SLR-GF-1

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Steel Structures (BTN01501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Draw the appropriate sketches wherever necessary.
5) Use of IS 800-2007 and IS 875 are allowed, but not allowed for MCQ (Q.No.1)

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) What is the value of constant 'k' to calculate throat thickness in fillet weld if the angle between fusion faces is 110°?
a) 0.6 b) 0.65
c) 0.55 d) 0.75

2) As per IS 800 purlins are designed as a _____.
a) Simply supported beams b) Cantilever beams
c) Continuous beams d) Compression member

3) Sag rod are designed as _____.
a) Compression member b) Tension member
c) Laterally supported beam d) Laterally unsupported beam

4) The self- weight of a roof truss $(\mathrm{N/m^2})$ may be obtained by _____.
a) $(\mathrm{L}+5)5$ b) $(\mathrm{L}/3+5)10$
c) $(\mathrm{L}-5)5$ d) $(\mathrm{L}/3-5)10$

5) Steel is an alloy which mainly contains _____.
a) iron and silica b) iron and sulfur
c) iron and carbon d) iron and sodium

6) The slenderness ratio of lacing flat is limited to _____.
a) 350 b) 145
c) 180 d) 250

7) The thickness of base plate is determined from the _____.
a) Flexural strength of plate
b) Shear strength of plate
c) Bearing strength of concrete pedestal
d) Punching criteria

8) The effective length of a battened column is _____.
a) increased by 10 %
b) increased by 20 %
c) 0.8 times actual length of column
d) 0.8 times the unsupported length of column

9) The partial safety factor for the material of bolts is _____.
a) 1.0 b) 1.1
c) 1.15 d) 1.25

10) Which of the following is the mode of failure in fillet weld material?
a) Tension b) Shear
c) Bearing d) Crushing

11) The shape factor in plastic method of analysis depends upon _____.
a) Yield stress of the material b) Hinge length
c) Geometry of the section d) Redistribution of moments

12) Which of the following is not a serviceability criteria?
a) Deflection b) Ponding
c) Vibration d) Fatigue

13) For the block shear failure of a tension member, the failure occurs along a path through the connection involving _____.
a) Tension on the two perpendicular planes
b) Shear on the two perpendicular planes
c) Tension on one plane and shear on the other perpendicular plane
d) Tension on the plane of connection and compression on the other perpendicular plane

14) Which of the following section will be preferred for a column?
a) ISLB b) ISMB
c) ISWB d) ISHB

SLR-GF-1

Seat No.	

Set P

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Steel Structures (BTN01501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 and Q.6 are compulsory and solve any 2 questions from each section.
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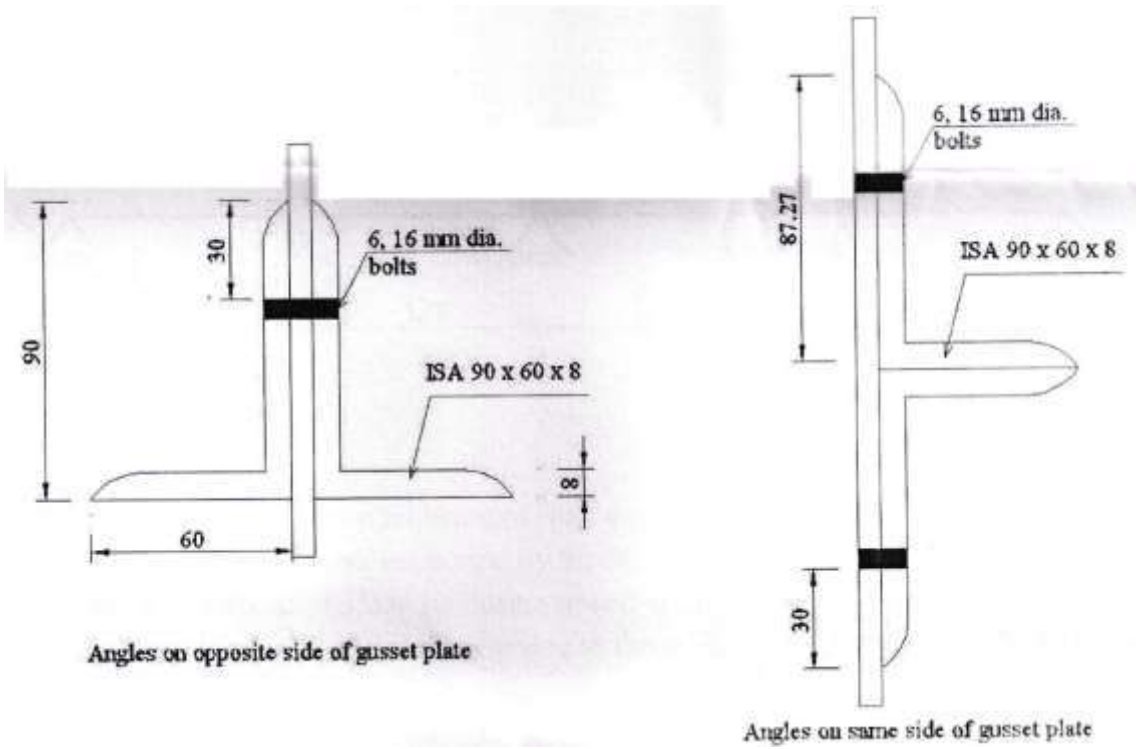
4) Draw the appropriate sketches wherever necessary.
5) Use of IS 800-2007 and IS 875 are allowed, but not allowed for Q.1 (MCQ)

Section – I

Q.2 **a)** Explain the limit state of strength and limit state of serviceability. **05**
b) Explain complete, partial and over complete collapse. **05**

Q.3 Determine the tensile capacity of the section shown in figure for following data **09**
Diameter of bolt = 16 mm
Number of bolts = 6
Pitch of bolt = 40 mm
Edge distance of bolts = 30 mm
Grade of bolt = 4.6
Grade of Steel Fe 410



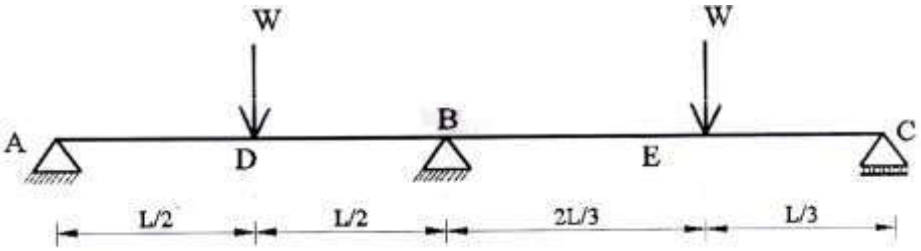
a) Angles are placed on the opposite side of 12 mm thick gusset plate (tack bolted)
b) Angles are placed on the same side of 12 mm thick gusset plate (tack bolted)
c) Angle are not tack bolted

Q.4 Design a double angle discontinuous strut to carry a factored load of 230 kN, the effective length of the strut is 2.4 m. Design the welded connection. **09**

Q.5 Design a built-up laced steel column 7 m long to carry a factored axial load of 900kN. The column is restrained in position but not restrained at against rotation at both the ends. Provide a single lacing system with bolted connections. The design should confirm to specifications of IS 800-2007, Design the column with two channels placed back-to-back. Also design a suitable single lacing system. **09**

Section – II

Q.6 Find out the collapse load for a continuous beam, shown in figure. The beam is of uniform cross section. **10**



Q.7 A simply supported steel beam of span 4 m effective span is laterally supported throughout. The loads supported by the beam comprise of uniformly distributed service live load of 35kN. (inclusive of self-weight) Adopting Fe410 grade steel, design the simply supported beam according to the specifications of IS 800-2007. **09**

Q.8 Design an I section purlin for industrial building supporting GI sheet roof for the following data. **09**

Spacing of trusses = 5.0m
Span of truss = 12 m
Spacing of purlins = 1.5 m
Inclination of main rafter to horizontal = 30°
Weight of GI sheets = 130 N/m^2
Wind load = 2.0 kN/m^2
Grade of steel Fe 410

Q.9 A column ISHB 350 @ 661.2 N/m carries an axial compressive factored load of 1500kN. Design a suitable welded gusset base. The base rests on M20 grade concrete pedestal. **09**

SLR-GF-1

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Steel Structures (BTN01501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
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5) Draw the appropriate sketches wherever necessary.
5) Use of IS 800-2007 and IS 875 are allowed, but not allowed for MCQ (Q.No.1)

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The effective length of a battened column is _____.
a) increased by 10 %
b) increased by 20 %
c) 0.8 times actual length of column
d) 0.8 times the unsupported length of column

2) The partial safety factor for the material of bolts is _____.
a) 1.0 b) 1.1
c) 1.15 d) 1.25

3) Which of the following is the mode of failure in fillet weld material?
a) Tension b) Shear
c) Bearing d) Crushing

4) The shape factor in plastic method of analysis depends upon _____.
a) Yield stress of the material b) Hinge length
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5) Which of the following is not a serviceability criteria?
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a) Tension on the two perpendicular planes
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7) Which of the following section will be preferred for a column?
a) ISLB b) ISMB
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8) What is the value of constant 'k' to calculate throat thickness in fillet weld if the angle between fusion faces is 110°?

a) 0.6 b) 0.65
c) 0.55 d) 0.75

9) As per IS 800 purlins are designed as a _____.

a) Simply supported beams b) Cantilever beams
c) Continuous beams d) Compression member

10) Sag rod are designed as _____.

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c) Laterally supported beam d) Laterally unsupported beam

11) The self- weight of a roof truss $(\mathrm{N/m^2})$ may be obtained by _____.

a) $(\mathrm{L}+5)5$ b) $(\mathrm{L}/3+5)10$
c) $(\mathrm{L}-5)5$ d) $(\mathrm{L}/3-5)10$

12) Steel is an alloy which mainly contains _____.

a) iron and silica b) iron and sulfur
c) iron and carbon d) iron and sodium

13) The slenderness ratio of lacing flat is limited to _____.

a) 350 b) 145
c) 180 d) 250

14) The thickness of base plate is determined from the _____.

a) Flexural strength of plate
b) Shear strength of plate
c) Bearing strength of concrete pedestal
d) Punching criteria

SLR-GF-1

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Steel Structures (BTN01501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 and Q.6 are compulsory and solve any 2 questions from each section.
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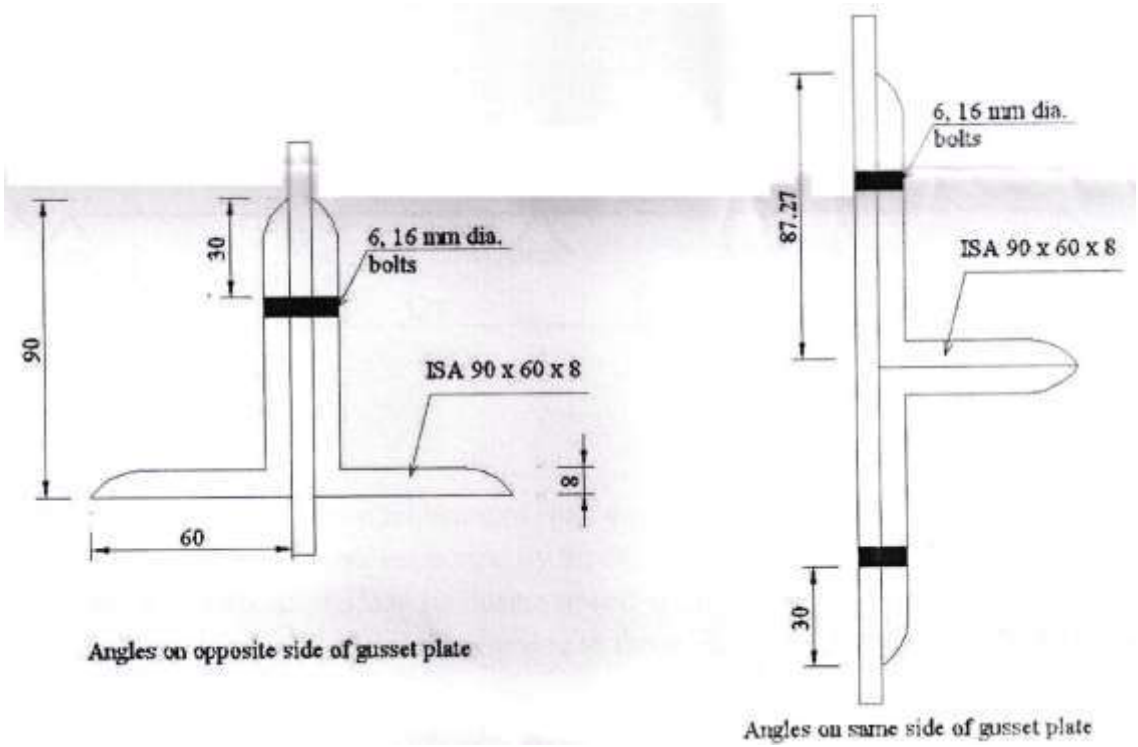
Section – I

Q.2 **a)** Explain the limit state of strength and limit state of serviceability. **05**
b) Explain complete, partial and over complete collapse. **05**

Q.3 Determine the tensile capacity of the section shown in figure for following data **09**
Diameter of bolt = 16 mm
Number of bolts = 6
Pitch of bolt = 40 mm
Edge distance of bolts = 30 mm
Grade of bolt = 4.6
Grade of Steel Fe 410



a) Angles are placed on the opposite side of 12 mm thick gusset plate (tack bolted)
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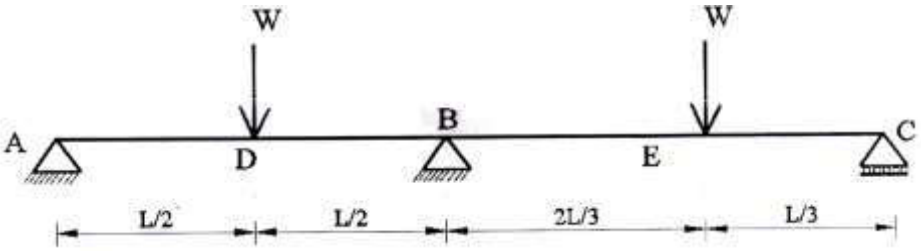
Section – II

Q.6 Find out the collapse load for a continuous beam, shown in figure. The beam is of uniform cross section. **10**



Q.7 A simply supported steel beam of span 4 m effective span is laterally supported throughout. The loads supported by the beam comprise of uniformly distributed service live load of 35kN. (inclusive of self-weight) Adopting Fe410 grade steel, design the simply supported beam according to the specifications of IS 800-2007. **09**

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Spacing of purlins = 1.5 m
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Wind load = 2.0 kN/m^2
Grade of steel Fe 410

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SLR-GF-1

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Steel Structures (BTN01501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The shape factor in plastic method of analysis depends upon _____.
a) Yield stress of the material b) Hinge length
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2) Which of the following is not a serviceability criteria?
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a) 1.0 b) 1.1
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14) Which of the following is the mode of failure in fillet weld material?
a) Tension b) Shear
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SLR-GF-1

Seat No.	

Set R

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Steel Structures (BTN01501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 **a)** Explain the limit state of strength and limit state of serviceability. **05**
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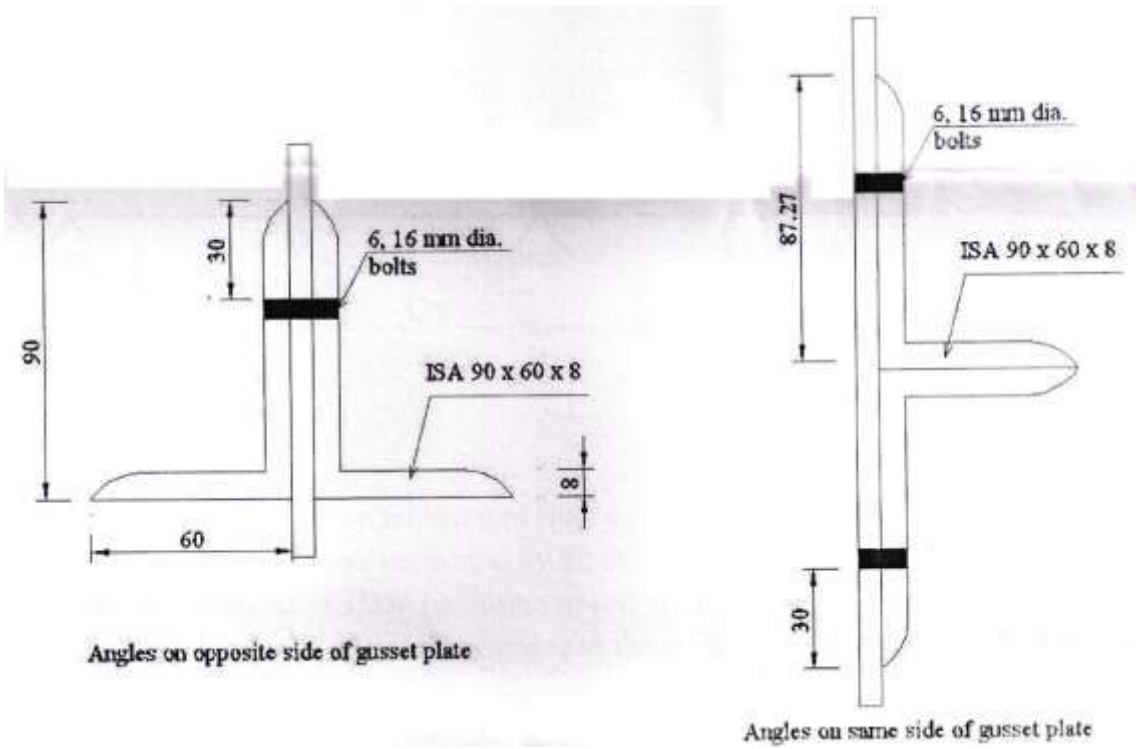

a) Angles are placed on the opposite side of 12 mm thick gusset plate (tack bolted)
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Section – II

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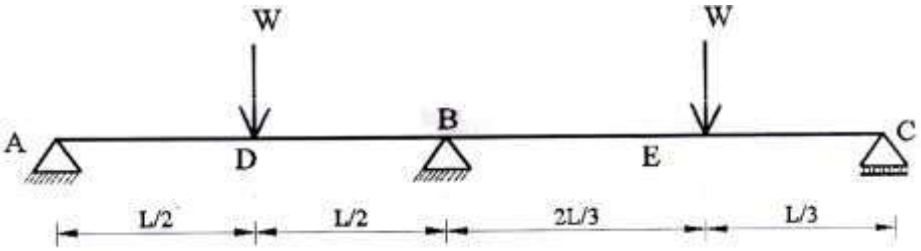

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Grade of steel Fe 410

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SLR-GF-1

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Steel Structures (BTN01501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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SLR-GF-1

Seat No.		Set	S

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CIVIL ENGINEERING
Design of Steel Structures (BTN01501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

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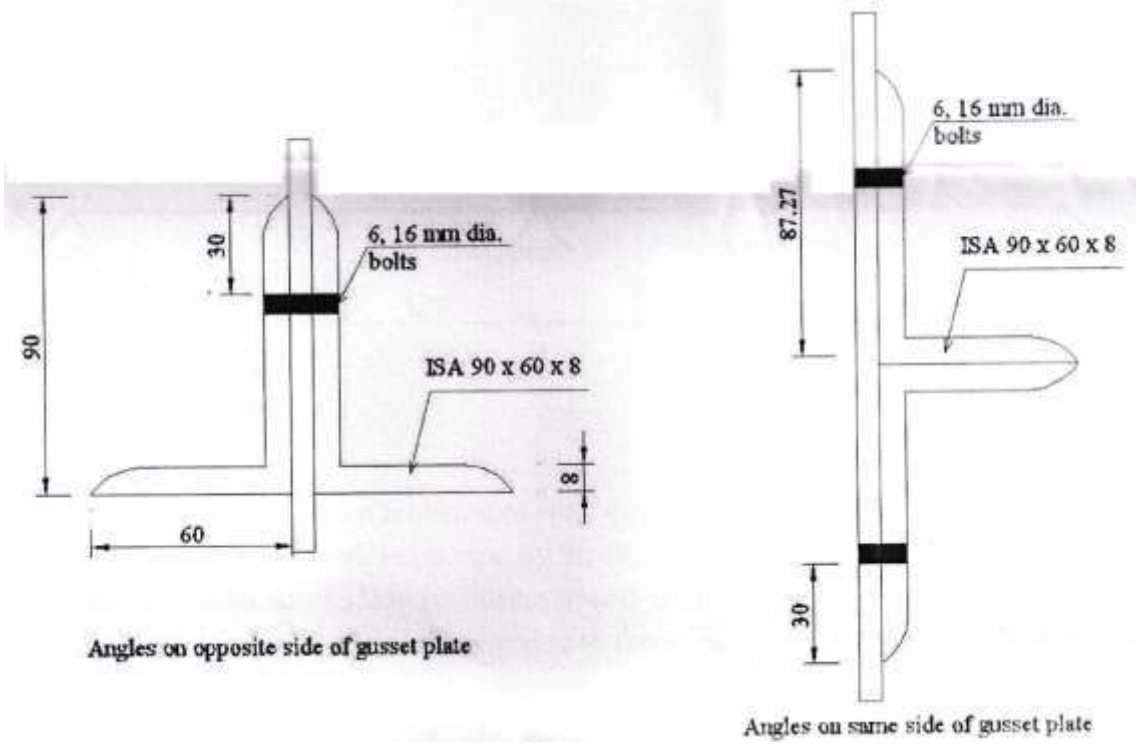

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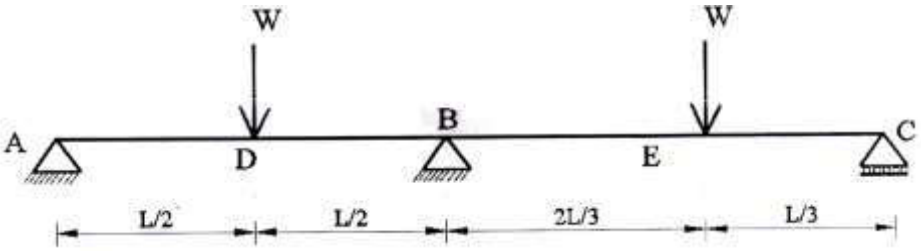
Section – II

Q.6 Find out the collapse load for a continuous beam, shown in figure. The beam is of uniform cross section. **10**



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Inclination of main rafter to horizontal = 30°
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Wind load = 2.0 kN/m^2
Grade of steel Fe 410

Q.9 A column ISHB 350 @ 661.2 N/m carries an axial compressive factored load of 1500kN. Design a suitable welded gusset base. The base rests on M20 grade concrete pedestal. **09**

SLR-GF-2

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) If solid portion is twice that of void portion in a given mass of soil, then porosity for this soil is _____
a) 0.33 b) 0.66
c) 0.50 d) 0.25

2) Which of following factors affect the permeability of soil?
a) Shape of soil particle b) Size of soil particle
c) both a and b d) None of these

3) Plasticity index is defined as the range of water content between _____.
a) liquid and plastic limit b) plastic limit and semi solid limit
c) semi-solid limit and liquid limit d) liquid limit and solid limit

4) A flow net may be utilised for the determination of _____.
a) Exit gradient b) Seepage
c) Hydrostatic pressure d) all the above

5) Which test is suitable to find permeability of sandy soil?
a) Constant head b) Falling head
c) Both d) None

6) The vertical pressure at every point on the surface of pressure bulb is _____.
a) Same
b) Different
c) More just below of load applied
d) None of these

7) Height of fall of rammer in modified compaction test is _____.
a) 250mm b) 310mm
c) 400mm d) 450mm

8) The Y intercept of strength envelope line on shear stress axis is called _____.
a) cohesion b) angle of internal friction
c) stress d) angle of friction

9) A sample of saturated soil has 30% water content and the specific gravity of soil grains is 2.6. The dry density of the soil mass in g/cm^3, is _____.

a) 1.46 b) 1.82
c) 1.91 d) None of these

10) A soil has a bulk density of 22 kN/m^3 and water content 10%. The dry density of soil is _____.

a) 18.6 kN/m^3 b) 20.0 kN/m^3
c) 22.0 kN/m^3 d) 23.2 kN/m^3

11) For 30% degree of consolidation of soil the time factor is _____.

a) 0.0706 b) 0.0523
c) 0.0042 d) 0.0061

12) Coefficient of consolidation for clays normally _____.

a) Decreases with increase in liquid limit
b) Increases with increase in liquid limit
c) First increases and then decreases with increase in liquid limit
d) Remains constant at all liquid limits

13) For a retaining wall of height 6 m with cohesionless backfill of $\varphi = 35°$ the distance of resultant earth pressure above the base of wall is _____.

a) 0.5 m b) 4.0 m
c) 2 m d) 3.0 m

14) The coefficient of passive earth pressure for a backfill having $\varphi = 35°$, as per Rankine's theory is _____.

a) 0.27 b) 0.33
c) 1.67 d) 3.69

SLR-GF-2

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 is compulsory and Q. No. 6 is compulsory.
2) Attempts any two questions from the remaining questions of each section.
3) Support your answer with illustrative sketches where-ever possible.
4) Assume suitable data if required.
5) Write units for the calculated quantities.

Section – I

Q.2 Answer any four questions. **08**

a) Define density index and percentage air voids.
b) What are the different drainage conditions used in shear test on soil? Which drainage condition is called as quick test?
c) Draw IS soil classification plasticity chart with symbol for soil group.
d) Write any two characteristics of flownet.
e) Define Darcy's law of flow of water through soil.

Q.3 a) Derive the relation between G, Υ, e and S with usual notations. **05**

b) A soil specimen has water content 10% and bulk unit weight 20KN/m^3. If specific gravity is 2.70 find dry unit weight, voids ratio, degree of saturation, porosity, air content. **05**

Q.4 a) What is permeability of soil? Explain any four factors affecting permeability of soil. **05**

b) Calculate the coefficient of permeability of a soil sample 6 cm in height and 50 cm^2 in cross sectional area, if a quantity of water equal to 420 ml passed down in 10 minutes under an effective constant head of 40 cm. On oven drying the test specimen has mass of 498 gm, calculate seepage velocity. Take G = 2.65. **05**

Q.5 a) What is failure envelope in shear strength of soil? Draw failure envelope and explain shear strength parameters for: **05**
1) Purely cohesive soil
2) Sandy soil
3) Partially cohesive soil

b) Following results were obtained in direct box shear test on sandy clay **05**

Normal Load	180N	380N	800N
Shear force at failure	200N	260N	360N

The size of box is 60 mm x 60 mm. Determine shear strength parameter of soil. If the same sample is tested in tri axial compression test with a cell pressure of 80 kN/m^2. Find the deviation stress at which the failure is expected.

Section – II

Q.6 Answer any four questions. **08**

a) Define Maximun dry density and optimum moisture.

b) Draw compaction curve for standard proctor test and modified proctor test on same scale and label it.

c) Define compression index and coefficient of compressibility.

d) Write any four analogy between spring model and saturated soil (consolidation).

e) Draw pressure distribution diagram for purely cohesive soil in active earth pressure.

Q.7 a) What are the different factors affecting compaction of soil? **05**

b) A Proctor density test gave following data **05**

Water content w%	9.5	11.3	13.2	15.7	18.0	20.2
Dry density Kg/M^3	1584	1650	1704	1698	1656	1597

1) Plot Compaction curve and find OMC and MDD
2) Plot zero air void line

Q.8 a) With a neat sketch explain procedure to calculate pre-consolidation pressure. **05**

b) A 1 cm thick laboratory soil sample reaches 50% consolidation in 30 seconds under double drainage conditions. Find how much time will it require for a 10 m thick layer in the field to reach the same degree of consolidation if **05**

1) It has drainage face on one side only
2) It has drainage face on both side

Q.9 a) Explain different types of earth pressure with neat sketch. **05**

b) A rigid vertical retaining wall 6 m high has a dry backfill of cohesionless soil. The properties are $\gamma = 16\text{kN/m}^3, \varphi = 25°$. The backfill is subjected to uniform surcharge pressure of 10 KN/m^2. Determine total active earth force and its point of application. **05**

SLR-GF-2

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) The Y intercept of strength envelope line on shear stress axis is called _____.
a) cohesion b) angle of internal friction
c) stress d) angle of friction

2) A sample of saturated soil has 30% water content and the specific gravity of soil grains is 2.6. The dry density of the soil mass in g/cm^3, is _____.
a) 1.46 b) 1.82
c) 1.91 d) None of these

3) A soil has a bulk density of 22 kN/m^3 and water content 10%. The dry density of soil is _____.
a) 18.6 kN/m^3 b) 20.0 kN/m^3
c) 22.0 kN/m^3 d) 23.2 kN/m^3

4) For 30% degree of consolidation of soil the time factor is _____.
a) 0.0706 b) 0.0523
c) 0.0042 d) 0.0061

5) Coefficient of consolidation for clays normally _____.
a) Decreases with increase in liquid limit
b) Increases with increase in liquid limit
c) First increases and then decreases with increase in liquid limit
d) Remains constant at all liquid limits

6) For a retaining wall of height 6 m with cohesionless backfill of $\varphi = 35°$ the distance of resultant earth pressure above the base of wall is _____.
a) 0.5 m b) 4.0 m
c) 2 m d) 3.0 m

7) The coefficient of passive earth pressure for a backfill having $\varphi = 35°$, as per Rankine's theory is _____.
a) 0.27 b) 0.33
c) 1.67 d) 3.69

8) If solid portion is twice that of void portion in a given mass of soil, then porosity for this soil is _____

a) 0.33 b) 0.66
c) 0.50 d) 0.25

9) Which of following factors affect the permeability of soil?

a) Shape of soil particle b) Size of soil particle
c) both a and b d) None of these

10) Plasticity index is defined as the range of water content between _____.

a) liquid and plastic limit b) plastic limit and semi solid limit
c) semi-solid limit and liquid limit d) liquid limit and solid limit

11) A flow net may be utilised for the determination of _____.

a) Exit gradient b) Seepage
c) Hydrostatic pressure d) all the above

12) Which test is suitable to find permeability of sandy soil?

a) Constant head b) Falling head
c) Both d) None

13) The vertical pressure at every point on the surface of pressure bulb is _____.

a) Same
b) Different
c) More just below of load applied
d) None of these

14) Height of fall of rammer in modified compaction test is _____.

a) 250mm b) 310mm
c) 400mm d) 450mm

SLR-GF-2

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 is compulsory and Q. No. 6 is compulsory.
2) Attempts any two questions from the remaining questions of each section.
3) Support your answer with illustrative sketches where-ever possible.
4) Assume suitable data if required.
5) Write units for the calculated quantities.

Section – I

Q.2 Answer any four questions. **08**

a) Define density index and percentage air voids.
b) What are the different drainage conditions used in shear test on soil? Which drainage condition is called as quick test?
c) Draw IS soil classification plasticity chart with symbol for soil group.
d) Write any two characteristics of flownet.
e) Define Darcy's law of flow of water through soil.

Q.3 a) Derive the relation between G, Υ, e and S with usual notations. **05**

b) A soil specimen has water content 10% and bulk unit weight 20KN/m^3. If specific gravity is 2.70 find dry unit weight, voids ratio, degree of saturation, porosity, air content. **05**

Q.4 a) What is permeability of soil? Explain any four factors affecting permeability of soil. **05**

b) Calculate the coefficient of permeability of a soil sample 6 cm in height and 50 cm^2 in cross sectional area, if a quantity of water equal to 420 ml passed down in 10 minutes under an effective constant head of 40 cm. On oven drying the test specimen has mass of 498 gm, calculate seepage velocity. Take G = 2.65. **05**

Q.5 a) What is failure envelope in shear strength of soil? Draw failure envelope and explain shear strength parameters for: **05**
1) Purely cohesive soil
2) Sandy soil
3) Partially cohesive soil

b) Following results were obtained in direct box shear test on sandy clay **05**

Normal Load	180N	380N	800N
Shear force at failure	200N	260N	360N

The size of box is 60 mm x 60 mm. Determine shear strength parameter of soil. If the same sample is tested in tri axial compression test with a cell pressure of 80 kN/m^2. Find the deviation stress at which the failure is expected.

Section – II

Q.6 Answer any four questions. **08**

a) Define Maximun dry density and optimum moisture.

b) Draw compaction curve for standard proctor test and modified proctor test on same scale and label it.

c) Define compression index and coefficient of compressibility.

d) Write any four analogy between spring model and saturated soil (consolidation).

e) Draw pressure distribution diagram for purely cohesive soil in active earth pressure.

Q.7 a) What are the different factors affecting compaction of soil? **05**

b) A Proctor density test gave following data **05**

Water content w%	9.5	11.3	13.2	15.7	18.0	20.2
Dry density Kg/M^3	1584	1650	1704	1698	1656	1597

1) Plot Compaction curve and find OMC and MDD
2) Plot zero air void line

Q.8 a) With a neat sketch explain procedure to calculate pre-consolidation pressure. **05**

b) A 1 cm thick laboratory soil sample reaches 50% consolidation in 30 seconds under double drainage conditions. Find how much time will it require for a 10 m thick layer in the field to reach the same degree of consolidation if **05**

1) It has drainage face on one side only
2) It has drainage face on both side

Q.9 a) Explain different types of earth pressure with neat sketch. **05**

b) A rigid vertical retaining wall 6 m high has a dry backfill of cohesionless soil. The properties are $\gamma = 16\text{kN/m}^3, \varphi = 25°$. The backfill is subjected to uniform surcharge pressure of 10 KN/m^2. Determine total active earth force and its point of application. **05**

SLR-GF-2

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) For 30% degree of consolidation of soil the time factor is _____.
a) 0.0706 b) 0.0523
c) 0.0042 d) 0.0061

2) Coefficient of consolidation for clays normally _____.
a) Decreases with increase in liquid limit
b) Increases with increase in liquid limit
c) First increases and then decreases with increase in liquid limit
d) Remains constant at all liquid limits

3) For a retaining wall of height 6 m with cohesionless backfill of $\varphi = 35°$ the distance of resultant earth pressure above the base of wall is _____.
a) 0.5 m b) 4.0 m
c) 2 m d) 3.0 m

4) The coefficient of passive earth pressure for a backfill having $\varphi = 35°$, as per Rankine's theory is _____.
a) 0.27 b) 0.33
c) 1.67 d) 3.69

5) If solid portion is twice that of void portion in a given mass of soil, then porosity for this soil is _____
a) 0.33 b) 0.66
c) 0.50 d) 0.25

6) Which of following factors affect the permeability of soil?
a) Shape of soil particle b) Size of soil particle
c) both a and b d) None of these

7) Plasticity index is defined as the range of water content between _____.
a) liquid and plastic limit b) plastic limit and semi solid limit
c) semi-solid limit and liquid limit d) liquid limit and solid limit

8) A flow net may be utilised for the determination of _____.
a) Exit gradient b) Seepage
c) Hydrostatic pressure d) all the above

9) Which test is suitable to find permeability of sandy soil?
a) Constant head b) Falling head
c) Both d) None

10) The vertical pressure at every point on the surface of pressure bulb is _____.
a) Same
b) Different
c) More just below of load applied
d) None of these

11) Height of fall of rammer in modified compaction test is _____.
a) 250mm b) 310mm
c) 400mm d) 450mm

12) The Y intercept of strength envelope line on shear stress axis is called _____.
a) cohesion b) angle of internal friction
c) stress d) angle of friction

13) A sample of saturated soil has 30% water content and the specific gravity of soil grains is 2.6. The dry density of the soil mass in g/cm^3, is _____.
a) 1.46 b) 1.82
c) 1.91 d) None of these

14) A soil has a bulk density of 22 kN/m^3 and water content 10%. The dry density of soil is _____.
a) 18.6 kN/m^3 b) 20.0 kN/m^3
c) 22.0 kN/m^3 d) 23.2 kN/m^3

SLR-GF-2

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 is compulsory and Q. No. 6 is compulsory.
2) Attempts any two questions from the remaining questions of each section.
3) Support your answer with illustrative sketches where-ever possible.
4) Assume suitable data if required.
5) Write units for the calculated quantities.

Section – I

Q.2 Answer any four questions. **08**

a) Define density index and percentage air voids.
b) What are the different drainage conditions used in shear test on soil? Which drainage condition is called as quick test?
c) Draw IS soil classification plasticity chart with symbol for soil group.
d) Write any two characteristics of flownet.
e) Define Darcy's law of flow of water through soil.

Q.3 a) Derive the relation between G, Υ, e and S with usual notations. **05**

b) A soil specimen has water content 10% and bulk unit weight 20KN/m^3. If specific gravity is 2.70 find dry unit weight, voids ratio, degree of saturation, porosity, air content. **05**

Q.4 a) What is permeability of soil? Explain any four factors affecting permeability of soil. **05**

b) Calculate the coefficient of permeability of a soil sample 6 cm in height and 50 cm^2 in cross sectional area, if a quantity of water equal to 420 ml passed down in 10 minutes under an effective constant head of 40 cm. On oven drying the test specimen has mass of 498 gm, calculate seepage velocity. Take G = 2.65. **05**

Q.5 a) What is failure envelope in shear strength of soil? Draw failure envelope and explain shear strength parameters for: **05**
1) Purely cohesive soil
2) Sandy soil
3) Partially cohesive soil

b) Following results were obtained in direct box shear test on sandy clay **05**

Normal Load	180N	380N	800N
Shear force at failure	200N	260N	360N

The size of box is 60 mm x 60 mm. Determine shear strength parameter of soil. If the same sample is tested in tri axial compression test with a cell pressure of 80 kN/m^2. Find the deviation stress at which the failure is expected.

Section – II

Q.6 Answer any four questions. **08**

a) Define Maximun dry density and optimum moisture.

b) Draw compaction curve for standard proctor test and modified proctor test on same scale and label it.

c) Define compression index and coefficient of compressibility.

d) Write any four analogy between spring model and saturated soil (consolidation).

e) Draw pressure distribution diagram for purely cohesive soil in active earth pressure.

Q.7 a) What are the different factors affecting compaction of soil? **05**

b) A Proctor density test gave following data **05**

Water content w%	9.5	11.3	13.2	15.7	18.0	20.2
Dry density Kg/M^3	1584	1650	1704	1698	1656	1597

1) Plot Compaction curve and find OMC and MDD
2) Plot zero air void line

Q.8 a) With a neat sketch explain procedure to calculate pre-consolidation pressure. **05**

b) A 1 cm thick laboratory soil sample reaches 50% consolidation in 30 seconds under double drainage conditions. Find how much time will it require for a 10 m thick layer in the field to reach the same degree of consolidation if **05**

1) It has drainage face on one side only
2) It has drainage face on both side

Q.9 a) Explain different types of earth pressure with neat sketch. **05**

b) A rigid vertical retaining wall 6 m high has a dry backfill of cohesionless soil. The properties are $\gamma = 16\text{kN/m}^3, \varphi = 25°$. The backfill is subjected to uniform surcharge pressure of 10 KN/m^2. Determine total active earth force and its point of application. **05**

SLR-GF-2

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) The vertical pressure at every point on the surface of pressure bulb is _____.
a) Same
b) Different
c) More just below of load applied
d) None of these

2) Height of fall of rammer in modified compaction test is _____.
a) 250mm b) 310mm
c) 400mm d) 450mm

3) The Y intercept of strength envelope line on shear stress axis is called _____.
a) cohesion b) angle of internal friction
c) stress d) angle of friction

4) A sample of saturated soil has 30% water content and the specific gravity of soil grains is 2.6. The dry density of the soil mass in g/cm^3, is _____.
a) 1.46 b) 1.82
c) 1.91 d) None of these

5) A soil has a bulk density of 22 kN/m^3 and water content 10%. The dry density of soil is _____.
a) 18.6 kN/m^3 b) 20.0 kN/m^3
c) 22.0 kN/m^3 d) 23.2 kN/m^3

6) For 30% degree of consolidation of soil the time factor is _____.
a) 0.0706 b) 0.0523
c) 0.0042 d) 0.0061

7) Coefficient of consolidation for clays normally _____.
a) Decreases with increase in liquid limit
b) Increases with increase in liquid limit
c) First increases and then decreases with increase in liquid limit
d) Remains constant at all liquid limits

8) For a retaining wall of height 6 m with cohesionless backfill of $\varphi = 35°$ the distance of resultant earth pressure above the base of wall is _____.

a) 0.5 m b) 4.0 m
c) 2 m d) 3.0 m

9) The coefficient of passive earth pressure for a backfill having $\varphi = 35°$, as per Rankine's theory is _____.

a) 0.27 b) 0.33
c) 1.67 d) 3.69

10) If solid portion is twice that of void portion in a given mass of soil, then porosity for this soil is _____

a) 0.33 b) 0.66
c) 0.50 d) 0.25

11) Which of following factors affect the permeability of soil?

a) Shape of soil particle b) Size of soil particle
c) both a and b d) None of these

12) Plasticity index is defined as the range of water content between _____.

a) liquid and plastic limit b) plastic limit and semi solid limit
c) semi-solid limit and liquid limit d) liquid limit and solid limit

13) A flow net may be utilised for the determination of _____.

a) Exit gradient b) Seepage
c) Hydrostatic pressure d) all the above

14) Which test is suitable to find permeability of sandy soil?

a) Constant head b) Falling head
c) Both d) None

SLR-GF-2

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geotechnical Engineering (BTN01502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 is compulsory and Q. No. 6 is compulsory.
2) Attempts any two questions from the remaining questions of each section.
3) Support your answer with illustrative sketches where-ever possible.
4) Assume suitable data if required.
5) Write units for the calculated quantities.

Section – I

Q.2 Answer any four questions. **08**

a) Define density index and percentage air voids.
b) What are the different drainage conditions used in shear test on soil? Which drainage condition is called as quick test?
c) Draw IS soil classification plasticity chart with symbol for soil group.
d) Write any two characteristics of flownet.
e) Define Darcy's law of flow of water through soil.

Q.3 a) Derive the relation between G, Υ, e and S with usual notations. **05**

b) A soil specimen has water content 10% and bulk unit weight 20KN/m^3. If specific gravity is 2.70 find dry unit weight, voids ratio, degree of saturation, porosity, air content. **05**

Q.4 a) What is permeability of soil? Explain any four factors affecting permeability of soil. **05**

b) Calculate the coefficient of permeability of a soil sample 6 cm in height and 50 cm^2 in cross sectional area, if a quantity of water equal to 420 ml passed down in 10 minutes under an effective constant head of 40 cm. On oven drying the test specimen has mass of 498 gm, calculate seepage velocity. Take G = 2.65. **05**

Q.5 a) What is failure envelope in shear strength of soil? Draw failure envelope and explain shear strength parameters for: **05**
1) Purely cohesive soil
2) Sandy soil
3) Partially cohesive soil

b) Following results were obtained in direct box shear test on sandy clay **05**

Normal Load	180N	380N	800N
Shear force at failure	200N	260N	360N

The size of box is 60 mm x 60 mm. Determine shear strength parameter of soil. If the same sample is tested in tri axial compression test with a cell pressure of 80 kN/m^2. Find the deviation stress at which the failure is expected.

Section – II

Q.6 Answer any four questions. **08**

a) Define Maximun dry density and optimum moisture.

b) Draw compaction curve for standard proctor test and modified proctor test on same scale and label it.

c) Define compression index and coefficient of compressibility.

d) Write any four analogy between spring model and saturated soil (consolidation).

e) Draw pressure distribution diagram for purely cohesive soil in active earth pressure.

Q.7 a) What are the different factors affecting compaction of soil? **05**

b) A Proctor density test gave following data **05**

Water content w%	9.5	11.3	13.2	15.7	18.0	20.2
Dry density Kg/M^3	1584	1650	1704	1698	1656	1597

1) Plot Compaction curve and find OMC and MDD
2) Plot zero air void line

Q.8 a) With a neat sketch explain procedure to calculate pre-consolidation pressure. **05**

b) A 1 cm thick laboratory soil sample reaches 50% consolidation in 30 seconds under double drainage conditions. Find how much time will it require for a 10 m thick layer in the field to reach the same degree of consolidation if **05**

1) It has drainage face on one side only
2) It has drainage face on both side

Q.9 a) Explain different types of earth pressure with neat sketch. **05**

b) A rigid vertical retaining wall 6 m high has a dry backfill of cohesionless soil. The properties are $\gamma = 16\text{kN/m}^3, \varphi = 25°$. The backfill is subjected to uniform surcharge pressure of 10 KN/m^2. Determine total active earth force and its point of application. **05**

SLR-GF-3

Seat No.		Set	P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Saturday,30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Match List-I (class of road with List-II (width of c/w) and select the correct answer using the codes:

List – I	List-II
A. Single lane	1. 7.5m
B. Two lane without raised Kerbs	2. 3.5m per lane
C. Two lane with raised Kerbs	3. 3.75m
D. Multilane pavement	4. 7.0m

Codes:

	A	B	C	D
a)	2	3	4	1
b)	4	1	2	3
c)	3	4	1	2
d)	2	1	4	3

2) Penetration value of Bitumen is expressed in _____.
a) cm b) N/mm^2
c) $1/10^{th}$ mm d) cm^2

3) Consider _____.
1) Creation of Central Road Fund
2) National Highway Act
3) Formation of Indian Road Congress
4) Creation of Highway Research Board
The correct chronological order of these events is
a) 4, 3, 2, 1 b) 2, 1, 3, 4
c) 1, 3, 2, 4 d) 2, 3, 1,4

4) Grade compensation at the horizontal curve is given by _____.
a) $\frac{30+V}{V}$ b) $\frac{30+S}{S}$
c) $\frac{30+R}{R}$ d) $\frac{30+e}{R}$

5) What is the stopping sight distance for a design speed of 65kmph assuming the coefficient of friction as 0.36 and total reaction time of drivers as 2.5 secs?

a) 91.34m b) 92.34m
c) 93.34m d) 94.34m

6) What is the standard aggregate load considered in calculation of CBR at 2.5mm and 5.0mm penetration level?

a) 1370kg and 2000kg b) 2055kg and 1300kg
c) 1380kg and 2088kg d) 1370 and 2055kg

7) Which of the following represents the hardest grade of bitumen?

a) 30/40 b) 60/70
c) 80/100 d) 100/120

8) Aggregate abrasion value indicates which of the following property?

a) Durability b) Toughness
c) Hardness d) Strength

9) Match the tests with their objectives:

	Test Name		**Objective**
A	Los Angeles Abrasion test	1	Consistency Limits and Indices
B	Impact test	2	MDD and OMC of Soil
C	Compaction test	3	Toughness property of aggregate
D	LL and PI test	4	Hardness property of Aggregate

Select the correct answer.

	A	**B**	**C**	**D**
a)	1	2	3	4
b)	1	4	3	2
c)	4	3	2	1
d)	2	3	4	1

10) Select the correct order of flexible pavement construction (From bottom to top) _____.

a) Bituminous Concrete, Dense Bituminous Macadam, Wet Mix Macadam, Granular Subbase and Subgrade
b) Subgrade, Granular Subbase, Bituminous Concrete, Dense Bituminous Macadam and Wet Mix Macadam
c) Dense Bituminous Macadam, Bituminous Concrete, Granular Subbase Wet Mix Macadam, and Subgrade
d) Subgrade, Granular Subbase, Wet Mix Macadam, Dense Bituminous Macadam and Bituminous Concrete

11) The location of Fatigue and Rutting cracking considered in the design of flexible pavement is _____.

a) At top of the Bituminous layer and the top of the Wet Mix Macadam
b) At bottom of the Bituminous layer and the top of the Wet Mix Macadam
c) At bottom of the Bituminous layer and the top of the Subgrade
d) At top of the Bituminous layer and the top of the Subgrade

12) The removal of the blasted debris from the tunnel interior to a good distance is called _____.

a) Drifting
b) Pumping
c) Mucking
d) Shifting

13) Forepoling method is generally adopted for tunneling in _____.

a) Soft ground
b) Hard Rock
c) Running ground
d) All the above

14) The ideal shape of the tunnel which suits sewers and water-carrying purposes is _____.

a) rectangular section
b) Circular section
c) Horse Shoe
d) Arched Roof

SLR-GF-3

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Saturday,30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section - I Q. 2 is compulsory; and solve any one question from remaining questions from Q.no. 3 and Q. no.4.
2) In Section - II Q. 5 is compulsory; and solve any one question from remaining from questions from Q.no. 6 and Q. no.7.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2 Solve any two questions. **10**

a) Explain the various factors to be considered in deciding the highway alignment.

b) Draw a typical cross section of Two Lane National Highway in cutting and embankment indicating width of road, camber, roadway and land.

c) Derive the expression for finding the stopping sight distance at the sloping ground.

Q.3 Solve any three questions. **18**

a) A radius of 500 m has to be provided at a locality due to site restrictions on a National Highway with design speed 100 kmph. Design the super elevation. Should there be any restriction in speed? Assume Suitable data.

b) On a two-way traffic road, the speed of overtaking and overtaken vehicles is 65kmph and 40kmph respectively. If the average acceleration 0.92m/sec^2. Determine the overtaking sight distance indicating the details of overtaking operations with sketch. Assume t=2.0sec.

c) An expressway four lane divided, passing through a flat terrain has a horizontal curve of radius equal to ruling minimum radius and design speed is 120kmph. Assume design coefficient of lateral friction=0.15, length of the vehicle wheel base=6.1m. Calculate the following elements of the curve,
1) Ruling minimum radius (considering f=0.15 & e=0.07)
2) Super elevation
3) Extra Widening (considering n=4)
4) Length of transition curve using IRC equation. Assume Suitable data.

d) Calculate the stopping distance on a highway for a vehicle moving at 80kmph on a
1) Level Road
2) On a road having 1 in 100 descending grade. Consider t=2.5 sec and f=0.35

Q.4 Solve any three questions. **18**

a) What are the objectives of the preliminary survey in highway alignment? Enumerate the details to be collected in it.

b) Derive the equation for finding the road curve widening with a neat sketch.

c) List the various objects of providing a horizontal transition curve? Also, explain the various shapes of the transition curve.

d) How do you find CBR value in a laboratory? Explain the test procedure with neat sketch.

Section – II

Q.5 Solve any two questions. **10**

a) Differentiate between flexible & rigid pavement (Draw a neat sketch of both the pavements)

b) Find ESWL at depths of 50mm, 200mm and 400mm for a dual wheel carrying 2044 kN each. The centre-to-centre tyre spacing is 200mm and distance between the walls of the two tyres is 100mm. Use (log) equation to calculate ESWL.

c) Write a short on applications of softening point & Ductility test on bitumen.

Q.6 Solve any three questions. **18**

a) Write a note on the surface and sub-surface drainage system for the highway.

b) Calculate the stresses at the interior, edge, and corner region of cement concrete pavement using Westergaard's analysis. Use the following data: Wheel Load P=5100kg, Modulus of elasticity of cement concrete E=3x10^5 kg/cm^2, pavement thickness, h=18cm, Poisson's ratio, $\mu = 0.15$, Modulus of subgrade reaction, K=6.0kg/cm^3, Radius of contact area, a=15cm. Consider Radius of relative stiffness, $l = 70.6cm$ and equivalent radius of resisting section, b =14cm.

c) State methods of tunneling in soft rock. Explain with sketch any one method in detail.

d) Describe drainage in tunneling.

Q.7 Solve any three questions. **18**

a) State the objectives of tunnel lining and discuss different materials used in tunnel lining.

b) With a neat sketch explain objects of providing
1) contraction joints
2) construction joints
3) expansion joints
4) longitudinal joints

c) With a neat sketch, explain the method of determining the aggregate-bituminous mixes proportioning by Rothfutch's method.

d) Explain the specification and construction procedure of Wet Mix Macadam.

SLR-GF-3

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Saturday,30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Aggregate abrasion value indicates which of the following property?
a) Durability b) Toughness
c) Hardness d) Strength

2) Match the tests with their objectives:

	Test Name		Objective
A	Los Angeles Abrasion test	1	Consistency Limits and Indices
B	Impact test	2	MDD and OMC of Soil
C	Compaction test	3	Toughness property of aggregate
D	LL and PI test	4	Hardness property of Aggregate

Select the correct answer.

	A	B	C	D
a)	1	2	3	4
b)	1	4	3	2
c)	4	3	2	1
d)	2	3	4	1

3) Select the correct order of flexible pavement construction (From bottom to top) _____.
a) Bituminous Concrete, Dense Bituminous Macadam, Wet Mix Macadam, Granular Subbase and Subgrade
b) Subgrade, Granular Subbase, Bituminous Concrete, Dense Bituminous Macadam and Wet Mix Macadam
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d) Subgrade, Granular Subbase, Wet Mix Macadam, Dense Bituminous Macadam and Bituminous Concrete

4) The location of Fatigue and Rutting cracking considered in the design of flexible pavement is _____.

a) At top of the Bituminous layer and the top of the Wet Mix Macadam
b) At bottom of the Bituminous layer and the top of the Wet Mix Macadam
c) At bottom of the Bituminous layer and the top of the Subgrade
d) At top of the Bituminous layer and the top of the Subgrade

5) The removal of the blasted debris from the tunnel interior to a good distance is called _____.

a) Drifting b) Pumping
c) Mucking d) Shifting

6) Forepoling method is generally adopted for tunneling in _____.

a) Soft ground b) Hard Rock
c) Running ground d) All the above

7) The ideal shape of the tunnel which suits sewers and water-carrying purposes is _____.

a) rectangular section b) Circular section
c) Horse Shoe d) Arched Roof

8) Match List-I (class of road with List-II (width of c/w) and select the correct answer using the codes:

List – I	List-II
A. Single lane	1. 7.5m
B. Two lane without raised Kerbs	2. 3.5m per lane
C. Two lane with raised Kerbs	3. 3.75m
D. Multilane pavement	4. 7.0m

Codes:

	A	**B**	**C**	**D**
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9) Penetration value of Bitumen is expressed in _____.

a) cm b) N/mm^2
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10) Consider _____.

1) Creation of Central Road Fund
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The correct chronological order of these events is

a) 4, 3, 2, 1 b) 2, 1, 3, 4
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11) Grade compensation at the horizontal curve is given by _____.

a) $\frac{30+V}{V}$ b) $\frac{30+S}{S}$
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12) What is the stopping sight distance for a design speed of 65kmph assuming the coefficient of friction as 0.36 and total reaction time of drivers as 2.5 secs?

a) 91.34m b) 92.34m
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13) What is the standard aggregate load considered in calculation of CBR at 2.5mm and 5.0mm penetration level?

a) 1370kg and 2000kg b) 2055kg and 1300kg
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14) Which of the following represents the hardest grade of bitumen?

a) 30/40 b) 60/70
c) 80/100 d) 100/120

SLR-GF-3

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Saturday,30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section - I Q. 2 is compulsory; and solve any one question from remaining questions from Q.no. 3 and Q. no.4.
2) In Section - II Q. 5 is compulsory; and solve any one question from remaining from questions from Q.no. 6 and Q. no.7.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2 Solve any two questions. **10**

a) Explain the various factors to be considered in deciding the highway alignment.

b) Draw a typical cross section of Two Lane National Highway in cutting and embankment indicating width of road, camber, roadway and land.

c) Derive the expression for finding the stopping sight distance at the sloping ground.

Q.3 Solve any three questions. **18**

a) A radius of 500 m has to be provided at a locality due to site restrictions on a National Highway with design speed 100 kmph. Design the super elevation. Should there be any restriction in speed? Assume Suitable data.

b) On a two-way traffic road, the speed of overtaking and overtaken vehicles is 65kmph and 40kmph respectively. If the average acceleration 0.92m/sec^2. Determine the overtaking sight distance indicating the details of overtaking operations with sketch. Assume t=2.0sec.

c) An expressway four lane divided, passing through a flat terrain has a horizontal curve of radius equal to ruling minimum radius and design speed is 120kmph. Assume design coefficient of lateral friction=0.15, length of the vehicle wheel base=6.1m. Calculate the following elements of the curve,
1) Ruling minimum radius (considering f=0.15 & e=0.07)
2) Super elevation
3) Extra Widening (considering n=4)
4) Length of transition curve using IRC equation. Assume Suitable data.

d) Calculate the stopping distance on a highway for a vehicle moving at 80kmph on a
1) Level Road
2) On a road having 1 in 100 descending grade. Consider t=2.5 sec and f=0.35

Q.4 Solve any three questions. **18**

a) What are the objectives of the preliminary survey in highway alignment? Enumerate the details to be collected in it.

b) Derive the equation for finding the road curve widening with a neat sketch.

c) List the various objects of providing a horizontal transition curve? Also, explain the various shapes of the transition curve.

d) How do you find CBR value in a laboratory? Explain the test procedure with neat sketch.

Section – II

Q.5 Solve any two questions. **10**

a) Differentiate between flexible & rigid pavement (Draw a neat sketch of both the pavements)

b) Find ESWL at depths of 50mm, 200mm and 400mm for a dual wheel carrying 2044 kN each. The centre-to-centre tyre spacing is 200mm and distance between the walls of the two tyres is 100mm. Use (log) equation to calculate ESWL.

c) Write a short on applications of softening point & Ductility test on bitumen.

Q.6 Solve any three questions. **18**

a) Write a note on the surface and sub-surface drainage system for the highway.

b) Calculate the stresses at the interior, edge, and corner region of cement concrete pavement using Westergaard's analysis. Use the following data: Wheel Load P=5100kg, Modulus of elasticity of cement concrete E=3x10^5 kg/cm^2, pavement thickness, h=18cm, Poisson's ratio, $\mu = 0.15$, Modulus of subgrade reaction, K=6.0kg/cm^3, Radius of contact area, a=15cm. Consider Radius of relative stiffness, $l = 70.6cm$ and equivalent radius of resisting section, b =14cm.

c) State methods of tunneling in soft rock. Explain with sketch any one method in detail.

d) Describe drainage in tunneling.

Q.7 Solve any three questions. **18**

a) State the objectives of tunnel lining and discuss different materials used in tunnel lining.

b) With a neat sketch explain objects of providing
1) contraction joints
2) construction joints
3) expansion joints
4) longitudinal joints

c) With a neat sketch, explain the method of determining the aggregate-bituminous mixes proportioning by Rothfutch's method.

d) Explain the specification and construction procedure of Wet Mix Macadam.

SLR-GF-3

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Saturday,30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The location of Fatigue and Rutting cracking considered in the design of flexible pavement is _____.
a) At top of the Bituminous layer and the top of the Wet Mix Macadam
b) At bottom of the Bituminous layer and the top of the Wet Mix Macadam
c) At bottom of the Bituminous layer and the top of the Subgrade
d) At top of the Bituminous layer and the top of the Subgrade

2) The removal of the blasted debris from the tunnel interior to a good distance is called _____.
a) Drifting b) Pumping
c) Mucking d) Shifting

3) Forepoling method is generally adopted for tunneling in _____.
a) Soft ground b) Hard Rock
c) Running ground d) All the above

4) The ideal shape of the tunnel which suits sewers and water-carrying purposes is _____.
a) rectangular section b) Circular section
c) Horse Shoe d) Arched Roof

5) Match List-I (class of road with List-II (width of c/w) and select the correct answer using the codes:

List – I	List-II
A. Single lane	1. 7.5m
B. Two lane without raised Kerbs	2. 3.5m per lane
C. Two lane with raised Kerbs	3. 3.75m
D. Multilane pavement	4. 7.0m

Codes:

	A	**B**	**C**	**D**
a)	2	3	4	1
b)	4	1	2	3
c)	3	4	1	2
d)	2	1	4	3

6) Penetration value of Bitumen is expressed in _____.

a) cm b) N/mm^2

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7) Consider _____.

1) Creation of Central Road Fund
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The correct chronological order of these events is

a) 4, 3, 2, 1 b) 2, 1, 3, 4

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a) $\frac{30+V}{V}$ b) $\frac{30+S}{S}$

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a) 91.34m b) 92.34m

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10) What is the standard aggregate load considered in calculation of CBR at 2.5mm and 5.0mm penetration level?

a) 1370kg and 2000kg b) 2055kg and 1300kg

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a) 30/40 b) 60/70

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12) Aggregate abrasion value indicates which of the following property?

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13) Match the tests with their objectives:

	Test Name		**Objective**
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C	Compaction test	3	Toughness property of aggregate
D	LL and PI test	4	Hardness property of Aggregate

Select the correct answer.

	A	**B**	**C**	**D**
a)	1	2	3	4
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14) Select the correct order of flexible pavement construction (From bottom to top) _____.

a) Bituminous Concrete, Dense Bituminous Macadam, Wet Mix Macadam, Granular Subbase and Subgrade
b) Subgrade, Granular Subbase, Bituminous Concrete, Dense Bituminous Macadam and Wet Mix Macadam
c) Dense Bituminous Macadam, Bituminous Concrete, Granular Subbase Wet Mix Macadam, and Subgrade
d) Subgrade, Granular Subbase, Wet Mix Macadam, Dense Bituminous Macadam and Bituminous Concrete

SLR-GF-3

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Saturday,30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section - I Q. 2 is compulsory; and solve any one question from remaining questions from Q.no. 3 and Q. no.4.
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3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2 Solve any two questions. **10**

a) Explain the various factors to be considered in deciding the highway alignment.

b) Draw a typical cross section of Two Lane National Highway in cutting and embankment indicating width of road, camber, roadway and land.

c) Derive the expression for finding the stopping sight distance at the sloping ground.

Q.3 Solve any three questions. **18**

a) A radius of 500 m has to be provided at a locality due to site restrictions on a National Highway with design speed 100 kmph. Design the super elevation. Should there be any restriction in speed? Assume Suitable data.

b) On a two-way traffic road, the speed of overtaking and overtaken vehicles is 65kmph and 40kmph respectively. If the average acceleration 0.92m/sec^2. Determine the overtaking sight distance indicating the details of overtaking operations with sketch. Assume t=2.0sec.

c) An expressway four lane divided, passing through a flat terrain has a horizontal curve of radius equal to ruling minimum radius and design speed is 120kmph. Assume design coefficient of lateral friction=0.15, length of the vehicle wheel base=6.1m. Calculate the following elements of the curve,
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4) Length of transition curve using IRC equation. Assume Suitable data.

d) Calculate the stopping distance on a highway for a vehicle moving at 80kmph on a
1) Level Road
2) On a road having 1 in 100 descending grade. Consider t=2.5 sec and f=0.35

Q.4 Solve any three questions. **18**

a) What are the objectives of the preliminary survey in highway alignment? Enumerate the details to be collected in it.

b) Derive the equation for finding the road curve widening with a neat sketch.

c) List the various objects of providing a horizontal transition curve? Also, explain the various shapes of the transition curve.

d) How do you find CBR value in a laboratory? Explain the test procedure with neat sketch.

Section – II

Q.5 Solve any two questions. **10**

a) Differentiate between flexible & rigid pavement (Draw a neat sketch of both the pavements)

b) Find ESWL at depths of 50mm, 200mm and 400mm for a dual wheel carrying 2044 kN each. The centre-to-centre tyre spacing is 200mm and distance between the walls of the two tyres is 100mm. Use (log) equation to calculate ESWL.

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c) State methods of tunneling in soft rock. Explain with sketch any one method in detail.

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a) State the objectives of tunnel lining and discuss different materials used in tunnel lining.

b) With a neat sketch explain objects of providing
1) contraction joints
2) construction joints
3) expansion joints
4) longitudinal joints

c) With a neat sketch, explain the method of determining the aggregate-bituminous mixes proportioning by Rothfutch's method.

d) Explain the specification and construction procedure of Wet Mix Macadam.

SLR-GF-3

Seat No.	

Set S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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1) What is the standard aggregate load considered in calculation of CBR at 2.5mm and 5.0mm penetration level?
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Select the correct answer.

	A	**B**	**C**	**D**
a)	1	2	3	4
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5) Select the correct order of flexible pavement construction (From bottom to top) _____.

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6) The location of Fatigue and Rutting cracking considered in the design of flexible pavement is _____.

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B. Two lane without raised Kerbs	2. 3.5m per lane
C. Two lane with raised Kerbs	3. 3.75m
D. Multilane pavement	4. 7.0m

Codes:

	A	**B**	**C**	**D**
a)	2	3	4	1
b)	4	1	2	3
c)	3	4	1	2
d)	2	1	4	3

11) Penetration value of Bitumen is expressed in _____.

a) cm b) N/mm^2
c) $1/10^{th}$ mm d) cm^2

12) Consider _____.

1) Creation of Central Road Fund
2) National Highway Act
3) Formation of Indian Road Congress
4) Creation of Highway Research Board

The correct chronological order of these events is

a) 4, 3, 2, 1 b) 2, 1, 3, 4
c) 1, 3, 2, 4 d) 2, 3, 1,4

13) Grade compensation at the horizontal curve is given by _____.

a) $\frac{30+V}{V}$ b) $\frac{30+S}{S}$
c) $\frac{30+R}{R}$ d) $\frac{30+e}{R}$

14) What is the stopping sight distance for a design speed of 65kmph assuming the coefficient of friction as 0.36 and total reaction time of drivers as 2.5 secs?

a) 91.34m b) 92.34m
c) 93.34m d) 94.34m

SLR-GF-3

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Highway and Tunnel Engineering (BTN01503)

Day & Date: Saturday,30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section - I Q. 2 is compulsory; and solve any one question from remaining questions from Q.no. 3 and Q. no.4.
2) In Section - II Q. 5 is compulsory; and solve any one question from remaining from questions from Q.no. 6 and Q. no.7.
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2 Solve any two questions. **10**

a) Explain the various factors to be considered in deciding the highway alignment.

b) Draw a typical cross section of Two Lane National Highway in cutting and embankment indicating width of road, camber, roadway and land.

c) Derive the expression for finding the stopping sight distance at the sloping ground.

Q.3 Solve any three questions. **18**

a) A radius of 500 m has to be provided at a locality due to site restrictions on a National Highway with design speed 100 kmph. Design the super elevation. Should there be any restriction in speed? Assume Suitable data.

b) On a two-way traffic road, the speed of overtaking and overtaken vehicles is 65kmph and 40kmph respectively. If the average acceleration 0.92m/sec^2. Determine the overtaking sight distance indicating the details of overtaking operations with sketch. Assume t=2.0sec.

c) An expressway four lane divided, passing through a flat terrain has a horizontal curve of radius equal to ruling minimum radius and design speed is 120kmph. Assume design coefficient of lateral friction=0.15, length of the vehicle wheel base=6.1m. Calculate the following elements of the curve,
1) Ruling minimum radius (considering f=0.15 & e=0.07)
2) Super elevation
3) Extra Widening (considering n=4)
4) Length of transition curve using IRC equation. Assume Suitable data.

d) Calculate the stopping distance on a highway for a vehicle moving at 80kmph on a
1) Level Road
2) On a road having 1 in 100 descending grade. Consider t=2.5 sec and f=0.35

Q.4 Solve any three questions. **18**

a) What are the objectives of the preliminary survey in highway alignment? Enumerate the details to be collected in it.

b) Derive the equation for finding the road curve widening with a neat sketch.

c) List the various objects of providing a horizontal transition curve? Also, explain the various shapes of the transition curve.

d) How do you find CBR value in a laboratory? Explain the test procedure with neat sketch.

Section – II

Q.5 Solve any two questions. **10**

a) Differentiate between flexible & rigid pavement (Draw a neat sketch of both the pavements)

b) Find ESWL at depths of 50mm, 200mm and 400mm for a dual wheel carrying 2044 kN each. The centre-to-centre tyre spacing is 200mm and distance between the walls of the two tyres is 100mm. Use (log) equation to calculate ESWL.

c) Write a short on applications of softening point & Ductility test on bitumen.

Q.6 Solve any three questions. **18**

a) Write a note on the surface and sub-surface drainage system for the highway.

b) Calculate the stresses at the interior, edge, and corner region of cement concrete pavement using Westergaard's analysis. Use the following data: Wheel Load P=5100kg, Modulus of elasticity of cement concrete E=3x10^5 kg/cm^2, pavement thickness, h=18cm, Poisson's ratio, $\mu = 0.15$, Modulus of subgrade reaction, K=6.0kg/cm^3, Radius of contact area, a=15cm. Consider Radius of relative stiffness, $l = 70.6cm$ and equivalent radius of resisting section, b =14cm.

c) State methods of tunneling in soft rock. Explain with sketch any one method in detail.

d) Describe drainage in tunneling.

Q.7 Solve any three questions. **18**

a) State the objectives of tunnel lining and discuss different materials used in tunnel lining.

b) With a neat sketch explain objects of providing
1) contraction joints
2) construction joints
3) expansion joints
4) longitudinal joints

c) With a neat sketch, explain the method of determining the aggregate-bituminous mixes proportioning by Rothfutch's method.

d) Explain the specification and construction procedure of Wet Mix Macadam.

SLR-GF-4

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 MCQ /Objective type question paper **14**

1) The circulation of water from the earth's surface to the atmosphere, and vice versa, is called:
a) hydrologic cycle
b) runoff cycle
c) precipitation cycle
d) all of the above.

2) Infiltration capacity:
a) is a constant factor
b) changes with time
c) changes with location
d) changes both with time as well as location.

3) Synthetic unit hydrograph is a unit hydrograph of a basin, and is derived from:
a) the existing unit hydrograph of smaller duration for the basin
b) the existing unit hydrograph of a nearly basin
c) the existing unit hydrograph of a meteorologically homogeneous basin
d) the analysis of the rainfall runoff data of the basin

4) Time of concentration is the:
a) time of which the rain remains concentrated on a basin
b) time of maximum possible precipitation that may ever concentrate and fall over a given basin
c) time taken by the rain water to flow to an existing defined drain in a basin
d) the maximum time taken by the rain water to reach the outlet of the basin.

5) The probable maximum flood is the one:
a) which can occur only at rare occasions, such as the maximum observed flood on record
b) which can not occur at all under any weather conditions
c) which can occur only under the worst weather conditions
d) none of them

6) In mean section method
a) the elemental strip is taken between two verticals
b) mean depth is taken as the average of the depths in the two verticals
c) width of the strip is distance *b* between the two verticals
d) All of these

7) Darcy's law is valid, when the flow is:
a) laminar b) turbulent
c) both (a) and (b) d) none of them

8) The line joining the static water levels in several wells, excavated through a confined aquifer, is known as the:
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c) perched water table d) hypsometric curve

9) The National water policy (2002), of India, gives the top priority to:
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c) irrigation water d) none of the above

10) Jack well is used for
a) accommodating pumping unit
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11) The water requirement in terms of delta is maximum for
a) Rice b) Tobacco
c) Potatoes d) Sugarcane

12) The efficiency of water conveyance does not depend upon
a) climatic conditions
b) geometry bf the conveyance system
c) nature of the boundary of the conveyance system
d) method of application of water.

13) Factors affecting watershed management
a) Shape and size of watershed
b) Precipitation occurring in watershed
c) Land use patterns
d) All of these

14) Post construction measure for control of sedimentation in reservoir includes
a) construction of dam in stages
b) selection of suitable site for reservoir
c) Construction of check dams
d) Removal of post flood water

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
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3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 a) Define precipitation, what are the different forms of precipitation? **05**

b) Given below are the ordinates of a 3-h unit hydrograph for a Catchment. Calculate the ordinates of the 6-h UH. **05**

Duration (h)	0	3	6	9	12	15	18	21	24	27
Ordinates of 3-h UH (m3/s)	0	40	50	70	90	110	95	94	20	0

Q.3 a) What do you mean by runoff? How it is generated? Explain the different factors affecting runoff. **04**

b) The following data were collected during stream gauging operation in a river. Compute the discharge. **05**

Distance from left water edge (m)	0	1.5	3.0	4.5	6.0	7.5	9.0
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Velocity at 0.2 d (m/s)	0	0.6	0.9	0.7	0.6	0.4	0.0
Velocity at 0.8 d (m/s)	0	0.4	0.6	0.5	0.4	0.3	0.0

Q.4 a) Enlist different methods of stream gauging and explain the area-velocity method of stream gauging. **04**

b) A well with radius of 0.35 m, completely penetrates into confined aquifer of thickness 40 m and hydraulic conductivity 8.2 x 10-4 m/s. What is the maximum yield expected from this well, if the drawdown in the well is not to exceed 4 m. The radius of influence may be taken as 280 m **05**

Q.5 **a)** Discuss various types of aquifers with reference to ground water availability **04**

b) The isohyets due to storm in a catchment were drawn and the area of the catchment bounded by isohyets was tabulated as below. Estimate the mean precipitation due to storm. **05**

Isohyets (cm)	Area km^2
Station - 12	30
12-10	140
10-8	80
8-6	180
6-4	20

Section – II

Q.6 **a)** Write a detailed note on 'National Perspective Plan' of National Water Development Academy for Inter-basin transfer of water in India. **05**

b) Enlist the main features of a lift irrigation scheme located at the bank of river. Discuss the economic feasibility of lift irrigation. **05**

Q.7 **a)** Explain the main components of sprinkler irrigation system with sketches. **04**

b) The root zone of an irrigation soil has dry weight of 15 kN/m^3 and a field capacity of 30%. The root zone depth of crop having, permanent wilting coefficient 8% is 0.8 m. determine (1) Depth of moisture in root zone at field capacity (2) depth of moisture in root zone at permanent wilting point (3) Depth of water available. **05**

Q.8 **a)** What is meant by 'Duty' and 'Delta' of canal water? Derive the relationship between Duty and Delta. **04**

b) What are the different methods of canal water revenue Assessment? Explain any one with its advantages and disadvantages. **05**

Q.9 **a)** What are the different structures constructed in watershed to retain soil and conserve water? Discuss briefly. **03**

b) The irrigation canal has GCA of 90000 hectares out of which 90% is culturable, the intensity of irrigation for Kharif season is 35% and for Rabbi season 55%. Find the discharge required at the head of the canal. If the duty at its head is 850 hectare/cumec for Kharif and 1800 hectares/cumec for Rabbi season. **06**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 MCQ /Objective type question paper **14**

1) The line joining the static water levels in several wells, excavated through a confined aquifer, is known as the:
a) cone of depression b) piezometric surface
c) perched water table d) hypsometric curve

2) The National water policy (2002), of India, gives the top priority to:
a) drinking water b) hydro power
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3) Jack well is used for
a) accommodating pumping unit
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4) The water requirement in terms of delta is maximum for
a) Rice b) Tobacco
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5) The efficiency of water conveyance does not depend upon
a) climatic conditions
b) geometry bf the conveyance system
c) nature of the boundary of the conveyance system
d) method of application of water.

6) Factors affecting watershed management
a) Shape and size of watershed
b) Precipitation occurring in watershed
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d) All of these

7) Post construction measure for control of sedimentation in reservoir includes
a) construction of dam in stages
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c) Construction of check dams
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8) The circulation of water from the earth's surface to the atmosphere, and vice versa, is called:
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10) Synthetic unit hydrograph is a unit hydrograph of a basin, and is derived from:
a) the existing unit hydrograph of smaller duration for the basin
b) the existing unit hydrograph of a nearly basin
c) the existing unit hydrograph of a meteorologically homogeneous basin
d) the analysis of the rainfall runoff data of the basin

11) Time of concentration is the:
a) time of which the rain remains concentrated on a basin
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13) In mean section method
a) the elemental strip is taken between two verticals
b) mean depth is taken as the average of the depths in the two verticals
c) width of the strip is distance *b* between the two verticals
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14) Darcy's law is valid, when the flow is:
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c) both (a) and (b) d) none of them

SLR-GF-4

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
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Section – I

Q.2 a) Define precipitation, what are the different forms of precipitation? **05**

b) Given below are the ordinates of a 3-h unit hydrograph for a Catchment. Calculate the ordinates of the 6-h UH. **05**

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Ordinates of 3-h UH (m3/s)	0	40	50	70	90	110	95	94	20	0

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Q.4 a) Enlist different methods of stream gauging and explain the area-velocity method of stream gauging. **04**

b) A well with radius of 0.35 m, completely penetrates into confined aquifer of thickness 40 m and hydraulic conductivity 8.2 x 10-4 m/s. What is the maximum yield expected from this well, if the drawdown in the well is not to exceed 4 m. The radius of influence may be taken as 280 m **05**

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Section – II

Q.6 **a)** Write a detailed note on 'National Perspective Plan' of National Water Development Academy for Inter-basin transfer of water in India. **05**

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b) The root zone of an irrigation soil has dry weight of 15 kN/m^3 and a field capacity of 30%. The root zone depth of crop having, permanent wilting coefficient 8% is 0.8 m. determine (1) Depth of moisture in root zone at field capacity (2) depth of moisture in root zone at permanent wilting point (3) Depth of water available. **05**

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SLR-GF-4

Seat No.	

Set R

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CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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SLR-GF-4

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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c) width of the strip is distance *b* between the two verticals
d) All of these

2) Darcy's law is valid, when the flow is:
a) laminar b) turbulent
c) both (a) and (b) d) none of them

3) The line joining the static water levels in several wells, excavated through a confined aquifer, is known as the:
a) cone of depression b) piezometric surface
c) perched water table d) hypsometric curve

4) The National water policy (2002), of India, gives the top priority to:
a) drinking water b) hydro power
c) irrigation water d) none of the above

5) Jack well is used for
a) accommodating pumping unit
b) to collect water form river
c) both a and b
d) none of these

6) The water requirement in terms of delta is maximum for
a) Rice b) Tobacco
c) Potatoes d) Sugarcane

7) The efficiency of water conveyance does not depend upon
a) climatic conditions
b) geometry bf the conveyance system
c) nature of the boundary of the conveyance system
d) method of application of water.

8) Factors affecting watershed management
   a) Shape and size of watershed
   b) Precipitation occurring in watershed
   c) Land use patterns
   d) All of these

9) Post construction measure for control of sedimentation in reservoir includes
   a) construction of dam in stages
   b) selection of suitable site for reservoir
   c) Construction of check dams
   d) Removal of post flood water

10) The circulation of water from the earth's surface to the atmosphere, and vice versa, is called:
   a) hydrologic cycle
   b) runoff cycle
   c) precipitation cycle
   d) all of the above.

11) Infiltration capacity:
   a) is a constant factor
   b) changes with time
   c) changes with location
   d) changes both with time as well as location.

12) Synthetic unit hydrograph is a unit hydrograph of a basin, and is derived from:
   a) the existing unit hydrograph of smaller duration for the basin
   b) the existing unit hydrograph of a nearly basin
   c) the existing unit hydrograph of a meteorologically homogeneous basin
   d) the analysis of the rainfall runoff data of the basin

13) Time of concentration is the:
   a) time of which the rain remains concentrated on a basin
   b) time of maximum possible precipitation that may ever concentrate and fall over a given basin
   c) time taken by the rain water to flow to an existing defined drain in a basin
   d) the maximum time taken by the rain water to reach the outlet of the basin.

14) The probable maximum flood is the one:
   a) which can occur only at rare occasions, such as the maximum observed flood on record
   b) which can not occur at all under any weather conditions
   c) which can occur only under the worst weather conditions
   d) none of them

SLR-GF-4

Seat No.	

Set S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydrology and Water Resources Engineering (BTN01504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 a) Define precipitation, what are the different forms of precipitation? **05**

b) Given below are the ordinates of a 3-h unit hydrograph for a Catchment. Calculate the ordinates of the 6-h UH. **05**

Duration (h)	0	3	6	9	12	15	18	21	24	27
Ordinates of 3-h UH (m3/s)	0	40	50	70	90	110	95	94	20	0

Q.3 a) What do you mean by runoff? How it is generated? Explain the different factors affecting runoff. **04**

b) The following data were collected during stream gauging operation in a river. Compute the discharge. **05**

Distance from left water edge (m)	0	1.5	3.0	4.5	6.0	7.5	9.0
Depth (m)	0	1.3	2.5	1.7	1.0	0.4	0.0
Velocity at 0.2 d (m/s)	0	0.6	0.9	0.7	0.6	0.4	0.0
Velocity at 0.8 d (m/s)	0	0.4	0.6	0.5	0.4	0.3	0.0

Q.4 a) Enlist different methods of stream gauging and explain the area-velocity method of stream gauging. **04**

b) A well with radius of 0.35 m, completely penetrates into confined aquifer of thickness 40 m and hydraulic conductivity 8.2 x 10-4 m/s. What is the maximum yield expected from this well, if the drawdown in the well is not to exceed 4 m. The radius of influence may be taken as 280 m **05**

Q.5 **a)** Discuss various types of aquifers with reference to ground water availability **04**

b) The isohyets due to storm in a catchment were drawn and the area of the catchment bounded by isohyets was tabulated as below. Estimate the mean precipitation due to storm. **05**

Isohyets (cm)	Area km^2
Station - 12	30
12-10	140
10-8	80
8-6	180
6-4	20

Section – II

Q.6 **a)** Write a detailed note on 'National Perspective Plan' of National Water Development Academy for Inter-basin transfer of water in India. **05**

b) Enlist the main features of a lift irrigation scheme located at the bank of river. Discuss the economic feasibility of lift irrigation. **05**

Q.7 **a)** Explain the main components of sprinkler irrigation system with sketches. **04**

b) The root zone of an irrigation soil has dry weight of 15 kN/m^3 and a field capacity of 30%. The root zone depth of crop having, permanent wilting coefficient 8% is 0.8 m. determine (1) Depth of moisture in root zone at field capacity (2) depth of moisture in root zone at permanent wilting point (3) Depth of water available. **05**

Q.8 **a)** What is meant by 'Duty' and 'Delta' of canal water? Derive the relationship between Duty and Delta. **04**

b) What are the different methods of canal water revenue Assessment? Explain any one with its advantages and disadvantages. **05**

Q.9 **a)** What are the different structures constructed in watershed to retain soil and conserve water? Discuss briefly. **03**

b) The irrigation canal has GCA of 90000 hectares out of which 90% is culturable, the intensity of irrigation for Kharif season is 35% and for Rabbi season 55%. Find the discharge required at the head of the canal. If the duty at its head is 850 hectare/cumec for Kharif and 1800 hectares/cumec for Rabbi season. **06**

SLR-GF-5

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) In Limit state method of concrete structure, the strain distribution is assumed to be **01**
a) Linear b) Non linear
c) Parabolic d) Parabolic and rectangular

2) If Xu/d is greater than the limiting value, then section is designed as _____. **01**
a) Under-reinforced section b) Over-reinforced section
c) Redesign d) Balanced section

3) For steel of grade Fe500, the value of Xumax/d is _____. **01**
a) 0.48 b) 0.46
c) 0.53 d) 0.43

4) The basic value of span to depth ratio for span up to 10 m for simply supported beam is _____. **01**
a) 20 b) 26
c) 7 d) 16

5) The neutral axis of a T-beam exists _____. **01**
a) Within the flange b) At the bottom edge of the slab
c) Below the slab d) All the above

6) The lateral ties are provided in columns _____. **01**
a) To decrease shear strength b) To resist axial force
c) To resist lateral buckling d) None of these

7) The effective width in L beam is _____. **01**
a) $(l_0/12) + b_w + 3\ D_f$ b) $(l_0/12) + 3b_w + \ D_f$
c) $(l_0/6) + b_w + 6\ D_f$ d) $(l_0/12) + b_w + 6D_f$

8) The basic value of span to depth ratio for span up 10 m for continuous beam is ____. **01**
a) 7 b) 20
c) 26 d) 16

9) The load carrying capacity of a helically reinforced column as compared to that of a tied column is about _____. **01**

a) 6 % less b) 5 % less
c) 6 % more d) 5% more

10) The minimum eccentricity of the axially loaded column is _____. **01**

a) 20 mm b) 10 mm
c) 16 mm d) 12 mm

11) The equivalent flexural moment Meq is calculated by using _____. **01**

a) Meq = Mu + Tu {(1+D/b)/1.5} b) Meq = Mu + Tu {(1+D/b)/1.7}
c) Meq = Mu + Tu {(1-D/b)/1.7} d) Meq = Mu + Tu {(1+b/D)/1.7}

12) Lifting of corners of the slab is prevented by providing ____ reinforcement. **01**

a) shear b) longitudinal
c) transverse d) torsion

13) The width of a rectangular beam is 300 mm and the effective depth is 420 mm. The concrete grade is M 20 and the grade of reinforcing steel is Fe 415. The position of neutral axis from compression side is ____. **02**

a) 205 mm b) 222 mm
c) 193 mm d) 201 mm

SLR-GF-5

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 and 6 is compulsory.
2) Solve any two questions from each section.
3) Use of IS456:2000 original and nonprogrammable calculator is allowed.
4) Figure to the right indicates full marks.
5) Assume additional suitable data if necessary and state it clearly.
6) Draw neat sketch of reinforcement details.

Section – I

Q.2 A beam 300 mm x 450mm effective is subjected to a factored moment of 190kNm. Determine the area of steel required. Use M20concrete and Fe415steel. Assume d'=50mm. **08**

Q.3 A T beam floor system has 100mm thick slab supported on beams. The width of beam is 300mm & effective depth is 580mm.The beam is reinforced with 8 bars of 20mm diameter. The beams are spaced at 3m center to center. The effective span of beam is 3.6m. Use M_{20} concrete and Fe_{415}steel. **10**

Q.4 Design a reinforced concrete slab for a room of clear dimension 3.2m x 4.2m. The slab is supported on walls of width 230 mm. The slab is carrying a live load of 4kN/m^2 & floor finish load 1kN/m^2. Use M20 concrete and Fe415steel. The corners of the slab are held down. **10**

Q.5 A rectangular reinforced concrete beam is required to carry a udl of 30 kN including self-weight of beam. The effective span of beam is 5m. Design the beam. Use M30concrete and Fe415 steel. **10**

Section – II

Q.6 Design a short RCC column to carry axial load of 1400 kN. It is 3.5 m long effectively held in position and direction. Use M20 concrete and Fe500 steel. **08**

Q.7 Design a rectangular beam, continuous over three column supports with effective Span 3.5m each. The beam is subjected to an imposed load of 10 kN/m and live load of 14 kN/m. UseM25 concrete and Fe500steel. **10**

Q.8 Determine reinforcement required for a beam size 300mm x 500mm subjected to factored bending moment of 130kNm, factored shear force 100kN and factored torsional moment of 20kNm.Use M20concrete and Fe415 steel. **10**

Q.9 a) Design a circular column of diameter 400 mm with helical reinforcement subjected to a load of 1500 kN. The column has unsupported length of 3m and is effectively held in position and restrained against rotation at both ends. Use M_{25} concrete and Fe_{415} steel. **07**

b) Write the condition in which IS code method is applicable for design of continues beam. **03**

SLR-GF-5

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The lateral ties are provided in columns _____. **01**
a) To decrease shear strength b) To resist axial force
c) To resist lateral buckling d) None of these

2) The effective width in L beam is _____. **01**
a) $(l_0/12) + b_w + 3\,D_f$ b) $(l_0/12) + 3b_w + D_f$
c) $(l_0/6) + b_w + 6\,D_f$ d) $(l_0/12) + b_w + 6D_f$

3) The basic value of span to depth ratio for span up 10 m for continuous beam is ____. **01**
a) 7 b) 20
c) 26 d) 16

4) The load carrying capacity of a helically reinforced column as compared to that of a tied column is about _____. **01**
a) 6 % less b) 5 % less
c) 6 % more d) 5% more

5) The minimum eccentricity of the axially loaded column is _____. **01**
a) 20 mm b) 10 mm
c) 16 mm d) 12 mm

6) The equivalent flexural moment Meq is calculated by using _____. **01**
a) Meq = Mu + Tu {(1+D/b)/1.5} b) Meq = Mu + Tu {(1+D/b)/1.7}
c) Meq = Mu + Tu {(1-D/b)/1.7} d) Meq = Mu + Tu {(1+b/D)/1.7}

7) Lifting of corners of the slab is prevented by providing ____ reinforcement. **01**
a) shear b) longitudinal
c) transverse d) torsion

8) In Limit state method of concrete structure, the strain distribution is assumed to be **01**
a) Linear b) Non linear
c) Parabolic d) Parabolic and rectangular

9) If Xu/d is greater than the limiting value, then section is designed as _____. **01**

a) Under-reinforced section b) Over-reinforced section
c) Redesign d) Balanced section

10) For steel of grade Fe500, the value of Xumax/d is _____. **01**

a) 0.48 b) 0.46
c) 0.53 d) 0.43

11) The basic value of span to depth ratio for span up to 10 m for simply supported beam is _____. **01**

a) 20 b) 26
c) 7 d) 16

12) The neutral axis of a T-beam exists _____. **01**

a) Within the flange b) At the bottom edge of the slab
c) Below the slab d) All the above

13) The width of a rectangular beam is 300 mm and the effective depth is 420 mm. The concrete grade is M 20 and the grade of reinforcing steel is Fe 415. The position of neutral axis from compression side is ____. **02**

a) 205 mm b) 222 mm
c) 193 mm d) 201 mm

SLR-GF-5

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 and 6 is compulsory.
2) Solve any two questions from each section.
3) Use of IS456:2000 original and nonprogrammable calculator is allowed.
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5) Assume additional suitable data if necessary and state it clearly.
6) Draw neat sketch of reinforcement details.

Section – I

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Q.3 A T beam floor system has 100mm thick slab supported on beams. The width of beam is 300mm & effective depth is 580mm.The beam is reinforced with 8 bars of 20mm diameter. The beams are spaced at 3m center to center. The effective span of beam is 3.6m. Use M_{20} concrete and Fe_{415}steel. **10**

Q.4 Design a reinforced concrete slab for a room of clear dimension 3.2m x 4.2m. The slab is supported on walls of width 230 mm. The slab is carrying a live load of 4kN/m^2 & floor finish load 1kN/m^2. Use M20 concrete and Fe415steel. The corners of the slab are held down. **10**

Q.5 A rectangular reinforced concrete beam is required to carry a udl of 30 kN including self-weight of beam. The effective span of beam is 5m. Design the beam. Use M30concrete and Fe415 steel. **10**

Section – II

Q.6 Design a short RCC column to carry axial load of 1400 kN. It is 3.5 m long effectively held in position and direction. Use M20 concrete and Fe500 steel. **08**

Q.7 Design a rectangular beam, continuous over three column supports with effective Span 3.5m each. The beam is subjected to an imposed load of 10 kN/m and live load of 14 kN/m. UseM25 concrete and Fe500steel. **10**

Q.8 Determine reinforcement required for a beam size 300mm x 500mm subjected to factored bending moment of 130kNm, factored shear force 100kN and factored torsional moment of 20kNm.Use M20concrete and Fe415 steel. **10**

Q.9 a) Design a circular column of diameter 400 mm with helical reinforcement subjected to a load of 1500 kN. The column has unsupported length of 3m and is effectively held in position and restrained against rotation at both ends. Use M_{25} concrete and Fe_{415} steel. **07**

b) Write the condition in which IS code method is applicable for design of continues beam. **03**

SLR-GF-5

Seat No.		Set	R

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) For steel of grade Fe500, the value of Xumax/d is _____. **01**
a) 0.48 b) 0.46
c) 0.53 d) 0.43

2) The basic value of span to depth ratio for span up to 10 m for simply supported beam is _____. **01**
a) 20 b) 26
c) 7 d) 16

3) The neutral axis of a T-beam exists _____. **01**
a) Within the flange b) At the bottom edge of the slab
c) Below the slab d) All the above

4) The lateral ties are provided in columns _____. **01**
a) To decrease shear strength b) To resist axial force
c) To resist lateral buckling d) None of these

5) The effective width in L beam is _____. **01**
a) $(l_0/12) + b_w + 3\ D_f$ b) $(l_0/12) + 3b_w + \ D_f$
c) $(l_0/6) + b_w + 6\ D_f$ d) $(l_0/12) + b_w + 6D_f$

6) The basic value of span to depth ratio for span up 10 m for continuous beam is ____. **01**
a) 7 b) 20
c) 26 d) 16

7) The load carrying capacity of a helically reinforced column as compared to that of a tied column is about _____. **01**
a) 6 % less b) 5 % less
c) 6 % more d) 5% more

8) The minimum eccentricity of the axially loaded column is _____. **01**
a) 20 mm b) 10 mm
c) 16 mm d) 12 mm

9) The equivalent flexural moment Meq is calculated by using _____. **01**

a) Meq = Mu + Tu {(1+D/b)/1.5} b) Meq = Mu + Tu {(1+D/b)/1.7}

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11) In Limit state method of concrete structure, the strain distribution is assumed to be **01**

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13) The width of a rectangular beam is 300 mm and the effective depth is 420 mm. The concrete grade is M 20 and the grade of reinforcing steel is Fe 415. The position of neutral axis from compression side is ____. **02**

a) 205 mm b) 222 mm

c) 193 mm d) 201 mm

SLR-GF-5

Seat No.		Set	R

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 and 6 is compulsory.
2) Solve any two questions from each section.
3) Use of IS456:2000 original and nonprogrammable calculator is allowed.
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Section – I

Q.2 A beam 300 mm x 450mm effective is subjected to a factored moment of 190kNm. Determine the area of steel required. Use M20concrete and Fe415steel. Assume d'=50mm. **08**

Q.3 A T beam floor system has 100mm thick slab supported on beams. The width of beam is 300mm & effective depth is 580mm.The beam is reinforced with 8 bars of 20mm diameter. The beams are spaced at 3m center to center. The effective span of beam is 3.6m. Use M_{20} concrete and Fe_{415}steel. **10**

Q.4 Design a reinforced concrete slab for a room of clear dimension 3.2m x 4.2m. The slab is supported on walls of width 230 mm. The slab is carrying a live load of 4kN/m^2 & floor finish load 1kN/m^2. Use M20 concrete and Fe415steel. The corners of the slab are held down. **10**

Q.5 A rectangular reinforced concrete beam is required to carry a udl of 30 kN including self-weight of beam. The effective span of beam is 5m. Design the beam. Use M30concrete and Fe415 steel. **10**

Section – II

Q.6 Design a short RCC column to carry axial load of 1400 kN. It is 3.5 m long effectively held in position and direction. Use M20 concrete and Fe500 steel. **08**

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Q.9 a) Design a circular column of diameter 400 mm with helical reinforcement subjected to a load of 1500 kN. The column has unsupported length of 3m and is effectively held in position and restrained against rotation at both ends. Use M_{25} concrete and Fe_{415} steel. **07**

b) Write the condition in which IS code method is applicable for design of continues beam. **03**

SLR-GF-5

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The basic value of span to depth ratio for span up 10 m for continuous beam is ____. **01**
a) 7 b) 20
c) 26 d) 16

2) The load carrying capacity of a helically reinforced column as compared to that of a tied column is about _____. **01**
a) 6 % less b) 5 % less
c) 6 % more d) 5% more

3) The minimum eccentricity of the axially loaded column is _____. **01**
a) 20 mm b) 10 mm
c) 16 mm d) 12 mm

4) The equivalent flexural moment Meq is calculated by using _____. **01**
a) Meq = Mu + Tu {(1+D/b)/1.5} b) Meq = Mu + Tu {(1+D/b)/1.7}
c) Meq = Mu + Tu {(1-D/b)/1.7} d) Meq = Mu + Tu {(1+b/D)/1.7}

5) Lifting of corners of the slab is prevented by providing ____ reinforcement. **01**
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9) The basic value of span to depth ratio for span up to 10 m for simply supported beam is _____. **01**

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c) 7 d) 16

10) The neutral axis of a T-beam exists _____. **01**

a) Within the flange b) At the bottom edge of the slab
c) Below the slab d) All the above

11) The lateral ties are provided in columns _____. **01**

a) To decrease shear strength b) To resist axial force
c) To resist lateral buckling d) None of these

12) The effective width in L beam is _____. **01**

a) $(l_0/12) + b_w + 3\ D_f$ b) $(l_0/12) + 3b_w + \ D_f$
c) $(l_0/6) + b_w + 6\ D_f$ d) $(l_0/12) + b_w + 6D_f$

13) The width of a rectangular beam is 300 mm and the effective depth is 420 mm. The concrete grade is M 20 and the grade of reinforcing steel is Fe 415. The position of neutral axis from compression side is ____. **02**

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SLR-GF-5

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures I (BTN01505)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 and 6 is compulsory.
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3) Use of IS456:2000 original and nonprogrammable calculator is allowed.
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Section – I

Q.2 A beam 300 mm x 450mm effective is subjected to a factored moment of 190kNm. Determine the area of steel required. Use M20concrete and Fe415steel. Assume d'=50mm. **08**

Q.3 A T beam floor system has 100mm thick slab supported on beams. The width of beam is 300mm & effective depth is 580mm.The beam is reinforced with 8 bars of 20mm diameter. The beams are spaced at 3m center to center. The effective span of beam is 3.6m. Use M_{20} concrete and Fe_{415}steel. **10**

Q.4 Design a reinforced concrete slab for a room of clear dimension 3.2m x 4.2m. The slab is supported on walls of width 230 mm. The slab is carrying a live load of 4kN/m^2 & floor finish load 1kN/m^2. Use M20 concrete and Fe415steel. The corners of the slab are held down. **10**

Q.5 A rectangular reinforced concrete beam is required to carry a udl of 30 kN including self-weight of beam. The effective span of beam is 5m. Design the beam. Use M30concrete and Fe415 steel. **10**

Section – II

Q.6 Design a short RCC column to carry axial load of 1400 kN. It is 3.5 m long effectively held in position and direction. Use M20 concrete and Fe500 steel. **08**

Q.7 Design a rectangular beam, continuous over three column supports with effective Span 3.5m each. The beam is subjected to an imposed load of 10 kN/m and live load of 14 kN/m. UseM25 concrete and Fe500steel. **10**

Q.8 Determine reinforcement required for a beam size 300mm x 500mm subjected to factored bending moment of 130kNm, factored shear force 100kN and factored torsional moment of 20kNm.Use M20concrete and Fe415 steel. **10**

Q.9 a) Design a circular column of diameter 400 mm with helical reinforcement subjected to a load of 1500 kN. The column has unsupported length of 3m and is effectively held in position and restrained against rotation at both ends. Use M_{25} concrete and Fe_{415} steel. **07**

b) Write the condition in which IS code method is applicable for design of continues beam. **03**

SLR-GF-6

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What is the quantity of wastewater required if water supply is 300 lpcd?
a) 260 lpcd b) 240 lpcd
c) 235 lpcd d) 250 lpcd

2) Which of the following is correct sequence?
a) Screening > Distribution > Aeration > Landfill
b) Screening > Sedimentation > Aeration > Landfill
c) Sedimentation > Aeration > Screening > Landfill
d) Aeration > Sedimentation > Landfill > Distribution

3) Which of the following are not the sources of wastewater?
a) Plume b) MSW
c) Industrial water d) All of the above

4) In composting method by trenching, trenches of _____m length are excavated.
a) 4 – 10 b) 7 – 12
c) 10 – 20 d) Above 20

5) Controlled tipping method of disposal of refuse requires an area of _____ m^2/c/yr.
a) 0.1 – 0.3 b) 0.3 – 0.5
c) 0.5 – 1.0 d) 1.0 – 1.2

6) Which type of pollutant does Ozone belong to?
a) Primary b) Secondary
c) Natural d) None of the above

7) The Fumigation plume from the stacks is observed in _____ type of atmosphere.
a) Stable b) Unstable
c) Inversion d) Neutral

8) As per CPCB, the COD limit is _____.
a) 1000 mg/lt b) 800 mg/lt
c) 250 mg/lt d) 300 mg/lt

9) Which of the standards govern the discharge of wastewater into streams?
a) IS 10500:2016
b) Schedule IV of Environmental (Protection) Rules, 1986
c) Schedule I of IUCN
d) Schedule II of WHO

10) Which of the following is/are the sources of Air Pollution?
a) Burning of Wood for Cooking
b) Vehicular Emission
c) Chimney Smoke from Industries
d) All of the above

11) What is Garbage?
a) Domestic waste
b) Wastewater from Landfill
c) Both a) & b)
d) None of the above

12) What is Leachate?
a) rubbish or waste, especially domestic refuse
b) wastewater from Landfill
c) Both a) & b)
d) None of the above

13) What is the sequence for Solid Waste treatment & Disposal?
a) Segregation > Collection > Waste to energy > Landfill
b) Waste to energy > Landfill > Segregation > Collection
c) Landfill > Segregation > Collection > Waste to energy
d) None of the above

14) The dilution method of sewage disposal is most preferred when _____.
a) The sewage arriving at outfall point is septic
b) There are non-forward currents
c) Discharge in water body is not low
d) All of the above

SLR-GF-6

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section - I, and solve any two questions from the remaining. Question no. 6 is compulsory in section - II, and solve any two questions from the remaining.
2) Figures to right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Draw complete and neat sketch of Activated Sludge treatment plant and discuss each part. **07**

b) Define the following with equations: **03**
i) Mean Cell Residence Time
ii) F/M ratio

Q.3 **a)** Design a completely mixed ASP for following data: **06**
i) Wastewater flow = 20 MLd
ii) Influent BOD = 200 mg/Lit
iii) Effluent BOD = 25 mg/Lit
iv) MLSS = 2000 mg/Lit
v) F/M = 0.2
vi) SVI = 80 ml/gm
vii) Sludge age = 10 days
Assume any missing data appropriately.

b) What is Chemical Oxygen Demand? Differentiate between Chemical Oxygen Demand and Biochemical Oxygen Demand. **03**

Q.4 **a)** Determine Ultimate BOD & BOD_3. If the BOD_5 is 200 mg/lt at 20°C. assuming the deoxygenation constant as 0.25/day. **06**

b) Explain Moving Bed Biofilm Reactor with a neat diagram. **03**

Q.5 **a)** Explain Trickling filter with the help of a diagram. **06**

b) Differentiate between Vermicomposting and Indore Method of composting. **03**

Section – II

Q.6 **a)** Discuss the oxygen sag analysis with the help of a diagram. **04**

b) A stream, saturated with DO has flow of 1.3 m^3/s, BOD of 4 mg/L and rate constant of 0.25 per day. It receives an effluent discharge of 0.35 m^3/s. Having BOD 20 mg/L, DO 5 mg/L and rate constant 0.13 per day. The average velocity of flow of the stream is 0.15 m/s. Calculate the DO deficit at point 20 km & 40 km downstream. Assume that the temperature is 20°C throughout and BOD is measured at 5 days. Take saturation DO at 20 °C as 9.17 mg/L. **06**

Q.7 **a)** Illustrate the functioning of Bangalore method of composting with the help of a diagram. **05**

b) Explain the concept of number of trip for solid waste with the help of a diagram. **04**

Q.8 **a)** With the help of a diagram, explain Electrostatic Precipitator. **05**

b) Discuss the sources of Air pollution with the help of a diagram. **04**

Q.9 Discuss the following: **09**

a) Cyclone Precipitator

b) Sludge drying Bed

c) SBR

SLR-GF-6

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) As per CPCB, the COD limit is _____.
a) 1000 mg/lt b) 800 mg/lt
c) 250 mg/lt d) 300 mg/lt

2) Which of the standards govern the discharge of wastewater into streams?
a) IS 10500:2016
b) Schedule IV of Environmental (Protection) Rules, 1986
c) Schedule I of IUCN
d) Schedule II of WHO

3) Which of the following is/are the sources of Air Pollution?
a) Burning of Wood for Cooking
b) Vehicular Emission
c) Chimney Smoke from Industries
d) All of the above

4) What is Garbage?
a) Domestic waste b) Wastewater from Landfill
c) Both a) & b) d) None of the above

5) What is Leachate?
a) rubbish or waste, especially domestic refuse
b) wastewater from Landfill
c) Both a) & b)
d) None of the above

6) What is the sequence for Solid Waste treatment & Disposal?
a) Segregation > Collection > Waste to energy > Landfill
b) Waste to energy > Landfill > Segregation > Collection
c) Landfill > Segregation > Collection > Waste to energy
d) None of the above

7) The dilution method of sewage disposal is most preferred when _____.
a) The sewage arriving at outfall point is septic
b) There are non-forward currents
c) Discharge in water body is not low
d) All of the above

8) What is the quantity of wastewater required if water supply is 300 lpcd?
a) 260 lpcd b) 240 lpcd
c) 235 lpcd d) 250 lpcd

9) Which of the following is correct sequence?
a) Screening > Distribution > Aeration > Landfill
b) Screening > Sedimentation > Aeration > Landfill
c) Sedimentation > Aeration > Screening > Landfill
d) Aeration > Sedimentation > Landfill > Distribution

10) Which of the following are not the sources of wastewater?
a) Plume b) MSW
c) Industrial water d) All of the above

11) In composting method by trenching, trenches of _____m length are excavated.
a) 4 – 10 b) 7 – 12
c) 10 – 20 d) Above 20

12) Controlled tipping method of disposal of refuse requires an area of _____ m^2/c/yr.
a) 0.1 – 0.3 b) 0.3 – 0.5
c) 0.5 – 1.0 d) 1.0 – 1.2

13) Which type of pollutant does Ozone belong to?
a) Primary b) Secondary
c) Natural d) None of the above

14) The Fumigation plume from the stacks is observed in _____ type of atmosphere.
a) Stable b) Unstable
c) Inversion d) Neutral

SLR-GF-6

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section - I, and solve any two questions from the remaining. Question no. 6 is compulsory in section - II, and solve any two questions from the remaining.
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Section – I

Q.2 **a)** Draw complete and neat sketch of Activated Sludge treatment plant and discuss each part. **07**

b) Define the following with equations: **03**
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ii) F/M ratio

Q.3 **a)** Design a completely mixed ASP for following data: **06**
i) Wastewater flow = 20 MLd
ii) Influent BOD = 200 mg/Lit
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iv) MLSS = 2000 mg/Lit
v) F/M = 0.2
vi) SVI = 80 ml/gm
vii) Sludge age = 10 days
Assume any missing data appropriately.

b) What is Chemical Oxygen Demand? Differentiate between Chemical Oxygen Demand and Biochemical Oxygen Demand. **03**

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Q.5 **a)** Explain Trickling filter with the help of a diagram. **06**

b) Differentiate between Vermicomposting and Indore Method of composting. **03**

Section – II

Q.6 **a)** Discuss the oxygen sag analysis with the help of a diagram. **04**

b) A stream, saturated with DO has flow of 1.3 m^3/s, BOD of 4 mg/L and rate constant of 0.25 per day. It receives an effluent discharge of 0.35 m^3/s. Having BOD 20 mg/L, DO 5 mg/L and rate constant 0.13 per day. The average velocity of flow of the stream is 0.15 m/s. Calculate the DO deficit at point 20 km & 40 km downstream. Assume that the temperature is 20°C throughout and BOD is measured at 5 days. Take saturation DO at 20 °C as 9.17 mg/L. **06**

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b) Discuss the sources of Air pollution with the help of a diagram. **04**

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a) Cyclone Precipitator

b) Sludge drying Bed

c) SBR

SLR-GF-6

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What is Garbage?
a) Domestic waste
b) Wastewater from Landfill
c) Both a) & b)
d) None of the above

2) What is Leachate?
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3) What is the sequence for Solid Waste treatment & Disposal?
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SLR-GF-6

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section - I, and solve any two questions from the remaining. Question no. 6 is compulsory in section - II, and solve any two questions from the remaining.
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Section – I

Q.2 **a)** Draw complete and neat sketch of Activated Sludge treatment plant and discuss each part. **07**

b) Define the following with equations: **03**
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Q.3 **a)** Design a completely mixed ASP for following data: **06**
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vi) SVI = 80 ml/gm
vii) Sludge age = 10 days
Assume any missing data appropriately.

b) What is Chemical Oxygen Demand? Differentiate between Chemical Oxygen Demand and Biochemical Oxygen Demand. **03**

Q.4 **a)** Determine Ultimate BOD & BOD_3. If the BOD_5 is 200 mg/lt at 20°C. assuming the deoxygenation constant as 0.25/day. **06**

b) Explain Moving Bed Biofilm Reactor with a neat diagram. **03**

Q.5 **a)** Explain Trickling filter with the help of a diagram. **06**

b) Differentiate between Vermicomposting and Indore Method of composting. **03**

Section – II

Q.6 **a)** Discuss the oxygen sag analysis with the help of a diagram. **04**

b) A stream, saturated with DO has flow of 1.3 m^3/s, BOD of 4 mg/L and rate constant of 0.25 per day. It receives an effluent discharge of 0.35 m^3/s. Having BOD 20 mg/L, DO 5 mg/L and rate constant 0.13 per day. The average velocity of flow of the stream is 0.15 m/s. Calculate the DO deficit at point 20 km & 40 km downstream. Assume that the temperature is 20°C throughout and BOD is measured at 5 days. Take saturation DO at 20 °C as 9.17 mg/L. **06**

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b) Explain the concept of number of trip for solid waste with the help of a diagram. **04**

Q.8 **a)** With the help of a diagram, explain Electrostatic Precipitator. **05**

b) Discuss the sources of Air pollution with the help of a diagram. **04**

Q.9 Discuss the following: **09**

a) Cyclone Precipitator

b) Sludge drying Bed

c) SBR

SLR-GF-6

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which type of pollutant does Ozone belong to?
a) Primary b) Secondary
c) Natural d) None of the above

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b) Waste to energy > Landfill > Segregation > Collection
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a) 260 lpcd b) 240 lpcd
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c) Sedimentation > Aeration > Screening > Landfill
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a) 4 – 10 b) 7 – 12
c) 10 – 20 d) Above 20

14) Controlled tipping method of disposal of refuse requires an area of _____ m^2/c/yr.
a) 0.1 – 0.3 b) 0.3 – 0.5
c) 0.5 – 1.0 d) 1.0 – 1.2

SLR-GF-6

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - II (BTN01506)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section - I, and solve any two questions from the remaining. Question no. 6 is compulsory in section - II, and solve any two questions from the remaining.
2) Figures to right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Draw complete and neat sketch of Activated Sludge treatment plant and discuss each part. **07**

b) Define the following with equations: **03**
i) Mean Cell Residence Time
ii) F/M ratio

Q.3 **a)** Design a completely mixed ASP for following data: **06**
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ii) Influent BOD = 200 mg/Lit
iii) Effluent BOD = 25 mg/Lit
iv) MLSS = 2000 mg/Lit
v) F/M = 0.2
vi) SVI = 80 ml/gm
vii) Sludge age = 10 days
Assume any missing data appropriately.

b) What is Chemical Oxygen Demand? Differentiate between Chemical Oxygen Demand and Biochemical Oxygen Demand. **03**

Q.4 **a)** Determine Ultimate BOD & BOD_3. If the BOD_5 is 200 mg/lt at 20°C. assuming the deoxygenation constant as 0.25/day. **06**

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Q.5 **a)** Explain Trickling filter with the help of a diagram. **06**

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Section – II

Q.6 **a)** Discuss the oxygen sag analysis with the help of a diagram. **04**

b) A stream, saturated with DO has flow of 1.3 m^3/s, BOD of 4 mg/L and rate constant of 0.25 per day. It receives an effluent discharge of 0.35 m^3/s. Having BOD 20 mg/L, DO 5 mg/L and rate constant 0.13 per day. The average velocity of flow of the stream is 0.15 m/s. Calculate the DO deficit at point 20 km & 40 km downstream. Assume that the temperature is 20°C throughout and BOD is measured at 5 days. Take saturation DO at 20 °C as 9.17 mg/L. **06**

Q.7 **a)** Illustrate the functioning of Bangalore method of composting with the help of a diagram. **05**

b) Explain the concept of number of trip for solid waste with the help of a diagram. **04**

Q.8 **a)** With the help of a diagram, explain Electrostatic Precipitator. **05**

b) Discuss the sources of Air pollution with the help of a diagram. **04**

Q.9 Discuss the following: **09**

a) Cyclone Precipitator

b) Sludge drying Bed

c) SBR

SLR-GF-7

Seat No.		Set	P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Sunday,07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Production and use of harmful chemicals is under ban in _____ countries.
a) Developing countries b) Developed countries
c) Third world countries d) All of these

2) Which of the following groups of people is more vulnerable in the event of disaster?
a) Men, boys, old people b) Men, women, boys
c) Women, children, old people d) None of the above

3) The extent to which a community, structure, services or geographic area is likely to be damaged or disrupted by the impact of particular hazard is termed as _____.
a) Capacity b) Vulnerability
c) Risk d) Hazard assessment

4) Vulnerability analysis comes in which part of the Disaster Management Cycle _____.
a) Mitigation b) Preparedness
c) Response d) Recovery

5) Disaster Management includes: _____.
a) Mitigation b) Reconstruction
c) Rehabilitation d) All of the above

6) Which of the following is considered as objective of disaster management?
a) Dispose dead bodies
b) Supplying of essential commodities
c) Rehabilitation of disaster victims
d) All of these

7) The role of which agency is important in disaster prevention.
a) Media b) Police
c) Government officials d) Public

8) The major effects of floods are _____.
a) Physical damage b) Loss of biodiversity
c) Scarcity of water supply d) All of the above

9) Disaster management is aimed at _____.
a) Resettling people in the closest unaffected urban area
b) Collection of valuable data for future management objectives
c) Strengthening sewage and drinking water treatment facilities to resist the impact of a future disaster
d) Restoring a communities services, facilities and residences to pre-disaster levels

10) The most essential item that the disaster-stricken populations must be provided with is _____.
a) Shelter material
b) Drinking water
c) Fuel
d) All of the above

11) Urbanization usually results in an increase in flood frequency because _____.
a) Less water is able to runoff in streams
b) Less water is able to infiltrate into the ground, so instead is discharged rapidly into streams
c) More water is used by humans and then discharged to streams
d) Rainfall is greater in urban areas than in rural areas

12) By what measures can we significantly reduce the impact of disasters on our people?
a) Better planning
b) Preparedness awareness
c) Mitigation measures
d) All the above

13) Engineering disaster is simply referred to those disasters when it is caused by an engineering failure like _____.
a) Design flaws or materials failures
b) Insufficient knowledge or underestimations
c) Carelessness or negligence
d) All the above

14) Disaster Management Team should include?
a) Awareness generation team
b) First aid team
c) Search and Rescue team
d) All of the above

SLR-GF-7

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Sunday,07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two Questions from Section – I.
2) Solve any two Questions from Section – II.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

Section – I

Q.2 **a)** What are the different elements of Risk? Explain in detail. **07**
b) Define: **07**
i) Risk
ii) Vulnerability
iii) Hazards
iv) Disasters

Q.3 **a)** Explain various problems involved in the risk assessment process. **07**
b) Explain participatory risk assessment methods. **07**

Q.4 **a)** Explain different social and economic factors of vulnerability. **07**
b) Explain vulnerability in the city and different risks in urban areas. **07**

Section – II

Q.5 **a)** Explain social infrastructure required for vulnerability reduction. **07**
b) Explain hazard resistant design and construction. **07**

Q.6 **a)** Explain the role of education and training in Health management of disasters. **07**
b) Explain the role of information and communication technology in health response. **07**

Q.7 **a)** Explain uses of remote sensing techniques in disaster preparedness. **07**
b) Explain uses of aerial photography and disaster mapping techniques in disaster preparedness. **07**

SLR-GF-7

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Sunday,07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The major effects of floods are _____.
a) Physical damage b) Loss of biodiversity
c) Scarcity of water supply d) All of the above

2) Disaster management is aimed at _____.
a) Resettling people in the closest unaffected urban area
b) Collection of valuable data for future management objectives
c) Strengthening sewage and drinking water treatment facilities to resist the impact of a future disaster
d) Restoring a communities services, facilities and residences to pre-disaster levels

3) The most essential item that the disaster-stricken populations must be provided with is _____.
a) Shelter material b) Drinking water
c) Fuel d) All of the above

4) Urbanization usually results in an increase in flood frequency because _____.
a) Less water is able to runoff in streams
b) Less water is able to infiltrate into the ground, so instead is discharged rapidly into streams
c) More water is used by humans and then discharged to streams
d) Rainfall is greater in urban areas than in rural areas

5) By what measures can we significantly reduce the impact of disasters on our people?
a) Better planning b) Preparedness awareness
c) Mitigation measures d) All the above

6) Engineering disaster is simply referred to those disasters when it is caused by an engineering failure like _____.
a) Design flaws or materials failures
b) Insufficient knowledge or underestimations
c) Carelessness or negligence
d) All the above

7) Disaster Management Team should include?
a) Awareness generation team
b) First aid team
c) Search and Rescue team
d) All of the above

8) Production and use of harmful chemicals is under ban in _____ countries.
a) Developing countries b) Developed countries
c) Third world countries d) All of these

9) Which of the following groups of people is more vulnerable in the event of disaster?
a) Men, boys, old people b) Men, women, boys
c) Women, children, old people d) None of the above

10) The extent to which a community, structure, services or geographic area is likely to be damaged or disrupted by the impact of particular hazard is termed as _____.
a) Capacity b) Vulnerability
c) Risk d) Hazard assessment

11) Vulnerability analysis comes in which part of the Disaster Management Cycle _____.
a) Mitigation b) Preparedness
c) Response d) Recovery

12) Disaster Management includes: _____.
a) Mitigation b) Reconstruction
c) Rehabilitation d) All of the above

13) Which of the following is considered as objective of disaster management?
a) Dispose dead bodies
b) Supplying of essential commodities
c) Rehabilitation of disaster victims
d) All of these

14) The role of which agency is important in disaster prevention.
a) Media b) Police
c) Government officials d) Public

SLR-GF-7

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Sunday,07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two Questions from Section – I.
2) Solve any two Questions from Section – II.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

Section – I

Q.2 **a)** What are the different elements of Risk? Explain in detail. **07**
b) Define: **07**
i) Risk
ii) Vulnerability
iii) Hazards
iv) Disasters

Q.3 **a)** Explain various problems involved in the risk assessment process. **07**
b) Explain participatory risk assessment methods. **07**

Q.4 **a)** Explain different social and economic factors of vulnerability. **07**
b) Explain vulnerability in the city and different risks in urban areas. **07**

Section – II

Q.5 **a)** Explain social infrastructure required for vulnerability reduction. **07**
b) Explain hazard resistant design and construction. **07**

Q.6 **a)** Explain the role of education and training in Health management of disasters. **07**
b) Explain the role of information and communication technology in health response. **07**

Q.7 **a)** Explain uses of remote sensing techniques in disaster preparedness. **07**
b) Explain uses of aerial photography and disaster mapping techniques in disaster preparedness. **07**

SLR-GF-7

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Sunday,07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Urbanization usually results in an increase in flood frequency because _____.
a) Less water is able to runoff in streams
b) Less water is able to infiltrate into the ground, so instead is discharged rapidly into streams
c) More water is used by humans and then discharged to streams
d) Rainfall is greater in urban areas than in rural areas

2) By what measures can we significantly reduce the impact of disasters on our people?
a) Better planning b) Preparedness awareness
c) Mitigation measures d) All the above

3) Engineering disaster is simply referred to those disasters when it is caused by an engineering failure like _____.
a) Design flaws or materials failures
b) Insufficient knowledge or underestimations
c) Carelessness or negligence
d) All the above

4) Disaster Management Team should include?
a) Awareness generation team
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c) Search and Rescue team
d) All of the above

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a) Capacity b) Vulnerability
c) Risk d) Hazard assessment

8) Vulnerability analysis comes in which part of the Disaster Management Cycle _____.

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c) Response d) Recovery

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a) Dispose dead bodies
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c) Government officials d) Public

12) The major effects of floods are _____.

a) Physical damage b) Loss of biodiversity
c) Scarcity of water supply d) All of the above

13) Disaster management is aimed at _____.

a) Resettling people in the closest unaffected urban area
b) Collection of valuable data for future management objectives
c) Strengthening sewage and drinking water treatment facilities to resist the impact of a future disaster
d) Restoring a communities services, facilities and residences to pre-disaster levels

14) The most essential item that the disaster-stricken populations must be provided with is _____.

a) Shelter material b) Drinking water
c) Fuel d) All of the above

SLR-GF-7

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Sunday,07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two Questions from Section – I.
2) Solve any two Questions from Section – II.
3) Figures to the right indicates full marks.
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Section – I

Q.2	**a)**	What are the different elements of Risk? Explain in detail.	**07**
	b)	Define: i) Risk ii) Vulnerability iii) Hazards iv) Disasters	**07**
Q.3	**a)**	Explain various problems involved in the risk assessment process.	**07**
	b)	Explain participatory risk assessment methods.	**07**
Q.4	**a)**	Explain different social and economic factors of vulnerability.	**07**
	b)	Explain vulnerability in the city and different risks in urban areas.	**07**

Section – II

Q.5	**a)**	Explain social infrastructure required for vulnerability reduction.	**07**
	b)	Explain hazard resistant design and construction.	**07**
Q.6	**a)**	Explain the role of education and training in Health management of disasters.	**07**
	b)	Explain the role of information and communication technology in health response.	**07**
Q.7	**a)**	Explain uses of remote sensing techniques in disaster preparedness.	**07**
	b)	Explain uses of aerial photography and disaster mapping techniques in disaster preparedness.	**07**

SLR-GF-7

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Sunday,07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which of the following is considered as objective of disaster management?
a) Dispose dead bodies
b) Supplying of essential commodities
c) Rehabilitation of disaster victims
d) All of these

2) The role of which agency is important in disaster prevention.
a) Media b) Police
c) Government officials d) Public

3) The major effects of floods are _____.
a) Physical damage b) Loss of biodiversity
c) Scarcity of water supply d) All of the above

4) Disaster management is aimed at _____.
a) Resettling people in the closest unaffected urban area
b) Collection of valuable data for future management objectives
c) Strengthening sewage and drinking water treatment facilities to resist the impact of a future disaster
d) Restoring a communities services, facilities and residences to pre-disaster levels

5) The most essential item that the disaster-stricken populations must be provided with is _____.
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c) Fuel d) All of the above

6) Urbanization usually results in an increase in flood frequency because _____.
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c) More water is used by humans and then discharged to streams
d) Rainfall is greater in urban areas than in rural areas

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b) Preparedness awareness
c) Mitigation measures
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b) Insufficient knowledge or underestimations
c) Carelessness or negligence
d) All the above

9) Disaster Management Team should include?

a) Awareness generation team
b) First aid team
c) Search and Rescue team
d) All of the above

10) Production and use of harmful chemicals is under ban in _____ countries.

a) Developing countries
b) Developed countries
c) Third world countries
d) All of these

11) Which of the following groups of people is more vulnerable in the event of disaster?

a) Men, boys, old people
b) Men, women, boys
c) Women, children, old people
d) None of the above

12) The extent to which a community, structure, services or geographic area is likely to be damaged or disrupted by the impact of particular hazard is termed as _____.

a) Capacity
b) Vulnerability
c) Risk
d) Hazard assessment

13) Vulnerability analysis comes in which part of the Disaster Management Cycle _____.

a) Mitigation
b) Preparedness
c) Response
d) Recovery

14) Disaster Management includes: _____.

a) Mitigation
b) Reconstruction
c) Rehabilitation
d) All of the above

SLR-GF-7

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Risk Assessment and Vulnerability Analysis (BTN01514)

Day & Date: Sunday,07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two Questions from Section – I.
2) Solve any two Questions from Section – II.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

Section – I

Q.2	**a)**	What are the different elements of Risk? Explain in detail.	**07**
	b)	Define: i) Risk ii) Vulnerability iii) Hazards iv) Disasters	**07**
Q.3	**a)**	Explain various problems involved in the risk assessment process.	**07**
	b)	Explain participatory risk assessment methods.	**07**
Q.4	**a)**	Explain different social and economic factors of vulnerability.	**07**
	b)	Explain vulnerability in the city and different risks in urban areas.	**07**

Section – II

Q.5	**a)**	Explain social infrastructure required for vulnerability reduction.	**07**
	b)	Explain hazard resistant design and construction.	**07**
Q.6	**a)**	Explain the role of education and training in Health management of disasters.	**07**
	b)	Explain the role of information and communication technology in health response.	**07**
Q.7	**a)**	Explain uses of remote sensing techniques in disaster preparedness.	**07**
	b)	Explain uses of aerial photography and disaster mapping techniques in disaster preparedness.	**07**

SLR-GF-8

Seat No.		Set	P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Pradhan Mantri Gram Sadak Yojana in under the authority of which ministry?
a) National Highway Authority of India
b) Ministry of Urban Development
c) Ministry of Rural Development
d) Indian Road Congress

2) Pradhan Mantri Gram Sadak Yojna (PMGSY), launched in the year 2000, aims to provide rural connectivity with _____.
a) Fair-weather roads b) All-weather roads
c) State Highway d) Major District Road

3) The raising of outer edge of the pavement with respect to the inner edge is called, _____.
a) Kerb b) Superelevation
c) Camber d) Crown

4) Select the correct order of road alignment surveys conducted in the field _____.
a) Final location and Detailed survey, Determination of final center line, Preliminary and Reconnaissance survey
b) Preliminary survey, Final location and Detailed survey, Determination of final center line, and Reconnaissance survey
c) Reconnaissance survey, Preliminary survey, Determination of final center line and Final location and Detailed survey
d) Determination of final center line, Final location and Detailed survey, Preliminary and Reconnaissance survey

5) Transition Curve is introduced in _____.
a) Horizontal curve
b) Between horizontal curve and circular curve
c) circular curve
d) Vertical curve

6) The most suitable soil material for highway embankments is _____.
a) granular soil b) organic soil
c) silt d) clay

7) The investigation of embankment should be carried out for _____.
a) twice the height of embankment
b) thrice the height of embankment
c) exact height of embankment
d) half height of embankment

8) If the height of embankment increases _____.
a) Slope stability increases b) Slope stability remains constant
c) Slope has to reduce d) Slope needs to be flattered

9) What is the most common natural problem found in embankment?
a) settlement b) stability of foundation
c) soil erosion d) stability of slope

10) The removal and diversion of surface water from the roadway is called _____.
a) surface drainage b) subsurface drainage
c) camber d) cross slope

11) The process of removing and controlling excess surface and sub soil water within the roadway is _____.
a) Highway engineering b) Highway maintenance
c) Highway drainage d) All of the above

12) The standard axle load considered for flexible pavement design is _____.
a) 50kN b) 60kN
c) 70kN d) 80kN

13) All rural roads should be designed for a minimum sub-grade CBR of _____.
a) 2% b) 3%
c) 4% d) 5%

14) The laden weight of commercial vehicles considered in the pavement design is _____.
a) more than 1 tone b) more than 2 tone
c) more than 3 tone d) more than 4 tone

SLR-GF-8

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** Explain the necessity and object of highway planning. **05**
b) Explain the governing factors for route selection of highway alignment. **05**

Q.3 **a)** Derive an equation for finding the superelevation required if the design coefficient of lateral friction is "f" with neat sketch. **04**
b) The radius of a horizontal circular curve is 100 m. The design speed is 50kmph and the design coefficient of lateral friction is 0.15. **05**
i) Calculate the superelevation required if full lateral friction is assumed to develop.
ii) Calculate the coefficient of friction needed if no superelevation is provided.

Q.4 **a)** Calculate the safe stopping distance on a level road stretch for design speed of 50kmph for **05**
i) two-way traffic on a two-lane road
ii) two-way traffic on a single lane road
Assume coefficient of friction as 0.37 and reaction time of driver as 2.5sec.
b) Calculate the extra widening required for a pavement of width 7 m on a horizontal curve of radius 200 m if the longest wheel base of vehicle expected on the road is 6.5 m Design speed is 65 kmph. **04**

Q.5 **a)** Explain in detail concept of road network planning. **04**
b) Explain the principle of soil-cement stabilization process in detail. **05**

Section – II

Q.6 **a)** Explain the construction process of soil-cement base course construction with its specification. **05**
b) Explain factors affecting the properties of soil-lime stabilization. **05**

Q.7 **a)** Discuss the importance of highway drainage. **04**
b) What are the requirements of a good highway drainage system? **05**

Q.8	**a)**	What are the objects of highway maintenance?	**04**
	b)	Classify different types of highway maintenance works and mention the function of each.	**05**
Q.9	**a)**	Briefly outline the advantages and limitations of flexible pavements.	**05**
	b)	Write a brief note on i) Roller compacted concrete ii) Dry lean concrete (DLC)	**04**

SLR-GF-8

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If the height of embankment increases _____.
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a) Kerb
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11) Select the correct order of road alignment surveys conducted in the field _____.

a) Final location and Detailed survey, Determination of final center line, Preliminary and Reconnaissance survey
b) Preliminary survey, Final location and Detailed survey, Determination of final center line, and Reconnaissance survey
c) Reconnaissance survey, Preliminary survey, Determination of final center line and Final location and Detailed survey
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14) The investigation of embankment should be carried out for _____.

a) twice the height of embankment
b) thrice the height of embankment
c) exact height of embankment
d) half height of embankment

SLR-GF-8

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
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Section – I

Q.2 **a)** Explain the necessity and object of highway planning. **05**
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b) The radius of a horizontal circular curve is 100 m. The design speed is 50kmph and the design coefficient of lateral friction is 0.15. **05**
i) Calculate the superelevation required if full lateral friction is assumed to develop.
ii) Calculate the coefficient of friction needed if no superelevation is provided.

Q.4 **a)** Calculate the safe stopping distance on a level road stretch for design speed of 50kmph for **05**
i) two-way traffic on a two-lane road
ii) two-way traffic on a single lane road
Assume coefficient of friction as 0.37 and reaction time of driver as 2.5sec.
b) Calculate the extra widening required for a pavement of width 7 m on a horizontal curve of radius 200 m if the longest wheel base of vehicle expected on the road is 6.5 m Design speed is 65 kmph. **04**

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b) Explain the principle of soil-cement stabilization process in detail. **05**

Section – II

Q.6 **a)** Explain the construction process of soil-cement base course construction with its specification. **05**
b) Explain factors affecting the properties of soil-lime stabilization. **05**

Q.7 **a)** Discuss the importance of highway drainage. **04**
b) What are the requirements of a good highway drainage system? **05**

Q.8	**a)**	What are the objects of highway maintenance?	**04**
	b)	Classify different types of highway maintenance works and mention the function of each.	**05**
Q.9	**a)**	Briefly outline the advantages and limitations of flexible pavements.	**05**
	b)	Write a brief note on i) Roller compacted concrete ii) Dry lean concrete (DLC)	**04**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The process of removing and controlling excess surface and sub soil water within the roadway is _____.
a) Highway engineering b) Highway maintenance
c) Highway drainage d) All of the above

2) The standard axle load considered for flexible pavement design is _____.
a) 50kN b) 60kN
c) 70kN d) 80kN

3) All rural roads should be designed for a minimum sub-grade CBR of _____.
a) 2% b) 3%
c) 4% d) 5%

4) The laden weight of commercial vehicles considered in the pavement design is _____.
a) more than 1 tone b) more than 2 tone
c) more than 3 tone d) more than 4 tone

5) Pradhan Mantri Gram Sadak Yojana in under the authority of which ministry?
a) National Highway Authority of India
b) Ministry of Urban Development
c) Ministry of Rural Development
d) Indian Road Congress

6) Pradhan Mantri Gram Sadak Yojna (PMGSY), launched in the year 2000, aims to provide rural connectivity with _____.
a) Fair-weather roads b) All-weather roads
c) State Highway d) Major District Road

7) The raising of outer edge of the pavement with respect to the inner edge is called, _____.
a) Kerb b) Superelevation
c) Camber d) Crown

8) Select the correct order of road alignment surveys conducted in the field _____.
   a) Final location and Detailed survey, Determination of final center line, Preliminary and Reconnaissance survey
   b) Preliminary survey, Final location and Detailed survey, Determination of final center line, and Reconnaissance survey
   c) Reconnaissance survey, Preliminary survey, Determination of final center line and Final location and Detailed survey
   d) Determination of final center line, Final location and Detailed survey, Preliminary and Reconnaissance survey

9) Transition Curve is introduced in _____.
   a) Horizontal curve
   b) Between horizontal curve and circular curve
   c) circular curve
   d) Vertical curve

10) The most suitable soil material for highway embankments is _____.
   a) granular soil b) organic soil
   c) silt d) clay

11) The investigation of embankment should be carried out for _____.
   a) twice the height of embankment
   b) thrice the height of embankment
   c) exact height of embankment
   d) half height of embankment

12) If the height of embankment increases _____.
   a) Slope stability increases b) Slope stability remains constant
   c) Slope has to reduce d) Slope needs to be flattered

13) What is the most common natural problem found in embankment?
   a) settlement b) stability of foundation
   c) soil erosion d) stability of slope

14) The removal and diversion of surface water from the roadway is called _____.
   a) surface drainage b) subsurface drainage
   c) camber d) cross slope

SLR-GF-8

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** Explain the necessity and object of highway planning. **05**
b) Explain the governing factors for route selection of highway alignment. **05**

Q.3 **a)** Derive an equation for finding the superelevation required if the design coefficient of lateral friction is “f” with neat sketch. **04**
b) The radius of a horizontal circular curve is 100 m. The design speed is 50kmph and the design coefficient of lateral friction is 0.15. **05**
i) Calculate the superelevation required if full lateral friction is assumed to develop.
ii) Calculate the coefficient of friction needed if no superelevation is provided.

Q.4 **a)** Calculate the safe stopping distance on a level road stretch for design speed of 50kmph for **05**
i) two-way traffic on a two-lane road
ii) two-way traffic on a single lane road
Assume coefficient of friction as 0.37 and reaction time of driver as 2.5sec.
b) Calculate the extra widening required for a pavement of width 7 m on a horizontal curve of radius 200 m if the longest wheel base of vehicle expected on the road is 6.5 m Design speed is 65 kmph. **04**

Q.5 **a)** Explain in detail concept of road network planning. **04**
b) Explain the principle of soil-cement stabilization process in detail. **05**

Section – II

Q.6 **a)** Explain the construction process of soil-cement base course construction with its specification. **05**
b) Explain factors affecting the properties of soil-lime stabilization. **05**

Q.7 **a)** Discuss the importance of highway drainage. **04**
b) What are the requirements of a good highway drainage system? **05**

Q.8	**a)**	What are the objects of highway maintenance?	**04**
	b)	Classify different types of highway maintenance works and mention the function of each.	**05**
Q.9	**a)**	Briefly outline the advantages and limitations of flexible pavements.	**05**
	b)	Write a brief note on i) Roller compacted concrete ii) Dry lean concrete (DLC)	**04**

SLR-GF-8

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The most suitable soil material for highway embankments is _____.
a) granular soil b) organic soil
c) silt d) clay

2) The investigation of embankment should be carried out for _____.
a) twice the height of embankment
b) thrice the height of embankment
c) exact height of embankment
d) half height of embankment

3) If the height of embankment increases _____.
a) Slope stability increases b) Slope stability remains constant
c) Slope has to reduce d) Slope needs to be flattered

4) What is the most common natural problem found in embankment?
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c) soil erosion d) stability of slope

5) The removal and diversion of surface water from the roadway is called _____.
a) surface drainage b) subsurface drainage
c) camber d) cross slope

6) The process of removing and controlling excess surface and sub soil water within the roadway is _____.
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c) Highway drainage d) All of the above

7) The standard axle load considered for flexible pavement design is _____.
a) 50kN b) 60kN
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8) All rural roads should be designed for a minimum sub-grade CBR of _____.
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9) The laden weight of commercial vehicles considered in the pavement design is _____.

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10) Pradhan Mantri Gram Sadak Yojana in under the authority of which ministry?

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c) Ministry of Rural Development
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11) Pradhan Mantri Gram Sadak Yojna (PMGSY), launched in the year 2000, aims to provide rural connectivity with _____.

a) Fair-weather roads
b) All-weather roads
c) State Highway
d) Major District Road

12) The raising of outer edge of the pavement with respect to the inner edge is called, _____.

a) Kerb
b) Superelevation
c) Camber
d) Crown

13) Select the correct order of road alignment surveys conducted in the field _____.

a) Final location and Detailed survey, Determination of final center line, Preliminary and Reconnaissance survey
b) Preliminary survey, Final location and Detailed survey, Determination of final center line, and Reconnaissance survey
c) Reconnaissance survey, Preliminary survey, Determination of final center line and Final location and Detailed survey
d) Determination of final center line, Final location and Detailed survey, Preliminary and Reconnaissance survey

14) Transition Curve is introduced in _____.

a) Horizontal curve
b) Between horizontal curve and circular curve
c) circular curve
d) Vertical curve

SLR-GF-8

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Planning and Design of Rural Roads (BTN01515)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** Explain the necessity and object of highway planning. **05**
b) Explain the governing factors for route selection of highway alignment. **05**

Q.3 **a)** Derive an equation for finding the superelevation required if the design coefficient of lateral friction is "f" with neat sketch. **04**
b) The radius of a horizontal circular curve is 100 m. The design speed is 50kmph and the design coefficient of lateral friction is 0.15. **05**
i) Calculate the superelevation required if full lateral friction is assumed to develop.
ii) Calculate the coefficient of friction needed if no superelevation is provided.

Q.4 **a)** Calculate the safe stopping distance on a level road stretch for design speed of 50kmph for **05**
i) two-way traffic on a two-lane road
ii) two-way traffic on a single lane road
Assume coefficient of friction as 0.37 and reaction time of driver as 2.5sec.
b) Calculate the extra widening required for a pavement of width 7 m on a horizontal curve of radius 200 m if the longest wheel base of vehicle expected on the road is 6.5 m Design speed is 65 kmph. **04**

Q.5 **a)** Explain in detail concept of road network planning. **04**
b) Explain the principle of soil-cement stabilization process in detail. **05**

Section – II

Q.6 **a)** Explain the construction process of soil-cement base course construction with its specification. **05**
b) Explain factors affecting the properties of soil-lime stabilization. **05**

Q.7 **a)** Discuss the importance of highway drainage. **04**
b) What are the requirements of a good highway drainage system? **05**

Q.8	**a)**	What are the objects of highway maintenance?	**04**
	b)	Classify different types of highway maintenance works and mention the function of each.	**05**
Q.9	**a)**	Briefly outline the advantages and limitations of flexible pavements.	**05**
	b)	Write a brief note on i) Roller compacted concrete ii) Dry lean concrete (DLC)	**04**

SLR-GF-9

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Materials: Sustainability and Usability (BTN01516)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Where is India's first green building located?
a) ITC Green Centre, Gurgaon
b) Suzlon earth, Pune
c) Wipro Technologies, Gurgaon
d) CII - Sohrabji Green Business Centre, Hyderabad

2) _____ is one such compression structure which ensures the conservation of natural resources.
a) Funicular shells b) Composite panels
c) Composite beam d) None of the above

3) _____ is the embodied energy to be calculated for individual building materials.
a) Cradle to gate b) Cradle to site
c) Cradle to grave d) None of the Above

4) _____ is the ancient time technology which saves material and labour cost.
a) Filler materials b) Composite panels
c) Composite beam d) None of the above

5) Factors affecting the performance of green material/product is/are _____.
a) Surrounding buildings b) Population
c) Vehicles d) All of the above

6) Resource efficiency can be achieved by utilizing materials to _____.
a) Recycled content b) Reusable content
c) Reusable packaging d) None of the above

7) The energy necessary to demolish and dispose off a building over its lifetime is _____.
a) Initial embodied energy b) Recurring embodied energy
c) Demolition energy d) None of the above

8) The cradle to grave embodied energy life cycle does include _____ required to utilize the final product.

a) Initial embodied energy
b) Operational energy
c) Demolition energy
d) All of the above

9) Flyash- cement bricks are composed of _____ cement.

a) 50% - 70%
b) 40% - 60%
c) 60% - 80%
d) 70% - 90%

10) Glass is _____ recyclable.

a) 100%
b) 75%
c) 50%
d) 25%

11) Internal waterproofing lining in disposable coffee cup is made by _____.

a) Polyester
b) PVC
c) Polyethylene
d) None of the above

12) Which of the following is not the factor while selecting the car?

a) CO_2 rating
b) Fuel type
c) Model
d) None of the above

13) Higher the cost of car, lesser the emission of _____.

a) CO
b) CO_2
c) SO_x
d) NO_x

14) The cement concrete, from which entrained air and excess water are removed after placing it in position, is called _____.

a) Vacuum concrete
b) Light Weight Concrete
c) Prestressed concrete
d) Sawdust concrete

SLR-GF-9

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Materials: Sustainability and Usability (BTN01516)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain the properties & advantages of filler materials	**05**
	b)	Explain properties of eco-friendly materials in detail.	**05**
Q.3	**a)**	Explain numerous activities that affects the carbon footprints of individuals.	**05**
	b)	Discuss process of selection of bamboo in the construction of green building.	**04**
Q.4	**a)**	How Resource efficiency can be accomplished by utilizing green material?	**05**
	b)	Explain compressed Stabilized Earth Blocks in detail.	**04**
Q.5	**Write Short notes on:**		
	a)	Disposable coffee cups	**05**
	b)	Embodied energy	**04**

Section – II

Q.6	**a)**	Explain various methodologies in material substitution for eco-efficient design residential building.	**05**
	b)	Explain various Plastic recycling process in detail.	**05**
Q.7	**a)**	Differentiate Recycle and Reuse of solid waste.	**05**
	b)	Explain Composite panel and its advantages in green building.	**04**
Q.8	**a)**	Differentiate between thermoplastics and thermoset plastics with suitable examples.	**05**
	b)	Provide numerous techniques for designing green concrete materials for 1BHK house having build-up area of 16 $m^{2.}$	**04**
Q.9	**a)**	Explain factors effecting material selection strategy for choosing a Car.	**05**
	b)	Define recycling of waste. Provide advantages of recycling of waste with a practical example.	**04**

SLR-GF-9

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Materials: Sustainability and Usability (BTN01516)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The cradle to grave embodied energy life cycle does include _____ required to utilize the final product.
a) Initial embodied energy b) Operational energy
c) Demolition energy d) All of the above

2) Flyash- cement bricks are composed of _____ cement.
a) 50% - 70% b) 40% - 60%
c) 60% - 80% d) 70% - 90%

3) Glass is _____ recyclable.
a) 100% b) 75%
c) 50% d) 25%

4) Internal waterproofing lining in disposable coffee cup is made by _____.
a) Polyester b) PVC
c) Polyethylene d) None of the above

5) Which of the following is not the factor while selecting the car?
a) CO_2 rating b) Fuel type
c) Model d) None of the above

6) Higher the cost of car, lesser the emission of _____.
a) CO b) CO_2
c) SO_x d) NO_x

7) The cement concrete, from which entrained air and excess water are removed after placing it in position, is called _____.
a) Vacuum concrete b) Light Weight Concrete
c) Prestressed concrete d) Sawdust concrete

8) Where is India's first green building located?
a) ITC Green Centre, Gurgaon
b) Suzlon earth, Pune
c) Wipro Technologies, Gurgaon
d) CII - Sohrabji Green Business Centre, Hyderabad

9) _____ is one such compression structure which ensures the conservation of natural resources.

a) Funicular shells b) Composite panels
c) Composite beam d) None of the above

10) _____ is the embodied energy to be calculated for individual building materials.

a) Cradle to gate b) Cradle to site
c) Cradle to grave d) None of the Above

11) _____ is the ancient time technology which saves material and labour cost.

a) Filler materials b) Composite panels
c) Composite beam d) None of the above

12) Factors affecting the performance of green material/product is/are _____.

a) Surrounding buildings b) Population
c) Vehicles d) All of the above

13) Resource efficiency can be achieved by utilizing materials to _____.

a) Recycled content b) Reusable content
c) Reusable packaging d) None of the above

14) The energy necessary to demolish and dispose off a building over its lifetime is _____.

a) Initial embodied energy b) Recurring embodied energy
c) Demolition energy d) None of the above

SLR-GF-9

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Materials: Sustainability and Usability (BTN01516)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain the properties & advantages of filler materials	**05**
	b)	Explain properties of eco-friendly materials in detail.	**05**
Q.3	**a)**	Explain numerous activities that affects the carbon footprints of individuals.	**05**
	b)	Discuss process of selection of bamboo in the construction of green building.	**04**
Q.4	**a)**	How Resource efficiency can be accomplished by utilizing green material?	**05**
	b)	Explain compressed Stabilized Earth Blocks in detail.	**04**
Q.5	**Write Short notes on:**		
	a)	Disposable coffee cups	**05**
	b)	Embodied energy	**04**

Section – II

Q.6	**a)**	Explain various methodologies in material substitution for eco-efficient design residential building.	**05**
	b)	Explain various Plastic recycling process in detail.	**05**
Q.7	**a)**	Differentiate Recycle and Reuse of solid waste.	**05**
	b)	Explain Composite panel and its advantages in green building.	**04**
Q.8	**a)**	Differentiate between thermoplastics and thermoset plastics with suitable examples.	**05**
	b)	Provide numerous techniques for designing green concrete materials for 1BHK house having build-up area of 16 $m^{2.}$	**04**
Q.9	**a)**	Explain factors effecting material selection strategy for choosing a Car.	**05**
	b)	Define recycling of waste. Provide advantages of recycling of waste with a practical example.	**04**

SLR-GF-9

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Materials: Sustainability and Usability (BTN01516)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Internal waterproofing lining in disposable coffee cup is made by _____.
a) Polyester b) PVC
c) Polyethylene d) None of the above

2) Which of the following is not the factor while selecting the car?
a) CO_2 rating b) Fuel type
c) Model d) None of the above

3) Higher the cost of car, lesser the emission of _____.
a) CO b) CO_2
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6) _____ is one such compression structure which ensures the conservation of natural resources.
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7) _____ is the embodied energy to be calculated for individual building materials.
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a) Surrounding buildings b) Population
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10) Resource efficiency can be achieved by utilizing materials to _____.
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11) The energy necessary to demolish and dispose off a building over its lifetime is _____.
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13) Flyash- cement bricks are composed of _____ cement.
a) 50% - 70% b) 40% - 60%
c) 60% - 80% d) 70% - 90%

14) Glass is _____ recyclable.
a) 100% b) 75%
c) 50% d) 25%

SLR-GF-9

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Materials: Sustainability and Usability (BTN01516)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
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5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain the properties & advantages of filler materials	**05**
	b)	Explain properties of eco-friendly materials in detail.	**05**
Q.3	**a)**	Explain numerous activities that affects the carbon footprints of individuals.	**05**
	b)	Discuss process of selection of bamboo in the construction of green building.	**04**
Q.4	**a)**	How Resource efficiency can be accomplished by utilizing green material?	**05**
	b)	Explain compressed Stabilized Earth Blocks in detail.	**04**
Q.5	**Write Short notes on:**		
	a)	Disposable coffee cups	**05**
	b)	Embodied energy	**04**

Section – II

Q.6	**a)**	Explain various methodologies in material substitution for eco-efficient design residential building.	**05**
	b)	Explain various Plastic recycling process in detail.	**05**
Q.7	**a)**	Differentiate Recycle and Reuse of solid waste.	**05**
	b)	Explain Composite panel and its advantages in green building.	**04**
Q.8	**a)**	Differentiate between thermoplastics and thermoset plastics with suitable examples.	**05**
	b)	Provide numerous techniques for designing green concrete materials for 1BHK house having build-up area of 16 $m^{2.}$	**04**
Q.9	**a)**	Explain factors effecting material selection strategy for choosing a Car.	**05**
	b)	Define recycling of waste. Provide advantages of recycling of waste with a practical example.	**04**

SLR-GF-9

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Materials: Sustainability and Usability (BTN01516)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Resource efficiency can be achieved by utilizing materials to _____.
a) Recycled content b) Reusable content
c) Reusable packaging d) None of the above

2) The energy necessary to demolish and dispose off a building over its lifetime is _____.
a) Initial embodied energy b) Recurring embodied energy
c) Demolition energy d) None of the above

3) The cradle to grave embodied energy life cycle does include _____ required to utilize the final product.
a) Initial embodied energy b) Operational energy
c) Demolition energy d) All of the above

4) Flyash- cement bricks are composed of _____ cement.
a) 50% - 70% b) 40% - 60%
c) 60% - 80% d) 70% - 90%

5) Glass is _____ recyclable.
a) 100% b) 75%
c) 50% d) 25%

6) Internal waterproofing lining in disposable coffee cup is made by _____.
a) Polyester b) PVC
c) Polyethylene d) None of the above

7) Which of the following is not the factor while selecting the car?
a) CO_2 rating b) Fuel type
c) Model d) None of the above

8) Higher the cost of car, lesser the emission of _____.
a) CO b) CO_2
c) SO_x d) NO_x

9) The cement concrete, from which entrained air and excess water are removed after placing it in position, is called _____.
a) Vacuum concrete b) Light Weight Concrete
c) Prestressed concrete d) Sawdust concrete

10) Where is India's first green building located?
a) ITC Green Centre, Gurgaon
b) Suzlon earth, Pune
c) Wipro Technologies, Gurgaon
d) CII - Sohrabji Green Business Centre, Hyderabad

11) _____ is one such compression structure which ensures the conservation of natural resources.
a) Funicular shells b) Composite panels
c) Composite beam d) None of the above

12) _____ is the embodied energy to be calculated for individual building materials.
a) Cradle to gate b) Cradle to site
c) Cradle to grave d) None of the Above

13) _____ is the ancient time technology which saves material and labour cost.
a) Filler materials b) Composite panels
c) Composite beam d) None of the above

14) Factors affecting the performance of green material/product is/are _____.
a) Surrounding buildings b) Population
c) Vehicles d) All of the above

SLR-GF-9

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Materials: Sustainability and Usability (BTN01516)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain the properties & advantages of filler materials	**05**
	b)	Explain properties of eco-friendly materials in detail.	**05**
Q.3	**a)**	Explain numerous activities that affects the carbon footprints of individuals.	**05**
	b)	Discuss process of selection of bamboo in the construction of green building.	**04**
Q.4	**a)**	How Resource efficiency can be accomplished by utilizing green material?	**05**
	b)	Explain compressed Stabilized Earth Blocks in detail.	**04**
Q.5	**Write Short notes on:**		
	a)	Disposable coffee cups	**05**
	b)	Embodied energy	**04**

Section – II

Q.6	**a)**	Explain various methodologies in material substitution for eco-efficient design residential building.	**05**
	b)	Explain various Plastic recycling process in detail.	**05**
Q.7	**a)**	Differentiate Recycle and Reuse of solid waste.	**05**
	b)	Explain Composite panel and its advantages in green building.	**04**
Q.8	**a)**	Differentiate between thermoplastics and thermoset plastics with suitable examples.	**05**
	b)	Provide numerous techniques for designing green concrete materials for 1BHK house having build-up area of 16 $m^{2.}$	**04**
Q.9	**a)**	Explain factors effecting material selection strategy for choosing a Car.	**05**
	b)	Define recycling of waste. Provide advantages of recycling of waste with a practical example.	**04**

SLR-GF-10

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Sunday,07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which one of the following is a challenge to innovation in the current business environment?
a) Resistance to change b) Able Workforce
c) Confident leadership d) None of the above

2) The first step of innovation management is _____.
a) Selection of Ideas b) Collection of Ideas
c) Experimentation with ideas d) Developing business model

3) A strategy to develop capabilities in the company value chain is called _____.
a) Value resource b) Substitute resource
c) Strategic resource d) Resource modelling

4) Future markets and innovation should be looked upon with a perspective of _____.
a) Needs b) Available resources
c) Multi dimensionality d) All the above

5) What is meant by scaling up in entrepreneurial process?
a) The business is growing
b) The business can hold its weight
c) The business can be franchised
d) The business can be scaled back

6) Which of the following is auto generated intellectual property rights?
a) Industrial design b) Patent
c) Copyright d) All IPRs are auto generated

7) Intellectual capital includes: _____.
a) Knowledge and skills of employees
b) The relationship firm has developed with both customer and suppliers
c) Software, business methods, manuals, reports, publications and databases
d) All of the above

8) What are the pillars of Self- Reliant India movement?
a) Infra-structure b) Economy
c) Demography d) All the above

9) What is a business model?
a) It is a planned activity, designed for profit in marketplace
b) It is a planned activity, designed for established business
c) It is a planned activity, for generating new jobs
d) None of the above

10) Which among the following are the qualities required in an entrepreneur?
a) Creativity and Thinking Ability b) Aptitude for Human Relations
c) Communication Skills d) All of the above

11) "The process whereby new and improved products, processes, materials, and services are developed and transferred to a new plant or market where they are appropriate" is the definition of given by Robenstein.
a) Marketing b) Financial Management
c) Innovation d) Entrepreneurship

12) What is the central purpose for any economic exchange?
a) Creation of Value b) Flow of knowledge
c) To allocate resources d) None of the above

13) What are the elements in the four-action framework of Blue Ocean Strategy?
a) Eliminate, Reduce, Reuse and Recycle
b) Eliminate, Reduce, Raise and Create
c) Eliminate, Recreate, Recycle and Reuse
d) Reduce, Reuse, Recycle and Recreate

14) How can an organization reconstruct market boundaries according to the Blue Ocean Strategy?
a) Looking across alternative industries
b) Looking across strategic groups within industries
c) Looking across the chain of buyers
d) All of the above

SLR-GF-10

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Sunday,07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining (Q. No. 3, 4 & 5).
2) Section II is compulsory
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain the concept of Entrepreneurial growth and the factors affecting it.	**04**
	b)	What is managerial Competencies? Explain four pillars of managerial competencies.	**06**
Q.3	**a)**	List the types of purposeful innovation and explain in detail.	**04**
	b)	Explain the term Innovation Process with neat sketch.	**05**
Q.4	**a)**	What is the role of Innovation in Entrepreneurship?	**04**
	b)	How to get the supports and grants for entrepreneurship?	**05**
Q.5	**a)**	Explain the term Innovation Strategies. Enlist different types of Innovation Strategies and explain in detail with examples.	**04**
	b)	Define the term shifting economy and explain the key economic concepts of shifting economy.	**05**

Section – II

Q.6	**a)**	What is the importance of technological innovation? Explain with examples.	**04**
	b)	Brief in short at least 5 stories of successful Indian entrepreneur.	**06**
Q.7		**Write a note on any Three of the following.**	**09**
	a)	Importance and advantages of international entrepreneurship	
	b)	International Entrepreneurship	
	c)	Four main elements of international business environments	
	d)	Write in short the benefits of learning and relearning process in entrepreneurship development	
Q.8		**Write a note on any Three of the following.**	**09**
	a)	Problem Identification	
	b)	Term Innovation and Diversification	
	c)	Methods of problem identification	
	d)	Steps of the problem identification	

Seat No.	

Set | Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Sunday,07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What are the pillars of Self- Reliant India movement?
a) Infra-structure b) Economy
c) Demography d) All the above

2) What is a business model?
a) It is a planned activity, designed for profit in marketplace
b) It is a planned activity, designed for established business
c) It is a planned activity, for generating new jobs
d) None of the above

3) Which among the following are the qualities required in an entrepreneur?
a) Creativity and Thinking Ability b) Aptitude for Human Relations
c) Communication Skills d) All of the above

4) "The process whereby new and improved products, processes, materials, and services are developed and transferred to a new plant or market where they are appropriate" is the definition of given by Robenstein.
a) Marketing b) Financial Management
c) Innovation d) Entrepreneurship

5) What is the central purpose for any economic exchange?
a) Creation of Value b) Flow of knowledge
c) To allocate resources d) None of the above

6) What are the elements in the four-action framework of Blue Ocean Strategy?
a) Eliminate, Reduce, Reuse and Recycle
b) Eliminate, Reduce, Raise and Create
c) Eliminate, Recreate, Recycle and Reuse
d) Reduce, Reuse, Recycle and Recreate

7) How can an organization reconstruct market boundaries according to the Blue Ocean Strategy?
a) Looking across alternative industries
b) Looking across strategic groups within industries
c) Looking across the chain of buyers
d) All of the above

8) Which one of the following is a challenge to innovation in the current business environment?
a) Resistance to change b) Able Workforce
c) Confident leadership d) None of the above

9) The first step of innovation management is _____.
a) Selection of Ideas b) Collection of Ideas
c) Experimentation with ideas d) Developing business model

10) A strategy to develop capabilities in the company value chain is called _____.
a) Value resource b) Substitute resource
c) Strategic resource d) Resource modelling

11) Future markets and innovation should be looked upon with a perspective of _____.
a) Needs b) Available resources
c) Multi dimensionality d) All the above

12) What is meant by scaling up in entrepreneurial process?
a) The business is growing
b) The business can hold its weight
c) The business can be franchised
d) The business can be scaled back

13) Which of the following is auto generated intellectual property rights?
a) Industrial design b) Patent
c) Copyright d) All IPRs are auto generated

14) Intellectual capital includes: _____.
a) Knowledge and skills of employees
b) The relationship firm has developed with both customer and suppliers
c) Software, business methods, manuals, reports, publications and databases
d) All of the above

SLR-GF-10

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Sunday,07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining (Q. No. 3, 4 & 5).
2) Section II is compulsory
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain the concept of Entrepreneurial growth and the factors affecting it.	**04**
	b)	What is managerial Competencies? Explain four pillars of managerial competencies.	**06**
Q.3	**a)**	List the types of purposeful innovation and explain in detail.	**04**
	b)	Explain the term Innovation Process with neat sketch.	**05**
Q.4	**a)**	What is the role of Innovation in Entrepreneurship?	**04**
	b)	How to get the supports and grants for entrepreneurship?	**05**
Q.5	**a)**	Explain the term Innovation Strategies. Enlist different types of Innovation Strategies and explain in detail with examples.	**04**
	b)	Define the term shifting economy and explain the key economic concepts of shifting economy.	**05**

Section – II

Q.6	**a)**	What is the importance of technological innovation? Explain with examples.	**04**
	b)	Brief in short at least 5 stories of successful Indian entrepreneur.	**06**
Q.7		**Write a note on any Three of the following.**	**09**
	a)	Importance and advantages of international entrepreneurship	
	b)	International Entrepreneurship	
	c)	Four main elements of international business environments	
	d)	Write in short the benefits of learning and relearning process in entrepreneurship development	
Q.8		**Write a note on any Three of the following.**	**09**
	a)	Problem Identification	
	b)	Term Innovation and Diversification	
	c)	Methods of problem identification	
	d)	Steps of the problem identification	

SLR-GF-10

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Sunday,07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) "The process whereby new and improved products, processes, materials, and services are developed and transferred to a new plant or market where they are appropriate" is the definition of given by Robenstein.
a) Marketing b) Financial Management
c) Innovation d) Entrepreneurship

2) What is the central purpose for any economic exchange?
a) Creation of Value b) Flow of knowledge
c) To allocate resources d) None of the above

3) What are the elements in the four-action framework of Blue Ocean Strategy?
a) Eliminate, Reduce, Reuse and Recycle
b) Eliminate, Reduce, Raise and Create
c) Eliminate, Recreate, Recycle and Reuse
d) Reduce, Reuse, Recycle and Recreate

4) How can an organization reconstruct market boundaries according to the Blue Ocean Strategy?
a) Looking across alternative industries
b) Looking across strategic groups within industries
c) Looking across the chain of buyers
d) All of the above

5) Which one of the following is a challenge to innovation in the current business environment?
a) Resistance to change b) Able Workforce
c) Confident leadership d) None of the above

6) The first step of innovation management is _____.
a) Selection of Ideas b) Collection of Ideas
c) Experimentation with ideas d) Developing business model

7) A strategy to develop capabilities in the company value chain is called _____.
a) Value resource b) Substitute resource
c) Strategic resource d) Resource modelling

8) Future markets and innovation should be looked upon with a perspective of _____.

a) Needs
b) Available resources
c) Multi dimensionality
d) All the above

9) What is meant by scaling up in entrepreneurial process?

a) The business is growing
b) The business can hold its weight
c) The business can be franchised
d) The business can be scaled back

10) Which of the following is auto generated intellectual property rights?

a) Industrial design
b) Patent
c) Copyright
d) All IPRs are auto generated

11) Intellectual capital includes: _____.

a) Knowledge and skills of employees
b) The relationship firm has developed with both customer and suppliers
c) Software, business methods, manuals, reports, publications and databases
d) All of the above

12) What are the pillars of Self- Reliant India movement?

a) Infra-structure
b) Economy
c) Demography
d) All the above

13) What is a business model?

a) It is a planned activity, designed for profit in marketplace
b) It is a planned activity, designed for established business
c) It is a planned activity, for generating new jobs
d) None of the above

14) Which among the following are the qualities required in an entrepreneur?

a) Creativity and Thinking Ability
b) Aptitude for Human Relations
c) Communication Skills
d) All of the above

SLR-GF-10

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Sunday,07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining (Q. No. 3, 4 & 5).
2) Section II is compulsory
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain the concept of Entrepreneurial growth and the factors affecting it.	**04**
	b)	What is managerial Competencies? Explain four pillars of managerial competencies.	**06**
Q.3	**a)**	List the types of purposeful innovation and explain in detail.	**04**
	b)	Explain the term Innovation Process with neat sketch.	**05**
Q.4	**a)**	What is the role of Innovation in Entrepreneurship?	**04**
	b)	How to get the supports and grants for entrepreneurship?	**05**
Q.5	**a)**	Explain the term Innovation Strategies. Enlist different types of Innovation Strategies and explain in detail with examples.	**04**
	b)	Define the term shifting economy and explain the key economic concepts of shifting economy.	**05**

Section – II

Q.6	**a)**	What is the importance of technological innovation? Explain with examples.	**04**
	b)	Brief in short at least 5 stories of successful Indian entrepreneur.	**06**
Q.7		**Write a note on any Three of the following.**	**09**
	a)	Importance and advantages of international entrepreneurship	
	b)	International Entrepreneurship	
	c)	Four main elements of international business environments	
	d)	Write in short the benefits of learning and relearning process in entrepreneurship development	
Q.8		**Write a note on any Three of the following.**	**09**
	a)	Problem Identification	
	b)	Term Innovation and Diversification	
	c)	Methods of problem identification	
	d)	Steps of the problem identification	

Seat No.	

Set | S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Sunday,07-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which of the following is auto generated intellectual property rights?
a) Industrial design b) Patent
c) Copyright d) All IPRs are auto generated

2) Intellectual capital includes: _____.
a) Knowledge and skills of employees
b) The relationship firm has developed with both customer and suppliers
c) Software, business methods, manuals, reports, publications and databases
d) All of the above

3) What are the pillars of Self- Reliant India movement?
a) Infra-structure b) Economy
c) Demography d) All the above

4) What is a business model?
a) It is a planned activity, designed for profit in marketplace
b) It is a planned activity, designed for established business
c) It is a planned activity, for generating new jobs
d) None of the above

5) Which among the following are the qualities required in an entrepreneur?
a) Creativity and Thinking Ability b) Aptitude for Human Relations
c) Communication Skills d) All of the above

6) "The process whereby new and improved products, processes, materials, and services are developed and transferred to a new plant or market where they are appropriate" is the definition of given by Robenstein.
a) Marketing b) Financial Management
c) Innovation d) Entrepreneurship

7) What is the central purpose for any economic exchange?
a) Creation of Value b) Flow of knowledge
c) To allocate resources d) None of the above

8) What are the elements in the four-action framework of Blue Ocean Strategy?
a) Eliminate, Reduce, Reuse and Recycle
b) Eliminate, Reduce, Raise and Create
c) Eliminate, Recreate, Recycle and Reuse
d) Reduce, Reuse, Recycle and Recreate

9) How can an organization reconstruct market boundaries according to the Blue Ocean Strategy?
a) Looking across alternative industries
b) Looking across strategic groups within industries
c) Looking across the chain of buyers
d) All of the above

10) Which one of the following is a challenge to innovation in the current business environment?
a) Resistance to change
b) Able Workforce
c) Confident leadership
d) None of the above

11) The first step of innovation management is _____.
a) Selection of Ideas
b) Collection of Ideas
c) Experimentation with ideas
d) Developing business model

12) A strategy to develop capabilities in the company value chain is called _____.
a) Value resource
b) Substitute resource
c) Strategic resource
d) Resource modelling

13) Future markets and innovation should be looked upon with a perspective of _____.
a) Needs
b) Available resources
c) Multi dimensionality
d) All the above

14) What is meant by scaling up in entrepreneurial process?
a) The business is growing
b) The business can hold its weight
c) The business can be franchised
d) The business can be scaled back

SLR-GF-10

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Managing Innovation and Entrepreneurship (BTN01517)

Day & Date: Sunday,07-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining (Q. No. 3, 4 & 5).
2) Section II is compulsory
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain the concept of Entrepreneurial growth and the factors affecting it.	**04**
	b)	What is managerial Competencies? Explain four pillars of managerial competencies.	**06**
Q.3	**a)**	List the types of purposeful innovation and explain in detail.	**04**
	b)	Explain the term Innovation Process with neat sketch.	**05**
Q.4	**a)**	What is the role of Innovation in Entrepreneurship?	**04**
	b)	How to get the supports and grants for entrepreneurship?	**05**
Q.5	**a)**	Explain the term Innovation Strategies. Enlist different types of Innovation Strategies and explain in detail with examples.	**04**
	b)	Define the term shifting economy and explain the key economic concepts of shifting economy.	**05**

Section – II

Q.6	**a)**	What is the importance of technological innovation? Explain with examples.	**04**
	b)	Brief in short at least 5 stories of successful Indian entrepreneur.	**06**
Q.7		**Write a note on any Three of the following.**	**09**
	a)	Importance and advantages of international entrepreneurship	
	b)	International Entrepreneurship	
	c)	Four main elements of international business environments	
	d)	Write in short the benefits of learning and relearning process in entrepreneurship development	
Q.8		**Write a note on any Three of the following.**	**09**
	a)	Problem Identification	
	b)	Term Innovation and Diversification	
	c)	Methods of problem identification	
	d)	Steps of the problem identification	

SLR-GF-11

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

2) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

3) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

4) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

5) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

6) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

7) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

8) Which of the following is international trade?

a) Trade between countries
b) Trade between regions
c) Trade between provinces
d) Both (b) and (c)

9) Who is the 'lender of the last resort' in the banking structure of India?

a) State Bank of India
b) Reserve Bank of India
c) EXIM Bank of India
d) Union Bank of India

10) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

SLR-GF-11

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

SLR-GF-11

Seat No.		Set	Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

2) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

3) Which of the following is international trade?
a) Trade between countries b) Trade between regions
c) Trade between provinces d) Both (b) and (c)

4) Who is the 'lender of the last resort' in the banking structure of India?
a) State Bank of India b) Reserve Bank of India
c) EXIM Bank of India d) Union Bank of India

5) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

6) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

7) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

8) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

9) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

10) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

SLR-GF-11

Seat No.		Set	Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Who is the 'lender of the last resort' in the banking structure of India?
a) State Bank of India b) Reserve Bank of India
c) EXIM Bank of India d) Union Bank of India

2) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

3) Law of demand must fail in case of _____.
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a) Demand will increase b) Supply will increase
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a) Adam Smith b) Prof. J. M. Keynes
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a) They have to pay less amount
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c) Public revenue and expenditure
d) Controls of money supply

10) Which of the following is international trade?
a) Trade between countries
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c) Trade between provinces
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SLR-GF-11

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

SLR-GF-11

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

2) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

3) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

4) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

5) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

6) Which of the following is international trade?
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7) Who is the 'lender of the last resort' in the banking structure of India?
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8) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False b) True
c) Partly true d) Partly False

9) Law of demand must fail in case of _____.

a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

10) All things remain equal, if input prices increase _____.

a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

SLR-GF-11

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
CIVIL ENGINEERING
Economics (BTN01508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

SLR-GF-12

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) The term 'Intellectual Property Rights' covers _____.
a) Copyrights b) Know-how
c) Trade dress d) All of these

2) The following cannot be exploited by assigning or by licensing the rights to others _____.
a) Patents b) Designs
c) Trademark d) All of these

3) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

4) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

5) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

6) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

7) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

8) What is the term of Patent?

a) 35 years b) 25 years

c) 20 years d) 15 years

9) Statutory requirement of “Abstract” is provided in _____ of Indian patents act,1970 and rules 2003.

a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)

c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

10) The following can be patented _____.

a) Machine b) Process

c) Composition of matter d) All of these

SLR-GF-12

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

2) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

3) What is the term of Patent?
a) 35 years b) 25 years
c) 20 years d) 15 years

4) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

5) The following can be patented _____.
a) Machine b) Process
c) Composition of matter d) All of these

6) The term 'Intellectual Property Rights' covers _____.
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c) Trade dress d) All of these

7) The following cannot be exploited by assigning or by licensing the rights to others _____.
a) Patents b) Designs
c) Trademark d) All of these

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a) Ethical value b) Moral value
c) Social value d) Commercial value

9) Trade mark _____.
   a) is represented graphically
   b) is capable of distinguishing the goods or services of one person from those of others
   c) may include shapes of goods or combination of colors
   d) All of the above

10) In India, the literary work is protected until _____.
   a) Lifetime of author
   b) 25 years after the death of author
   c) 40 years after the death of author
   d) 60 years after the death of author

SLR-GF-12

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

2) The following can be patented _____.
a) Machine b) Process
c) Composition of matter d) All of these

3) The term 'Intellectual Property Rights' covers _____.
a) Copyrights b) Know-how
c) Trade dress d) All of these

4) The following cannot be exploited by assigning or by licensing the rights to others _____.
a) Patents b) Designs
c) Trademark d) All of these

5) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

6) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

7) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

8) Who fills the invention disclosure form (IDF)?

a) Inventor
b) Patent Attorney
c) Assignee
d) Patent Searcher

9) What is copyright meant for?

a) Film work
b) Books
c) Essay
d) All of these

10) What is the term of Patent?

a) 35 years
b) 25 years
c) 20 years
d) 15 years

SLR-GF-12

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

SLR-GF-12

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

2) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

3) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

4) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

5) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

6) What is the term of Patent?
a) 35 years b) 25 years
c) 20 years d) 15 years

7) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
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a) Machine b) Process
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9) The term 'Intellectual Property Rights' covers _____.

a) Copyrights b) Know-how
c) Trade dress d) All of these

10) The following cannot be exploited by assigning or by licensing the rights to others _____.

a) Patents b) Designs
c) Trademark d) All of these

SLR-GF-12

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN01509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The term sociology was coined by _____
a) Herbert Spencer b) August Comte
c) Karl Marx d) Max Weber

2) _____ and role are interrelated and inter-depended.
a) Position b) Status
c) Role d) Person

3) Rural society is _____.
a) Heterogeneous b) Homogeneous
c) Cultural d) Normative

4) Urban family is _____ unit.
a) Monogamous b) Polygamous
c) Mono-lateral d) Unilateral

5) Castes hierarchy is supposed to be _____.
a) Manual b) Formal
c) Divine d) Legal

6) The term Modernization was given by _____.
a) Ghurye b) Dr. Ambedkar
c) Shakespeare d) Srinivas

7) The two directions of social change are _____
a) uncertain - uncertain b) linear - cyclical
c) formal - informal d) negative - positive

8) _____ legalizes the sexual relation between man and woman
a) leaders b) Industry
c) Marriage d) Ideology

9) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

10) Environmental science is the study of _____.

a) nature
b) society
c) diversity
d) surroundings

SLR-GF-13

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 **Write answer on any four of the following.** **16**

a) Explain the meaning and elements of social structure.
b) Discuss on the conventional feature of marriage in India.
c) Elucidate nature and types of social institutions.
d) Explain the nature and process of social change.
e) Give and account of nature and types of social movements.
f) What is social mobility?

Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The term Modernization was given by _____.
a) Ghurye b) Dr. Ambedkar
c) Shakespeare d) Srinivas

2) The two directions of social change are _____
a) uncertain - uncertain b) linear - cyclical
c) formal - informal d) negative - positive

3) _____ legalizes the sexual relation between man and woman
a) leaders b) Industry
c) Marriage d) Ideology

4) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

5) Environmental science is the study of _____.
a) nature b) society
c) diversity d) surroundings

6) The term sociology was coined by _____
a) Herbert Spencer b) August Comte
c) Karl Marx d) Max Weber

7) _____ and role are interrelated and inter-depended.
a) Position b) Status
c) Role d) Person

8) Rural society is _____.
a) Heterogeneous b) Homogeneous
c) Cultural d) Normative

9) Urban family is _____ unit.
a) Monogamous b) Polygamous
c) Mono-lateral d) Unilateral

10) Castes hierarchy is supposed to be _____.

a) Manual b) Formal

c) Divine d) Legal

SLR-GF-13

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 **Write answer on any four of the following.** **16**

a) Explain the meaning and elements of social structure.
b) Discuss on the conventional feature of marriage in India.
c) Elucidate nature and types of social institutions.
d) Explain the nature and process of social change.
e) Give and account of nature and types of social movements.
f) What is social mobility?

Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

Seat No.		Set	R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

2) Environmental science is the study of _____.
a) nature b) society
c) diversity d) surroundings

3) The term sociology was coined by _____
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9) The two directions of social change are _____
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10) _____ legalizes the sexual relation between man and woman

a) leaders
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SLR-GF-13

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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Q.2 **Write answer on any four of the following.** **16**

a) Explain the meaning and elements of social structure.
b) Discuss on the conventional feature of marriage in India.
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d) Explain the nature and process of social change.
e) Give and account of nature and types of social movements.
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Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Introduction to Sociology (BTN01510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Rural society is _____.
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SLR-GF-13

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OR

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SLR-GF-14

Seat No.		Set	P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Which factors improve coping?
a) Social support b) Optimism
c) Perceived control d) All of the above

2) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

3) Which of the following statements is true?
a) The stress response is nonspecific
b) Different kinds of stressors produce exactly the same response
c) Different people respond to the same stressor differently
d) All of the above

4) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
b) When he expects a positive outcome
c) When he thinks he does not have control over the situation
d) When he has a good social support network

5) Aches, shallow breathing and sweating, frequent colds are _____.
a) Physical symptoms of stress
b) Behavioral symptoms of stress
c) Emotional symptoms of stress
d) Cognitive symptoms of stress

6) What thoughts come to the mind when you're under negative stress?
a) You think that you can cope with the situation
b) You think that you cannot cope with the situation
c) You think that everything will get fine eventually
d) You think that you will get help immediately

7) Which of the following are the physical symptoms of anxiety?

a) Racing heart
b) Sweaty palms
c) Flushed cheeks
d) All of the above

8) Which of the following is true about 'deep breathing relaxation technique'?

a) It can be self-taught
b) It releases tension from the body and clears your mind
c) You have to do this under-water
d) Only 'a' & 'b' are true

9) Which of the following are stress busters?

a) Trying to find something funny in a difficult situation
b) Developing a support network
c) Taking a mindful walk
d) All of the above

10) When danger or stress is perceived/experienced, this response occurs in the body _____.

a) Exhaustion
b) Adaption
c) Fight-or-flight
d) Resistance

SLR-GF-14

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) What thoughts come to the mind when you're under negative stress?
a) You think that you can cope with the situation
b) You think that you cannot cope with the situation
c) You think that everything will get fine eventually
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2) Which of the following are the physical symptoms of anxiety?
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3) Which of the following is true about 'deep breathing relaxation technique'?
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6) Which factors improve coping?
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7) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
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c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

8) Which of the following statements is true?
a) The stress response is nonspecific
b) Different kinds of stressors produce exactly the same response
c) Different people respond to the same stressor differently
d) All of the above

9) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
b) When he expects a positive outcome
c) When he thinks he does not have control over the situation
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10) Aches, shallow breathing and sweating, frequent colds are _____.
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b) Behavioral symptoms of stress
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SLR-GF-14

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

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SLR-GF-14

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
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Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
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Q.7 Explain the role of social support in mitigating stress with example. **10**

SLR-GF-14

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Stress and Coping (BTN01511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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SLR-GF-14

Seat No.		Set	S

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Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

SLR-GF-15

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Ethics & Human Value (BTN01512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

2) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

3) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

4) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

5) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

6) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

7) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

8) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

9) Human values are essential for _____.

a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

10) _____ is defined as the duty, obligation or even authority.

a) Work
b) Responsibility
c) Democracy
d) authority

SLR-GF-15

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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Professional Ethics & Human Value (BTN01512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

SLR-GF-15

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Ethics & Human Value (BTN01512)

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c) Attitude
d) Values

9) What is Integrity?

a) Unity of thought
b) Word and deed
c) Open mindedness
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10) Ethical issues that can affect an engineer's professional and personal life are termed as _____.

a) Macro ethics
b) Micro ethics
c) Morals
d) Rights

SLR-GF-15

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Ethics & Human Value (BTN01512)

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d) Commitment
e) Spirituality
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SLR-GF-15

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Ethics & Human Value (BTN01512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

2) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

3) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

4) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

5) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

6) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

7) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

8) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

9) Value and skills should go hand in hand _____.

a) True b) False
c) Cannot tell d) Wrong question

10) _____ are the basic Human aspirations.

a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

SLR-GF-15

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Ethics & Human Value (BTN01512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Ethics & Human Value (BTN01512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

2) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

3) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
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9) Many complex social problems exist in the _____.

a) Industry/ Business b) Society
c) Home d) None of the above

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a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

SLR-GF-15

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Ethics & Human Value (BTN01512)

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Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

SLR-GF-16

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume additional data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) For tube sampler External Diameter 51 mm and Internal Diameter 48 mm what is area ratio?
a) 12.9% b) 15.3%
c) 10.6% d) 14.5%

2) If RQD is 26% then quality of the rock is _____
a) Poor b) Fair
c) Good d) Excellent

3) The maximum pressure which a soil can carry without shear failure, is called _____.
a) Safe bearing capacity b) Net Safe bearing capacity
c) Ultimate bearing capacity d) Net Ultimate bearing capacity

4) Terzaghi's bearing capacity factors Nc, Nq and Nr are functions of _____
a) Cohesion only
b) Angle of internal friction only
c) Both Cohesion and angle of internal friction
d) None

5) On wetting, cohesive soils _____
a) Loose permeability b) Gain shear strength
c) Loose elasticity d) Decrease their shear strength

6) The plate-load test gives _____
a) ultimate bearing capacity b) Safe bearing capacity
c) Net ultimate bearing capacity d) All

7) Square spread footing is preferred rather than other shape because _____
a) It is simple in construction b) It looks good
c) Its bearing capacity is more d) None

8) Common material used for sheet pile is _____
a) Steel b) Concrete
c) Timber d) none

9) Which footing consists of two spread footing connected with beam?
a) Spread footing
b) Mat footing
c) Continuous footing
d) Cantilever footing

10) Factor of safety used to calculate load carrying capacity by dynamic formulae is _____
a) 6
b) 2.5
c) 3
d) 2

11) Efficiency of a pile group consisting of three piles by using Felds rule is _____
a) 93.75
b) 81.25
c) 87.5
d) None

12) The degree of disturbance for a soil sample is usually expressed by _____
a) Void ratio
b) Area ratio
c) Recovery ratio
d) Consolidation ratio

13) In a cantilever-sheet pile wall, the rotation is about _____
a) The bottom of the wall
b) The dredge level
c) Above the bottom but below the dredge level
d) The top of the wall

14) For a base failure of a slope, depth factor _____
a) Df = 1
b) Df < 1
c) Df > 1
d) None

Seat No.	

Set **P**

T. Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory. Solve any two from remaining questions from section-I
2) Q.6 is compulsory. Solve any two from remaining questions from section-II
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2 **a)** Write in detail about 'Wash Boring' with neat sketch. **04**

b) Determine the ultimate bearing capacity of square footing of 1.5 m size, at a depth of 1.5 m, in a pure clay with an unconfined strength of $150\ \mathrm{KN/m^2}$. $\phi = 0°$ and $\gamma = 17\ \mathrm{KN/m^3}$, Take $\mathrm{Nc} = 5.7, \mathrm{Nq} = 1.0$, and $\mathrm{N}\gamma = 0$ **06**

Q.3 **a)** Discuss the effect of water table on bearing capacity of foundation. **03**

b) Immediate settlement of a square footing of dimensions 1.2 m × 1.2 m carrying a load intensity of 220 KN/m^2 is 30 mm. What would be the immediate settlement of a footing measuring 3 m × 3 m carrying a load intensity of 160 KN/m^2. The subsoil conditions are identical in both the footing. **06**

Q.4 **a)** Explain the procedure of Plate load test with neat sketches. **03**

b) A sampler has inner diameter of 68 mm with its thickness 4 mm and cutting edge of sampler has outer diameter of 81 mm with its thickness 8 mm. Determine area ratio for the sampler, inside clearance and outside clearance. Draw sketch of the sampler. **06**

Q.5 **a)** Explain sand drain technique of ground improvement. **03**

b) Determine the allowable gross load and net allowable load of square footing of 2m side and with a depth of foundation 1.0 m. use Terzaghi's bearing capacity theory and assume local Shear failure, take factor of safety 3.0, the soil at the site has $\gamma = 18\ \mathrm{KN/m^3}, \mathrm{C} = 15\ \mathrm{KN/m^2}$ and $(\phi) = 25°$, Take $\mathrm{Nc} = 14.8, \mathrm{Nq} = 5.6$, and $\mathrm{N}\gamma = 3.2$ **06**

Section – II

Q.6 **a)** Write a short note on raft foundation. **04**

b) Design a combined trapezoidal footing by using following data. **06**
External column load is 800 KN Internal column load is 600 KN centre to centre spacing between columns is 3.8 m. Size of each column = 400mm × 400mm. Both column flush with footing and SBC of soil 350 KN/m^2

Q.7 **a)** Write a short note on Construction of under reamed pile. **03**

b) A group of 9 piles arranged in square pattern with diameter and length of each pile as 25cm and 10m respectively is used as foundation in soft clay. Unconfined compressive strength of clay is 120 KN/m^2 and pile spacing as 100cm centre to centre find capacity of pile group. Assume bearing capacity factor Nc=9, adhesive factor as 0.75 and factor of safety 2.5. **06**

Q.8 **a)** Sketch the pressure distribution diagram for following cases. **03**

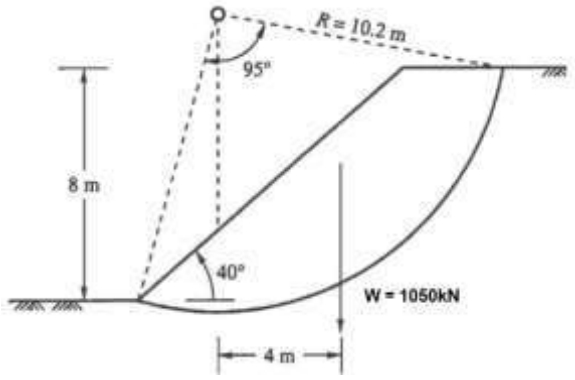
i) Cantilever sheet pile in cohesive soil
ii) Cantilever sheet pile in cohesionless soil
iii) Anchored sheet pile in partially cohesive soil (free earth).

b) Determine depth of embedment for an anchored sheet pile using following data: **06**

Height of wall – 7 m Soil above and below dredge line granular $\gamma = 20\ \mathrm{kN/m^3}$ $c = 0$ and $\phi = 33°$ Anchor rods are placed at a depth of 1 m below ground level.

Q.9 **a)** Write a note on 'Taylor's Stability Number'. **03**

b) A 40° cutting slope is excavated to a depth of 8 m in a deep layer of saturated clay of unit weight 19 KN/m^3, the relevant shear strength parameters are cu = 65 kPa. Determine the factor of safety for the trial failure surface specified in **06**



Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume additional data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Common material used for sheet pile is _____
a) Steel b) Concrete
c) Timber d) none

2) Which footing consists of two spread footing connected with beam?
a) Spread footing b) Mat footing
c) Continuous footing d) Cantilever footing

3) Factor of safety used to calculate load carrying capacity by dynamic formulae is _____
a) 6 b) 2.5
c) 3 d) 2

4) Efficiency of a pile group consisting of three piles by using Felds rule is _____
a) 93.75 b) 81.25
c) 87.5 d) None

5) The degree of disturbance for a soil sample is usually expressed by _____
a) Void ratio b) Area ratio
c) Recovery ratio d) Consolidation ratio

6) In a cantilever-sheet pile wall, the rotation is about _____
a) The bottom of the wall
b) The dredge level
c) Above the bottom but below the dredge level
d) The top of the wall

7) For a base failure of a slope, depth factor _____
a) Df = 1 b) Df < 1
c) Df > 1 d) None

8) For tube sampler External Diameter 51 mm and Internal Diameter 48 mm what is area ratio?
a) 12.9% b) 15.3%
c) 10.6% d) 14.5%

9) If RQD is 26% then quality of the rock is _____
a) Poor b) Fair
c) Good d) Excellent

10) The maximum pressure which a soil can carry without shear failure, is called _____.
a) Safe bearing capacity b) Net Safe bearing capacity
c) Ultimate bearing capacity d) Net Ultimate bearing capacity

11) Terzaghi's bearing capacity factors Nc, Nq and Nr are functions of _____
a) Cohesion only
b) Angle of internal friction only
c) Both Cohesion and angle of internal friction
d) None

12) On wetting, cohesive soils _____
a) Loose permeability b) Gain shear strength
c) Loose elasticity d) Decrease their shear strength

13) The plate-load test gives _____
a) ultimate bearing capacity b) Safe bearing capacity
c) Net ultimate bearing capacity d) All

14) Square spread footing is preferred rather than other shape because _____
a) It is simple in construction b) It looks good
c) Its bearing capacity is more d) None

Seat No.	

Set **Q**

T. Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory. Solve any two from remaining questions from section-I
2) Q.6 is compulsory. Solve any two from remaining questions from section-II
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Section – I

Q.2 **a)** Write in detail about 'Wash Boring' with neat sketch. **04**

b) Determine the ultimate bearing capacity of square footing of 1.5 m size, at a depth of 1.5 m, in a pure clay with an unconfined strength of $150\ \mathrm{KN/m^2}$. $\phi = 0°$ and $\gamma = 17\ \mathrm{KN/m^3}$, Take $\mathrm{Nc} = 5.7, \mathrm{Nq} = 1.0$, and $\mathrm{N\gamma} = 0$ **06**

Q.3 **a)** Discuss the effect of water table on bearing capacity of foundation. **03**

b) Immediate settlement of a square footing of dimensions 1.2 m × 1.2 m carrying a load intensity of 220 KN/m^2 is 30 mm. What would be the immediate settlement of a footing measuring 3 m × 3 m carrying a load intensity of 160 KN/m^2. The subsoil conditions are identical in both the footing. **06**

Q.4 **a)** Explain the procedure of Plate load test with neat sketches. **03**

b) A sampler has inner diameter of 68 mm with its thickness 4 mm and cutting edge of sampler has outer diameter of 81 mm with its thickness 8 mm. Determine area ratio for the sampler, inside clearance and outside clearance. Draw sketch of the sampler. **06**

Q.5 **a)** Explain sand drain technique of ground improvement. **03**

b) Determine the allowable gross load and net allowable load of square footing of 2m side and with a depth of foundation 1.0 m. use Terzaghi's bearing capacity theory and assume local Shear failure, take factor of safety 3.0, the soil at the site has $\gamma = 18\ \mathrm{KN/m^3}, \mathrm{C} = 15\ \mathrm{KN/m^2}$ and $(\phi) = 25°$, Take $\mathrm{Nc} = 14.8, \mathrm{Nq} = 5.6$, and $\mathrm{N\gamma} = 3.2$ **06**

Section – II

Q.6 **a)** Write a short note on raft foundation. **04**

b) Design a combined trapezoidal footing by using following data. **06**
External column load is 800 KN Internal column load is 600 KN centre to centre spacing between columns is 3.8 m. Size of each column = 400mm × 400mm. Both column flush with footing and SBC of soil 350 KN/m^2

Q.7 **a)** Write a short note on Construction of under reamed pile. **03**

b) A group of 9 piles arranged in square pattern with diameter and length of each pile as 25cm and 10m respectively is used as foundation in soft clay. Unconfined compressive strength of clay is 120 KN/m^2 and pile spacing as 100cm centre to centre find capacity of pile group. Assume bearing capacity factor Nc=9, adhesive factor as 0.75 and factor of safety 2.5. **06**

Q.8 **a)** Sketch the pressure distribution diagram for following cases. **03**

i) Cantilever sheet pile in cohesive soil
ii) Cantilever sheet pile in cohesionless soil
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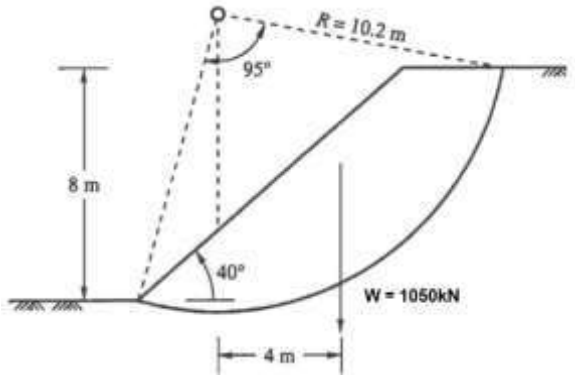
b) Determine depth of embedment for an anchored sheet pile using following data: **06**

Height of wall – 7 m Soil above and below dredge line granular $\gamma = 20\ \mathrm{kN/m^3}$ $c = 0$ and $\phi = 33°$ Anchor rods are placed at a depth of 1 m below ground level.

Q.9 **a)** Write a note on 'Taylor's Stability Number'. **03**

b) A 40° cutting slope is excavated to a depth of 8 m in a deep layer of saturated clay of unit weight 19 KN/m^3, the relevant shear strength parameters are cu = 65 kPa. Determine the factor of safety for the trial failure surface specified in **06**



SLR-GF-16

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Efficiency of a pile group consisting of three piles by using Felds rule is _____
a) 93.75 b) 81.25
c) 87.5 d) None

2) The degree of disturbance for a soil sample is usually expressed by _____
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9) On wetting, cohesive soils _____
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10) The plate-load test gives _____
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a) Spread footing b) Mat footing
c) Continuous footing d) Cantilever footing

14) Factor of safety used to calculate load carrying capacity by dynamic formulae is _____
a) 6 b) 2.5
c) 3 d) 2

Seat No.	

Set **R**

T. Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
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Section – I

Q.2 **a)** Write in detail about 'Wash Boring' with neat sketch. **04**

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Q.5 **a)** Explain sand drain technique of ground improvement. **03**

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Section – II

Q.6 **a)** Write a short note on raft foundation. **04**

b) Design a combined trapezoidal footing by using following data. **06**
External column load is 800 KN Internal column load is 600 KN centre to centre spacing between columns is 3.8 m. Size of each column = 400mm × 400mm. Both column flush with footing and SBC of soil 350 KN/m^2

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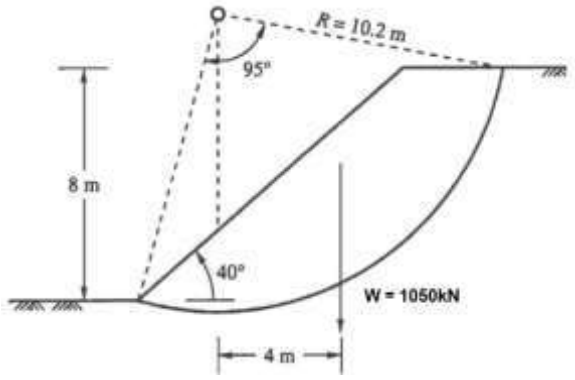

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Seat No.	

Set S

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) The plate-load test gives _____
a) ultimate bearing capacity b) Safe bearing capacity
c) Net ultimate bearing capacity d) All

2) Square spread footing is preferred rather than other shape because _____
a) It is simple in construction b) It looks good
c) Its bearing capacity is more d) None

3) Common material used for sheet pile is _____
a) Steel b) Concrete
c) Timber d) none

4) Which footing consists of two spread footing connected with beam?
a) Spread footing b) Mat footing
c) Continuous footing d) Cantilever footing

5) Factor of safety used to calculate load carrying capacity by dynamic formulae is _____
a) 6 b) 2.5
c) 3 d) 2

6) Efficiency of a pile group consisting of three piles by using Felds rule is _____
a) 93.75 b) 81.25
c) 87.5 d) None

7) The degree of disturbance for a soil sample is usually expressed by _____
a) Void ratio b) Area ratio
c) Recovery ratio d) Consolidation ratio

8) In a cantilever-sheet pile wall, the rotation is about _____
a) The bottom of the wall
b) The dredge level
c) Above the bottom but below the dredge level
d) The top of the wall

9) For a base failure of a slope, depth factor _____

a) Df = 1 b) Df < 1
c) Df > 1 d) None

10) For tube sampler External Diameter 51 mm and Internal Diameter 48 mm what is area ratio?

a) 12.9% b) 15.3%
c) 10.6% d) 14.5%

11) If RQD is 26% then quality of the rock is _____

a) Poor b) Fair
c) Good d) Excellent

12) The maximum pressure which a soil can carry without shear failure, is called _____.

a) Safe bearing capacity b) Net Safe bearing capacity
c) Ultimate bearing capacity d) Net Ultimate bearing capacity

13) Terzaghi's bearing capacity factors Nc, Nq and Nr are functions of _____

a) Cohesion only
b) Angle of internal friction only
c) Both Cohesion and angle of internal friction
d) None

14) On wetting, cohesive soils _____

a) Loose permeability b) Gain shear strength
c) Loose elasticity d) Decrease their shear strength

Seat No.	

Set **S**

T. Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Foundation Engineering (BTN01601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q.2 is compulsory. Solve any two from remaining questions from section-I
2) Q.6 is compulsory. Solve any two from remaining questions from section-II
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2 **a)** Write in detail about 'Wash Boring' with neat sketch. **04**

b) Determine the ultimate bearing capacity of square footing of 1.5 m size, at a depth of 1.5 m, in a pure clay with an unconfined strength of $150\ \mathrm{KN/m^2}$. $\phi = 0°$ and $\gamma = 17\ \mathrm{KN/m^3}$, Take $\mathrm{Nc} = 5.7, \mathrm{Nq} = 1.0$, and $\mathrm{N\gamma} = 0$ **06**

Q.3 **a)** Discuss the effect of water table on bearing capacity of foundation. **03**

b) Immediate settlement of a square footing of dimensions 1.2 m × 1.2 m carrying a load intensity of 220 KN/m^2 is 30 mm. What would be the immediate settlement of a footing measuring 3 m × 3 m carrying a load intensity of 160 KN/m^2. The subsoil conditions are identical in both the footing. **06**

Q.4 **a)** Explain the procedure of Plate load test with neat sketches. **03**

b) A sampler has inner diameter of 68 mm with its thickness 4 mm and cutting edge of sampler has outer diameter of 81 mm with its thickness 8 mm. Determine area ratio for the sampler, inside clearance and outside clearance. Draw sketch of the sampler. **06**

Q.5 **a)** Explain sand drain technique of ground improvement. **03**

b) Determine the allowable gross load and net allowable load of square footing of 2m side and with a depth of foundation 1.0 m. use Terzaghi's bearing capacity theory and assume local Shear failure, take factor of safety 3.0, the soil at the site has $\gamma = 18\ \mathrm{KN/m^3}, \mathrm{C} = 15\ \mathrm{KN/m^2}$ and $(\phi) = 25°$, Take $\mathrm{Nc} = 14.8, \mathrm{Nq} = 5.6$, and $\mathrm{N\gamma} = 3.2$ **06**

Section – II

Q.6 **a)** Write a short note on raft foundation. **04**

b) Design a combined trapezoidal footing by using following data. **06**
External column load is 800 KN Internal column load is 600 KN centre to centre spacing between columns is 3.8 m. Size of each column = 400mm × 400mm. Both column flush with footing and SBC of soil 350 KN/m^2

Q.7 **a)** Write a short note on Construction of under reamed pile. **03**

b) A group of 9 piles arranged in square pattern with diameter and length of each pile as 25cm and 10m respectively is used as foundation in soft clay. Unconfined compressive strength of clay is 120 KN/m^2 and pile spacing as 100cm centre to centre find capacity of pile group. Assume bearing capacity factor Nc=9, adhesive factor as 0.75 and factor of safety 2.5. **06**

Q.8 **a)** Sketch the pressure distribution diagram for following cases. **03**

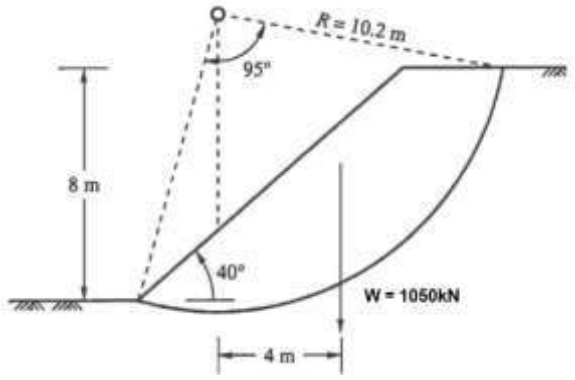
i) Cantilever sheet pile in cohesive soil
ii) Cantilever sheet pile in cohesionless soil
iii) Anchored sheet pile in partially cohesive soil (free earth).

b) Determine depth of embedment for an anchored sheet pile using following data: **06**

Height of wall – 7 m Soil above and below dredge line granular $\gamma = 20\ \mathrm{kN/m^3}$ $c = 0$ and $\phi = 33°$ Anchor rods are placed at a depth of 1 m below ground level.

Q.9 **a)** Write a note on 'Taylor's Stability Number'. **03**

b) A 40° cutting slope is excavated to a depth of 8 m in a deep layer of saturated clay of unit weight 19 KN/m^3, the relevant shear strength parameters are cu = 65 kPa. Determine the factor of safety for the trial failure surface specified in **06**



SLR-GF-17

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) For a flood control reservoir, the effective storage is equal to _____.
a) useful storage + valley storage
b) useful storage + surcharge storage - valley storage
c) useful storage + surcharge storage + valley storage
d) useful storage - valley storage

2) Pick up the incorrect statement:
a) surface run off equals run off minus base flow
b) the water that seeps into the ground reservoir is called infiltration
c) the annual yield of a drainage basin in depth, when multiplied by the basin area, gives us the yearly available water volume
d) the coarser sand and silt get deposited near the face of the dam, and the finer one away from it
e) none of the above

3) The vertical downward earthquake acceleration, $\alpha_y = 0.1$ g, acting on a gravity dam, will _____.
a) increase the resisting weight of the dam by 10%
b) decrease the resisting weight of the dam by 10%
c) increase the uplift by 10%
d) none of the above

4) Arch dams are suitable in locations where the canyon slope factor (length of arch at top/height of dam) is: _____.
a) less than 8 b) greater than 16
c) between 8 and 16 d) none of these

5) The most preferred type of an earthen dam section is the one, in which the: _____.
a) entire embankment is made of one type of soil
b) inner embankment is made of highly porous soil, surrounded by the outer shell of highly impervious soil, both separated by transition filter material of mediocre permeability
c) inner embankment is made of highly impervious soil surrounded by the outer shell of highly pervious soil, both separated by transition filter material of mediocre permeability
d) none of the above

6) The only provision among the following, which can help control the seepage through the body of an earthen dam and, thus, to keep the phreatic line well within the dam width, is: _____.
a) upstream impervious cut off
b) drain trench along the downstream toe
c) relief wells
d) chimney drain

7) The critical exit gradient suggested in Khosla's theory of design of weirs and barrages, is _____.
a) less for more porous soils
b) more for more porous soils
c) equal for all kinds of soils
d) none of them

8) Point out the correct meaning of 'piping', as applied to the design of barrages: _____.
a) It refers to a network of pipes laid below the hydraulic structure to remove the seeping water
b) It refers to the process of undermining of foundation and creation of hollows therein
c) It refers to the uplift force caused by seeping water on the floor of the hydraulic structure
d) None of the above

9) When a channel is protected on the bed and sides with some protective material, and there is no possibility of change in its cross-section and longitudinal slope, then the channel is said to be in : _____.
a) initial regime
b) final regime
c) permanent regime
d) true regime

10) An irrigational canal, freely flowing under a drainage channel, is specifically called a: _____
a) canal junction
b) canal crossing
c) canal siphon
d) super passage

11) Which one of the followings does not contribute to water logging?
a) inadequate drainage
b) seepage from unlined canals
c) frequent flooding
d) excessive tapping of ground water

12) In a meandering river, the ratio of 'actual channel length' to 'direct axial length', is called: _____.
a) Tortuosity
b) Inverse of Tortuosity
c) Cut off ratio
d) None of these

13) A hydropower plant, developed at the site of a drop in an irrigation canal, is of the type _____.

a) runoff river plant
b) storage plant
c) pumped storage plant
d) tidal plant

14) Pump storage schemes are used to improve _____.

a) The power factor
b) The load factor
c) The plant capacity factor as well as the load factor of the power system
d) The diversity factor

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

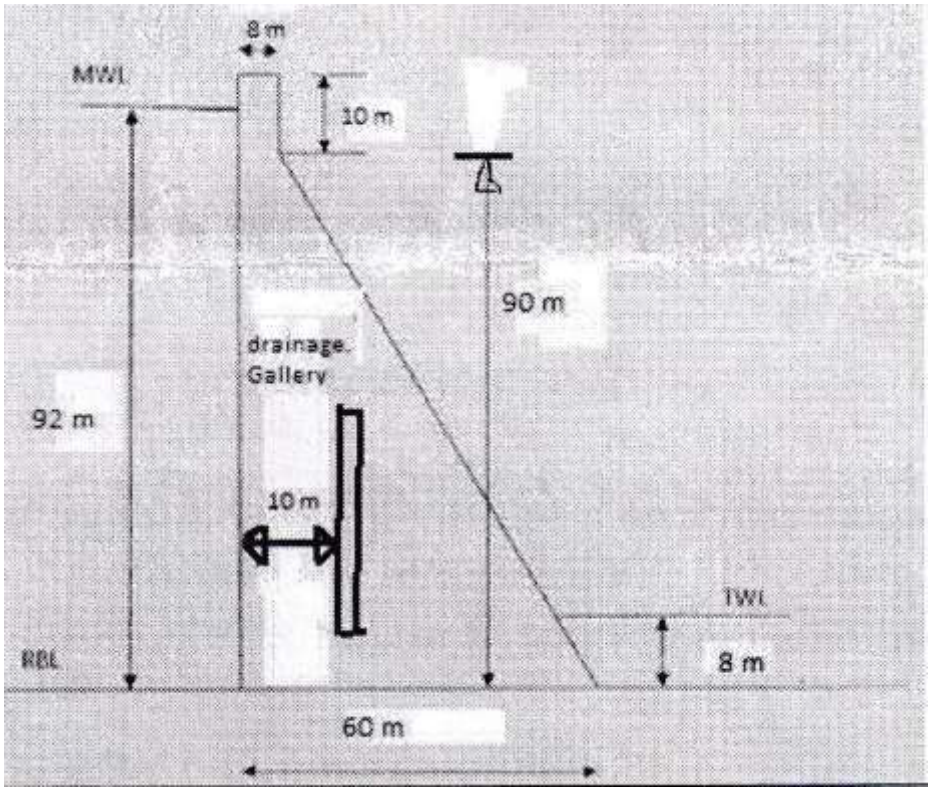
Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** Enlist the factors on which rate of silting of an impounding reservoir depends. What is trap efficiency of reservoir? **05**

b) What is mean by spillway? Explain in detail how spillways are selected for particular dam. **04**

Q.3 Figure shows a section of a gravity dam (non overflow section) built of concrete. Calculate the maximum vertical stress at the heel and toe of the dam, when water level at maximum water level. Assume unit weight of concrete as 23.5 kN/m^3. Neglect earthquake forces. **10**



Q.4 **a)** What are the precautions that would you take while constructing an earthen dam? Explain the Swedish slip circle method of analyzing stability of earth dam slope. **05**

b) A saddle syphon spillway ha following data. **04**
FRL 485m, level of center of syphon at outlet 479.6 m, HFL 485.9 m, Highest flood discharge 700 m^3/sec. If the dimensions of the throat of syphon are width 4.2 m and height 1.9 m. Determine number of syphon units required to pass the flood safely. The syphon has to discharge freely into air. Assume Cd as 0.65.

Q.5 **a)** Enlist different types of reservoirs losses and explain methods of controlling them. **05**

b) Explain with neat sketches different methods to control seepage through the body of earthen dam. **04**

Section – II

Q.6 **a)** Write a short note on Khosla's theory and his concept of flow net for seepage flow below the foundation of weirs on permeable foundations. **05**

b) What are the different possible water losses through canal? What are the methods adopted for reducing such losses? **05**

Q.7 **a)** Define the terms **03**
1) Firm Power
2) Load factor
3) Installed capacity of a power house

b) What is mean by river training? What are the objectives served by it? Enumerate different types of river training works and explain any one with neat sketches. **06**

Q.8 **a)** Explain the phenomenon of piping and undercutting for structures on permeable foundations. **03**

b) What are the different types of cross drainage works? Explain them with neat sketches. **06**

Q.9 **a)** What are the principal causes of water logging in a canal irrigated tract? **03**

b) A runoff river plant has installed capacity of 1600 kW and operates at 32% load factor when it serves as a peak load station. What should be the minimum discharge in the stream so that it may serve as a peak base station? The plant efficiency may be taken as 85% when working under a head of 27 m. Also calculate the maximum load factor of plant when discharge in stream is 33 m^3/s. **06**

SLR-GF-17

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Point out the correct meaning of 'piping', as applied to the design of barrages: _____.
a) It refers to a network of pipes laid below the hydraulic structure to remove the seeping water
b) It refers to the process of undermining of foundation and creation of hollows therein
c) It refers to the uplift force caused by seeping water on the floor of the hydraulic structure
d) None of the above

2) When a channel is protected on the bed and sides with some protective material, and there is no possibility of change in its cross-section and longitudinal slope, then the channel is said to be in : _____.
a) initial regime b) final regime
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3) An irrigational canal, freely flowing under a drainage channel, is specifically called a: _____
a) canal junction b) canal crossing
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4) Which one of the followings does not contribute to water logging?
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b) seepage from unlined canals
c) frequent flooding
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5) In a meandering river, the ratio of 'actual channel length' to 'direct axial length', is called: _____.
a) Tortuosity b) Inverse of Tortuosity
c) Cut off ratio d) None of these

6) A hydropower plant, developed at the site of a drop in an irrigation canal, is of the type _____.
a) runoff river plant b) storage plant
c) pumped storage plant d) tidal plant

7) Pump storage schemes are used to improve _____.
a) The power factor
b) The load factor
c) The plant capacity factor as well as the load factor of the power system
d) The diversity factor

8) For a flood control reservoir, the effective storage is equal to _____.
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9) Pick up the incorrect statement:
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c) the annual yield of a drainage basin in depth, when multiplied by the basin area, gives us the yearly available water volume
d) the coarser sand and silt get deposited near the face of the dam, and the finer one away from it
e) none of the above

10) The vertical downward earthquake acceleration, $\alpha_y = 0.1$ g, acting on a gravity dam, will _____.
a) increase the resisting weight of the dam by 10%
b) decrease the resisting weight of the dam by 10%
c) increase the uplift by 10%
d) none of the above

11) Arch dams are suitable in locations where the canyon slope factor (length of arch at top/height of dam) is: _____.
a) less than 8 b) greater than 16
c) between 8 and 16 d) none of these

12) The most preferred type of an earthen dam section is the one, in which the: _____.
a) entire embankment is made of one type of soil
b) inner embankment is made of highly porous soil, surrounded by the outer shell of highly impervious soil, both separated by transition filter material of mediocre permeability
c) inner embankment is made of highly impervious soil surrounded by the outer shell of highly pervious soil, both separated by transition filter material of mediocre permeability
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13) The only provision among the following, which can help control the seepage through the body of an earthen dam and, thus, to keep the phreatic line well within the dam width, is: _____.
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b) drain trench along the downstream toe
c) relief wells
d) chimney drain

14) The critical exit gradient suggested in Khosla's theory of design of weirs and barrages, is _____.

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d) none of them

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining.
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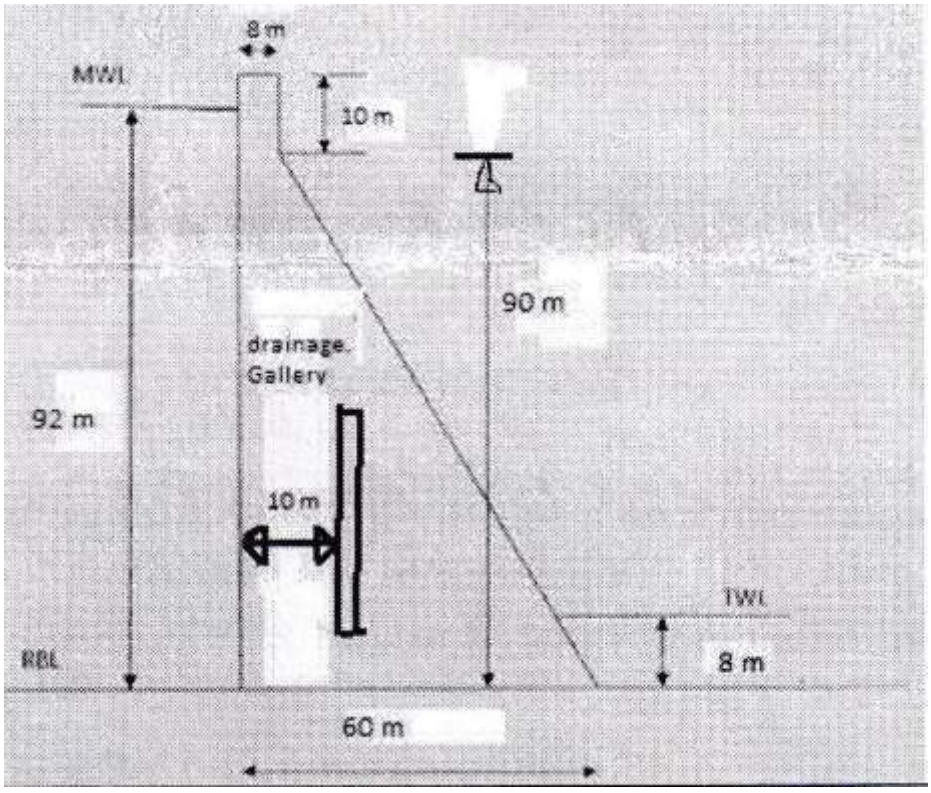
Section – I

Q.2 **a)** Enlist the factors on which rate of silting of an impounding reservoir depends. What is trap efficiency of reservoir? **05**

b) What is mean by spillway? Explain in detail how spillways are selected for particular dam. **04**

Q.3 Figure shows a section of a gravity dam (non overflow section) built of concrete. Calculate the maximum vertical stress at the heel and toe of the dam, when water level at maximum water level. Assume unit weight of concrete as 23.5 kN/m^3. Neglect earthquake forces. **10**



Q.4 **a)** What are the precautions that would you take while constructing an earthen dam? Explain the Swedish slip circle method of analyzing stability of earth dam slope. **05**

b) A saddle syphon spillway ha following data. **04**
FRL 485m, level of center of syphon at outlet 479.6 m, HFL 485.9 m, Highest flood discharge 700 m^3/sec. If the dimensions of the throat of syphon are width 4.2 m and height 1.9 m. Determine number of syphon units required to pass the flood safely. The syphon has to discharge freely into air. Assume Cd as 0.65.

Q.5 **a)** Enlist different types of reservoirs losses and explain methods of controlling them. **05**

b) Explain with neat sketches different methods to control seepage through the body of earthen dam. **04**

Section – II

Q.6 **a)** Write a short note on Khosla's theory and his concept of flow net for seepage flow below the foundation of weirs on permeable foundations. **05**

b) What are the different possible water losses through canal? What are the methods adopted for reducing such losses? **05**

Q.7 **a)** Define the terms **03**
1) Firm Power
2) Load factor
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b) A runoff river plant has installed capacity of 1600 kW and operates at 32% load factor when it serves as a peak load station. What should be the minimum discharge in the stream so that it may serve as a peak base station? The plant efficiency may be taken as 85% when working under a head of 27 m. Also calculate the maximum load factor of plant when discharge in stream is 33 m^3/s. **06**

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Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which one of the followings does not contribute to water logging?
a) inadequate drainage
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7) The vertical downward earthquake acceleration, $\alpha_y = 0.1$ g, acting on a gravity dam, will _____.
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14) An irrigational canal, freely flowing under a drainage channel, is specifically called a: _____

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Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining.
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Section – I

Q.2 **a)** Enlist the factors on which rate of silting of an impounding reservoir depends. What is trap efficiency of reservoir? **05**

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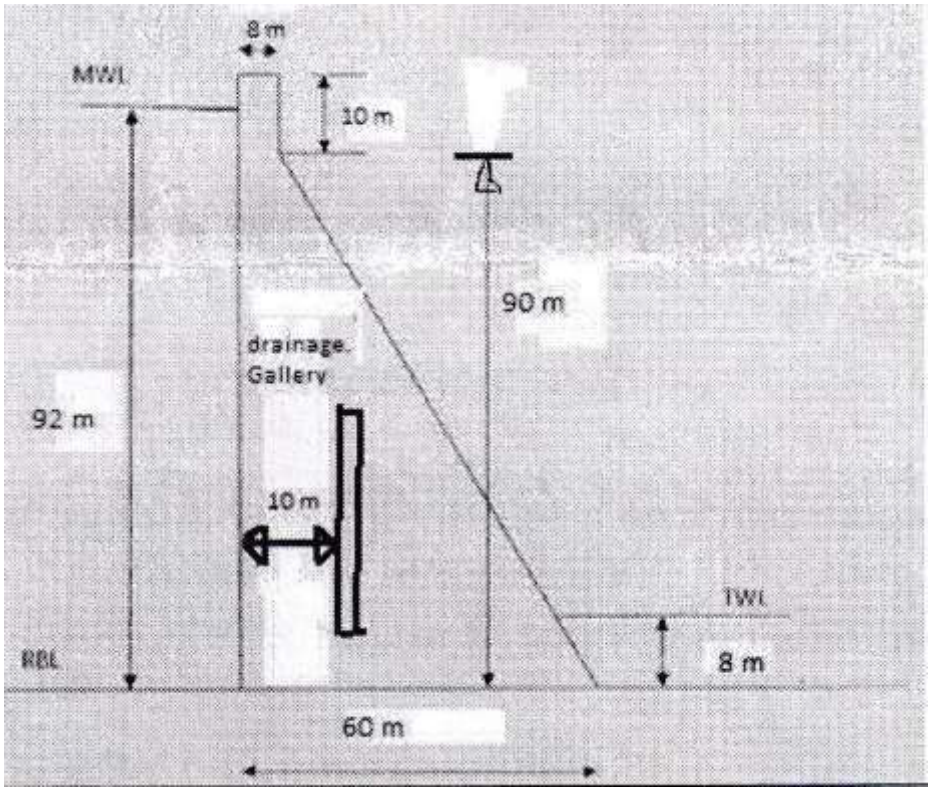
Q.3 Figure shows a section of a gravity dam (non overflow section) built of concrete. Calculate the maximum vertical stress at the heel and toe of the dam, when water level at maximum water level. Assume unit weight of concrete as 23.5 kN/m^3. Neglect earthquake forces. **10**



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b) A saddle syphon spillway ha following data. **04**
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Q.5 **a)** Enlist different types of reservoirs losses and explain methods of controlling them. **05**

b) Explain with neat sketches different methods to control seepage through the body of earthen dam. **04**

Section – II

Q.6 **a)** Write a short note on Khosla's theory and his concept of flow net for seepage flow below the foundation of weirs on permeable foundations. **05**

b) What are the different possible water losses through canal? What are the methods adopted for reducing such losses? **05**

Q.7 **a)** Define the terms **03**
1) Firm Power
2) Load factor
3) Installed capacity of a power house

b) What is mean by river training? What are the objectives served by it? Enumerate different types of river training works and explain any one with neat sketches. **06**

Q.8 **a)** Explain the phenomenon of piping and undercutting for structures on permeable foundations. **03**

b) What are the different types of cross drainage works? Explain them with neat sketches. **06**

Q.9 **a)** What are the principal causes of water logging in a canal irrigated tract? **03**

b) A runoff river plant has installed capacity of 1600 kW and operates at 32% load factor when it serves as a peak load station. What should be the minimum discharge in the stream so that it may serve as a peak base station? The plant efficiency may be taken as 85% when working under a head of 27 m. Also calculate the maximum load factor of plant when discharge in stream is 33 m^3/s. **06**

SLR-GF-17

Seat No.	

Set S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The only provision among the following, which can help control the seepage through the body of an earthen dam and, thus, to keep the phreatic line well within the dam width, is: _____.
a) upstream impervious cut off
b) drain trench along the downstream toe
c) relief wells
d) chimney drain

2) The critical exit gradient suggested in Khosla's theory of design of weirs and barrages, is _____.
a) less for more porous soils b) more for more porous soils
c) equal for all kinds of soils d) none of them

3) Point out the correct meaning of 'piping', as applied to the design of barrages: _____.
a) It refers to a network of pipes laid below the hydraulic structure to remove the seeping water
b) It refers to the process of undermining of foundation and creation of hollows therein
c) It refers to the uplift force caused by seeping water on the floor of the hydraulic structure
d) None of the above

4) When a channel is protected on the bed and sides with some protective material, and there is no possibility of change in its cross-section and longitudinal slope, then the channel is said to be in : _____.
a) initial regime b) final regime
c) permanent regime d) true regime

5) An irrigational canal, freely flowing under a drainage channel, is specifically called a: _____
a) canal junction b) canal crossing
c) canal siphon d) super passage

6) Which one of the followings does not contribute to water logging?
a) inadequate drainage
b) seepage from unlined canals
c) frequent flooding
d) excessive tapping of ground water

7) In a meandering river, the ratio of 'actual channel length' to 'direct axial length', is called: _____.
a) Tortuosity
b) Inverse of Tortuosity
c) Cut off ratio
d) None of these

8) A hydropower plant, developed at the site of a drop in an irrigation canal, is of the type _____.
a) runoff river plant
b) storage plant
c) pumped storage plant
d) tidal plant

9) Pump storage schemes are used to improve _____.
a) The power factor
b) The load factor
c) The plant capacity factor as well as the load factor of the power system
d) The diversity factor

10) For a flood control reservoir, the effective storage is equal to _____.
a) useful storage + valley storage
b) useful storage + surcharge storage - valley storage
c) useful storage + surcharge storage + valley storage
d) useful storage - valley storage

11) Pick up the incorrect statement:
a) surface run off equals run off minus base flow
b) the water that seeps into the ground reservoir is called infiltration
c) the annual yield of a drainage basin in depth, when multiplied by the basin area, gives us the yearly available water volume
d) the coarser sand and silt get deposited near the face of the dam, and the finer one away from it
e) none of the above

12) The vertical downward earthquake acceleration, $\alpha_y = 0.1$ g, acting on a gravity dam, will _____.
a) increase the resisting weight of the dam by 10%
b) decrease the resisting weight of the dam by 10%
c) increase the uplift by 10%
d) none of the above

13) Arch dams are suitable in locations where the canyon slope factor (length of arch at top/height of dam) is: _____.
a) less than 8
b) greater than 16
c) between 8 and 16
d) none of these

14) The most preferred type of an earthen dam section is the one, in which the: _____.

a) entire embankment is made of one type of soil
b) inner embankment is made of highly porous soil, surrounded by the outer shell of highly impervious soil, both separated by transition filter material of mediocre permeability
c) inner embankment is made of highly impervious soil surrounded by the outer shell of highly pervious soil, both separated by transition filter material of mediocre permeability
d) none of the above

Seat No.	

Set **S**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (BTN01602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
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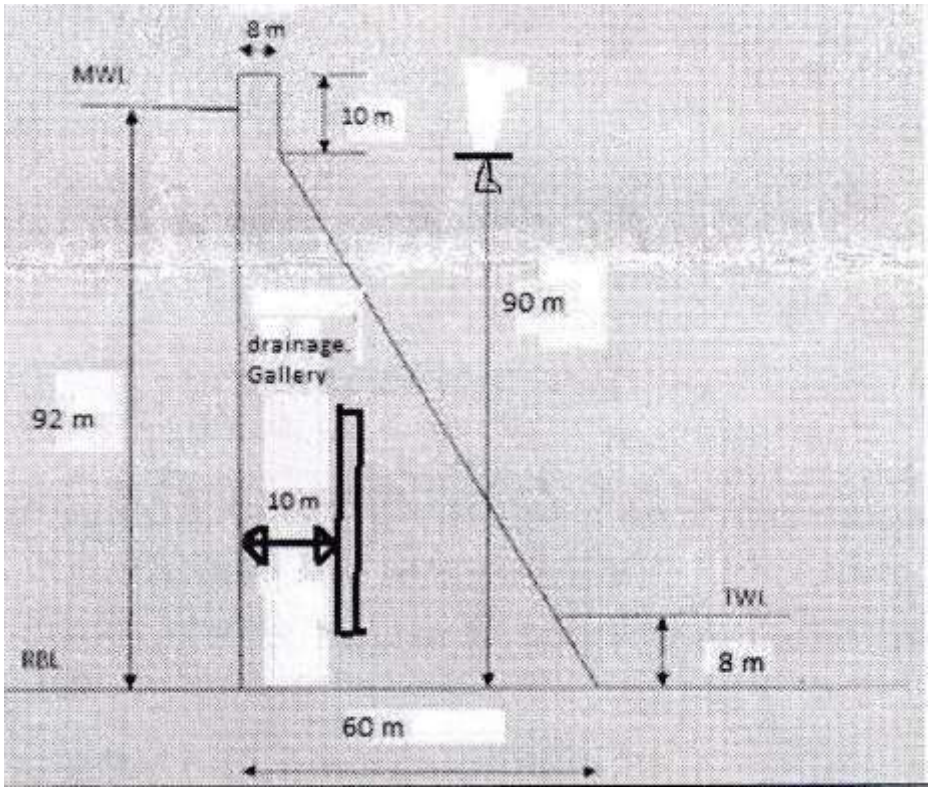
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** Enlist the factors on which rate of silting of an impounding reservoir depends. What is trap efficiency of reservoir? **05**

b) What is mean by spillway? Explain in detail how spillways are selected for particular dam. **04**

Q.3 Figure shows a section of a gravity dam (non overflow section) built of concrete. Calculate the maximum vertical stress at the heel and toe of the dam, when water level at maximum water level. Assume unit weight of concrete as 23.5 kN/m^3. Neglect earthquake forces. **10**



Q.4 **a)** What are the precautions that would you take while constructing an earthen dam? Explain the Swedish slip circle method of analyzing stability of earth dam slope. **05**

b) A saddle syphon spillway ha following data. **04**
FRL 485m, level of center of syphon at outlet 479.6 m, HFL 485.9 m, Highest flood discharge 700 m^3/sec. If the dimensions of the throat of syphon are width 4.2 m and height 1.9 m. Determine number of syphon units required to pass the flood safely. The syphon has to discharge freely into air. Assume Cd as 0.65.

Q.5 **a)** Enlist different types of reservoirs losses and explain methods of controlling them. **05**

b) Explain with neat sketches different methods to control seepage through the body of earthen dam. **04**

Section – II

Q.6 **a)** Write a short note on Khosla's theory and his concept of flow net for seepage flow below the foundation of weirs on permeable foundations. **05**

b) What are the different possible water losses through canal? What are the methods adopted for reducing such losses? **05**

Q.7 **a)** Define the terms **03**
1) Firm Power
2) Load factor
3) Installed capacity of a power house

b) What is mean by river training? What are the objectives served by it? Enumerate different types of river training works and explain any one with neat sketches. **06**

Q.8 **a)** Explain the phenomenon of piping and undercutting for structures on permeable foundations. **03**

b) What are the different types of cross drainage works? Explain them with neat sketches. **06**

Q.9 **a)** What are the principal causes of water logging in a canal irrigated tract? **03**

b) A runoff river plant has installed capacity of 1600 kW and operates at 32% load factor when it serves as a peak load station. What should be the minimum discharge in the stream so that it may serve as a peak base station? The plant efficiency may be taken as 85% when working under a head of 27 m. Also calculate the maximum load factor of plant when discharge in stream is 33 m^3/s. **06**

SLR-GF-20

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Culvert is the type of bridge whose span is _____.
a) Between 6m-60m b) Above 60m
c) Less than 6m d) None of these

2) For small bridges, with open foundations, the economical span is approximately equal to _____times height of Pier.
a) 2.0 b) 1.2
c) 1.0 d) 1.5

3) Total load in case of IRC 70R tracked loading is _____.
a) 700 kN b) 710 kN
c) 1000 kN d) 554 kN

4) For spans greater than 9m, impact factor for Tracked vehicle is _____.
a) 10% b) 20%
c) 25% d) 15%

5) The ground contact length of the track of IRC class AA loading is _____.
a) 3.6m b) 4.57m
c) 3.5m d) None of these

6) Impact force for IRC class A & B is given by _____.
a) $I_f = \frac{AB}{B+L}$ b) $I_f = \frac{B+L}{A}$
c) $I_f = \frac{A}{B+L}$ d) None of these

7) Total load of class AA wheeled is _____.
a) 700kN b) 400kN
c) 554kN d) 332kN

8) Braking force is assumed to act along the line parallel to roadway & _____ above it.
a) 1.2m b) 1.5m
c) 1.8m d) 2.0m

9) Solid deck slab is adopted for spans _____.
a) more than 8m
b) more than 20m
c) less than 8m
d) between 10-25m

10) The pier cap or abutment cap should be of minimum _____ concrete.
a) M20 grade
b) M25 grade
c) M30 grade
d) None one of these

11) Following is not the function of the pier cap or abutment cap _____.
a) Provides immediate bearing surface for the support of the super structure at pier and abutment location.
b) Disperses the strip load from bearing to the substructure evenly.
c) Prevent rain water from dripping down the sides and ends of the pier
d) Resist all horizontal forces acting on bridges

12) In case of urban site, suitable pier is _____.
a) Cellular pier
b) Trestle pier
c) Inboard pier
d) Hammerhead pier

13) Fixed bearing allow _____.
a) Rotation only
b) Translation only
c) Both rotational as well as translation
d) Restrict rotation as well as translation

14) Two span girder requires _____.
a) Fixed bearing at central support & expansion bearing at the two abutment
b) Fixed bearing at all supports
c) Expansion bearing on all supports
d) Expansion bearing at central support & Fixed bearing at the two abutment

SLR-GF-20

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Find the design bending moment of Two lane bridge solid deck slab for following data: **10**
a) Effective span – 7 m
b) Carriage way width – 7.5 m
c) Kerb – 600 × 275 on both side
d) Live load – IRC Class A (Two lane)
e) Wearing coat – 100 mm thick
f) Use M-25 concrete and Fe-415 steel
g) Use α = 2.82

Q.3 Answer the following.
a) What are the basic components of bridge structure? Explain with the help of sketch with their functions. **05**
b) What is economical span? Derive the equation for the same. **04**

Q.4 A RCC T beam type bridge having deck slab of 225 mm thick, wearing coat of 90 mm thick, three longitudinal girders and five cross girders. Determine the Design bending moment for all the longitudinal girders. Use following additional data. **09**
a) Carriage way width – 7.5 m
b) Span of bridge – 14 m
c) Live Load – IRC class AA Tracked
d) Kerb – 600 mm wide, 400 mm deep
e) Web thickness for Longitudinal and cross girder – 300 mm
f) Longitudinal Girder spacing – 280 mm
g) Use M-30 concrete and Fe-415 steel

Q.5 Design a slab panel having size of 3 m × 3.5 m. Consider IRC class AA tracked loading. Consider thickness of slab as 200 mm and wearing coat thickness as 80 mm. Use M-25 concrete and Fe-415 steel. Pigeuad's coefficient for DL are, m_1 = 0.049, m_2 =0.015 and Pigeuad's coefficient for LL are, m_1 = 0.085, m_2 = 0.024 **09**

Section – II

Q.6 Verify the adequacy of pier for the following data: **10**
Top width of pier - 1.7 m, Height of pier up to springing level - 7 m, C/C distance of bearing - 1.2 m, Side batter 1:12, HFL - 1.5 m below the bearing level, Span of bridge - 8 m, carriage way width - 7.5 m, Reaction due to D.L. from each span = 2000 kN, Reaction due to L.L. from each span = 600 kN, Braking force - 140 kN, wind pressure on pier - 2.4 kN/m^2. Material of pier = M20 concrete.

Estimate the maximum and minimum stress developed at the base of the pier due to critical combination of various loads for dry condition and Flood condition.

Q.7 Verify the suitability of abutment as shown in the fig 7.1 Use following data **09**
Density of soil - 19 kN/m^3, Friction angle of soil (∅) = 31°
Coefficient of friction - 0.6, Live load reaction at bearing - 350 kN, DL reaction from super structure - 2000 kN

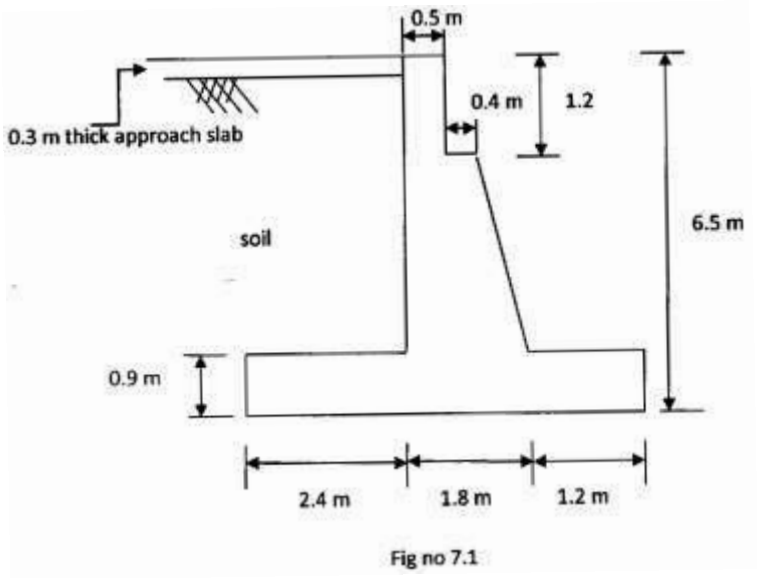


Fig no 7.1

Q.8 **a)** Design an elastomeric unreinforced bearing pad for following data **05**
Vertical load (sustained) = 195 kN
Vertical load (dynamic) = 100 kN
Horizontal force = 95 kN
Modulus of rigidity of elastomer - 1 N/mm^2
Coefficient of friction = 0.35

b) Write a note on types of expansion joints. **04**

Q.9 **Write a note on following (Any three)** **09**

a) Cantilever method of construction
b) Functions of bearing
c) Approach slab
d) Reinforced earth retaining wall
e) Types of bridge inspection

SLR-GF-20

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Braking force is assumed to act along the line parallel to roadway & _____ above it.
a) 1.2m b) 1.5m
c) 1.8m d) 2.0m

2) Solid deck slab is adopted for spans _____.
a) more than 8m b) more than 20m
c) less than 8m d) between 10-25m

3) The pier cap or abutment cap should be of minimum _____ concrete.
a) M20 grade b) M25 grade
c) M30 grade d) None one of these

4) Following is not the function of the pier cap or abutment cap _____.
a) Provides immediate bearing surface for the support of the super structure at pier and abutment location.
b) Disperses the strip load from bearing to the substructure evenly.
c) Prevent rain water from dripping down the sides and ends of the pier
d) Resist all horizontal forces acting on bridges

5) In case of urban site, suitable pier is _____.
a) Cellular pier b) Trestle pier
c) Inboard pier d) Hammerhead pier

6) Fixed bearing allow _____.
a) Rotation only
b) Translation only
c) Both rotational as well as translation
d) Restrict rotation as well as translation

7) Two span girder requires _____.
a) Fixed bearing at central support & expansion bearing at the two abutment
b) Fixed bearing at all supports
c) Expansion bearing on all supports
d) Expansion bearing at central support & Fixed bearing at the two abutment

8) Culvert is the type of bridge whose span is _____.
a) Between 6m-60m b) Above 60m
c) Less than 6m d) None of these

9) For small bridges, with open foundations, the economical span is approximately equal to _____times height of Pier.
a) 2.0 b) 1.2
c) 1.0 d) 1.5

10) Total load in case of IRC 70R tracked loading is _____.
a) 700 kN b) 710 kN
c) 1000 kN d) 554 kN

11) For spans greater than 9m, impact factor for Tracked vehicle is _____.
a) 10% b) 20%
c) 25% d) 15%

12) The ground contact length of the track of IRC class AA loading is _____.
a) 3.6m b) 4.57m
c) 3.5m d) None of these

13) Impact force for IRC class A & B is given by _____.
a) $I_f = \frac{AB}{B+L}$ b) $I_f = \frac{B+L}{A}$
c) $I_f = \frac{A}{B+L}$ d) None of these

14) Total load of class AA wheeled is _____.
a) 700kN b) 400kN
c) 554kN d) 332kN

SLR-GF-20

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
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Section – I

Q.2 Find the design bending moment of Two lane bridge solid deck slab for following data: **10**
a) Effective span – 7 m
b) Carriage way width – 7.5 m
c) Kerb – 600 × 275 on both side
d) Live load – IRC Class A (Two lane)
e) Wearing coat – 100 mm thick
f) Use M-25 concrete and Fe-415 steel
g) Use α = 2.82

Q.3 Answer the following.
a) What are the basic components of bridge structure? Explain with the help of sketch with their functions. **05**
b) What is economical span? Derive the equation for the same. **04**

Q.4 A RCC T beam type bridge having deck slab of 225 mm thick, wearing coat of 90 mm thick, three longitudinal girders and five cross girders. Determine the Design bending moment for all the longitudinal girders. Use following additional data. **09**
a) Carriage way width – 7.5 m
b) Span of bridge – 14 m
c) Live Load – IRC class AA Tracked
d) Kerb – 600 mm wide, 400 mm deep
e) Web thickness for Longitudinal and cross girder – 300 mm
f) Longitudinal Girder spacing – 280 mm
g) Use M-30 concrete and Fe-415 steel

Q.5 Design a slab panel having size of 3 m × 3.5 m. Consider IRC class AA tracked loading. Consider thickness of slab as 200 mm and wearing coat thickness as 80 mm. Use M-25 concrete and Fe-415 steel. Pigeuad's coefficient for DL are, m_1 = 0.049, m_2 =0.015 and Pigeuad's coefficient for LL are, m_1 = 0.085, m_2 = 0.024 **09**

Section – II

Q.6 Verify the adequacy of pier for the following data: **10**
Top width of pier - 1.7 m, Height of pier up to springing level - 7 m, C/C distance of bearing - 1.2 m, Side batter 1:12, HFL - 1.5 m below the bearing level, Span of bridge - 8 m, carriage way width - 7.5 m, Reaction due to D.L. from each span = 2000 kN, Reaction due to L.L. from each span = 600 kN, Braking force - 140 kN, wind pressure on pier - 2.4 kN/m^2. Material of pier = M20 concrete.

Estimate the maximum and minimum stress developed at the base of the pier due to critical combination of various loads for dry condition and Flood condition.

Q.7 Verify the suitability of abutment as shown in the fig 7.1 Use following data **09**
Density of soil - 19 kN/m^3, Friction angle of soil (∅) = 31°
Coefficient of friction - 0.6, Live load reaction at bearing - 350 kN, DL reaction from super structure - 2000 kN

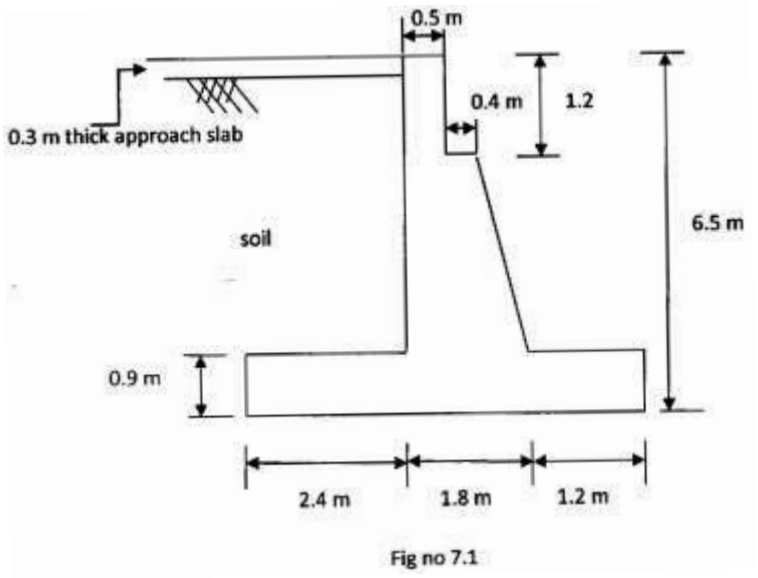

Fig no 7.1

Q.8 **a)** Design an elastomeric unreinforced bearing pad for following data **05**
Vertical load (sustained) = 195 kN
Vertical load (dynamic) = 100 kN
Horizontal force = 95 kN
Modulus of rigidity of elastomer - 1 N/mm^2
Coefficient of friction = 0.35

b) Write a note on types of expansion joints. **04**

Q.9 **Write a note on following (Any three)** **09**

a) Cantilever method of construction
b) Functions of bearing
c) Approach slab
d) Reinforced earth retaining wall
e) Types of bridge inspection

SLR-GF-20

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Following is not the function of the pier cap or abutment cap _____.
a) Provides immediate bearing surface for the support of the super structure at pier and abutment location.
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d) Resist all horizontal forces acting on bridges

2) In case of urban site, suitable pier is _____.
a) Cellular pier b) Trestle pier
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3) Fixed bearing allow _____.
a) Rotation only
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4) Two span girder requires _____.
a) Fixed bearing at central support & expansion bearing at the two abutment
b) Fixed bearing at all supports
c) Expansion bearing on all supports
d) Expansion bearing at central support & Fixed bearing at the two abutment

5) Culvert is the type of bridge whose span is _____.
a) Between 6m-60m b) Above 60m
c) Less than 6m d) None of these

6) For small bridges, with open foundations, the economical span is approximately equal to _____times height of Pier.
a) 2.0 b) 1.2
c) 1.0 d) 1.5

7) Total load in case of IRC 70R tracked loading is _____.
a) 700 kN b) 710 kN
c) 1000 kN d) 554 kN

8) For spans greater than 9m, impact factor for Tracked vehicle is _____.
a) 10% b) 20%
c) 25% d) 15%

9) The ground contact length of the track of IRC class AA loading is _____.
a) 3.6m b) 4.57m
c) 3.5m d) None of these

10) Impact force for IRC class A & B is given by _____.
a) $I_f = \frac{AB}{B+L}$ b) $I_f = \frac{B+L}{A}$
c) $I_f = \frac{A}{B+L}$ d) None of these

11) Total load of class AA wheeled is _____.
a) 700kN b) 400kN
c) 554kN d) 332kN

12) Braking force is assumed to act along the line parallel to roadway & _____ above it.
a) 1.2m b) 1.5m
c) 1.8m d) 2.0m

13) Solid deck slab is adopted for spans _____.
a) more than 8m b) more than 20m
c) less than 8m d) between 10-25m

14) The pier cap or abutment cap should be of minimum _____ concrete.
a) M20 grade b) M25 grade
c) M30 grade d) None one of these

SLR-GF-20

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
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Section – I

Q.2 Find the design bending moment of Two lane bridge solid deck slab for following data: **10**
a) Effective span – 7 m
b) Carriage way width – 7.5 m
c) Kerb – 600 × 275 on both side
d) Live load – IRC Class A (Two lane)
e) Wearing coat – 100 mm thick
f) Use M-25 concrete and Fe-415 steel
g) Use α = 2.82

Q.3 Answer the following.
a) What are the basic components of bridge structure? Explain with the help of sketch with their functions. **05**
b) What is economical span? Derive the equation for the same. **04**

Q.4 A RCC T beam type bridge having deck slab of 225 mm thick, wearing coat of 90 mm thick, three longitudinal girders and five cross girders. Determine the Design bending moment for all the longitudinal girders. Use following additional data. **09**
a) Carriage way width – 7.5 m
b) Span of bridge – 14 m
c) Live Load – IRC class AA Tracked
d) Kerb – 600 mm wide, 400 mm deep
e) Web thickness for Longitudinal and cross girder – 300 mm
f) Longitudinal Girder spacing – 280 mm
g) Use M-30 concrete and Fe-415 steel

Q.5 Design a slab panel having size of 3 m × 3.5 m. Consider IRC class AA tracked loading. Consider thickness of slab as 200 mm and wearing coat thickness as 80 mm. Use M-25 concrete and Fe-415 steel. Pigeuad's coefficient for DL are, m_1 = 0.049, m_2 =0.015 and Pigeuad's coefficient for LL are, m_1 = 0.085, m_2 = 0.024 **09**

Section – II

Q.6 Verify the adequacy of pier for the following data: **10**
Top width of pier - 1.7 m, Height of pier up to springing level - 7 m, C/C distance of bearing - 1.2 m, Side batter 1:12, HFL - 1.5 m below the bearing level, Span of bridge - 8 m, carriage way width - 7.5 m, Reaction due to D.L. from each span = 2000 kN, Reaction due to L.L. from each span = 600 kN, Braking force - 140 kN, wind pressure on pier - 2.4 kN/m^2. Material of pier = M20 concrete.

Estimate the maximum and minimum stress developed at the base of the pier due to critical combination of various loads for dry condition and Flood condition.

Q.7 Verify the suitability of abutment as shown in the fig 7.1 Use following data **09**
Density of soil - 19 kN/m^3, Friction angle of soil (∅) = 31°
Coefficient of friction - 0.6, Live load reaction at bearing - 350 kN, DL reaction from super structure - 2000 kN

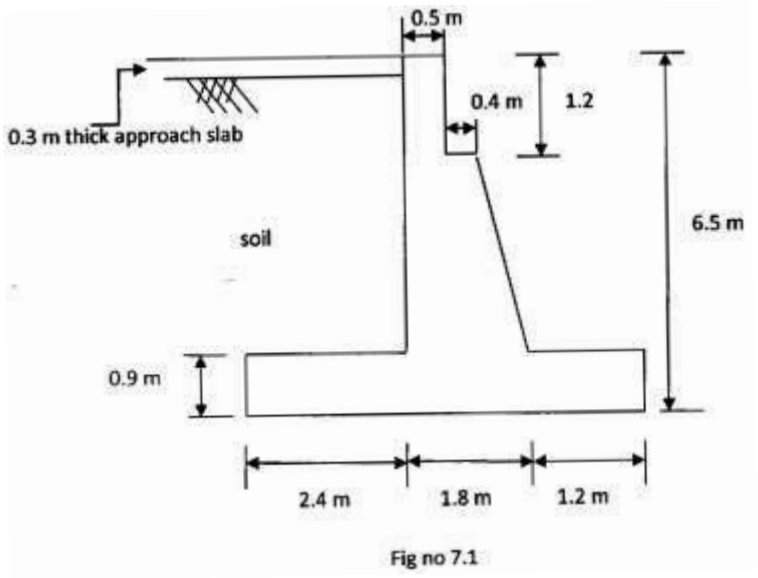

Fig no 7.1

Q.8 **a)** Design an elastomeric unreinforced bearing pad for following data **05**
Vertical load (sustained) = 195 kN
Vertical load (dynamic) = 100 kN
Horizontal force = 95 kN
Modulus of rigidity of elastomer - 1 N/mm^2
Coefficient of friction = 0.35

b) Write a note on types of expansion joints. **04**

Q.9 **Write a note on following (Any three)** **09**

a) Cantilever method of construction
b) Functions of bearing
c) Approach slab
d) Reinforced earth retaining wall
e) Types of bridge inspection

SLR-GF-20

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Impact force for IRC class A & B is given by _____.
a) $I_f = \frac{AB}{B+L}$ b) $I_f = \frac{B+L}{A}$
c) $I_f = \frac{A}{B+L}$ d) None of these

2) Total load of class AA wheeled is _____.
a) 700kN b) 400kN
c) 554kN d) 332kN

3) Braking force is assumed to act along the line parallel to roadway & _____ above it.
a) 1.2m b) 1.5m
c) 1.8m d) 2.0m

4) Solid deck slab is adopted for spans _____.
a) more than 8m b) more than 20m
c) less than 8m d) between 10-25m

5) The pier cap or abutment cap should be of minimum _____ concrete.
a) M20 grade b) M25 grade
c) M30 grade d) None one of these

6) Following is not the function of the pier cap or abutment cap _____.
a) Provides immediate bearing surface for the support of the super structure at pier and abutment location.
b) Disperses the strip load from bearing to the substructure evenly.
c) Prevent rain water from dripping down the sides and ends of the pier
d) Resist all horizontal forces acting on bridges

7) In case of urban site, suitable pier is _____.
a) Cellular pier b) Trestle pier
c) Inboard pier d) Hammerhead pier

8) Fixed bearing allow _____.
a) Rotation only
b) Translation only
c) Both rotational as well as translation
d) Restrict rotation as well as translation

9) Two span girder requires _____.
a) Fixed bearing at central support & expansion bearing at the two abutment
b) Fixed bearing at all supports
c) Expansion bearing on all supports
d) Expansion bearing at central support & Fixed bearing at the two abutment

10) Culvert is the type of bridge whose span is _____.
a) Between 6m-60m b) Above 60m
c) Less than 6m d) None of these

11) For small bridges, with open foundations, the economical span is approximately equal to _____times height of Pier.
a) 2.0 b) 1.2
c) 1.0 d) 1.5

12) Total load in case of IRC 70R tracked loading is _____.
a) 700 kN b) 710 kN
c) 1000 kN d) 554 kN

13) For spans greater than 9m, impact factor for Tracked vehicle is _____.
a) 10% b) 20%
c) 25% d) 15%

14) The ground contact length of the track of IRC class AA loading is _____.
a) 3.6m b) 4.57m
c) 3.5m d) None of these

SLR-GF-20

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (BTN01610)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Find the design bending moment of Two lane bridge solid deck slab for following data: **10**
a) Effective span – 7 m
b) Carriage way width – 7.5 m
c) Kerb – 600 × 275 on both side
d) Live load – IRC Class A (Two lane)
e) Wearing coat – 100 mm thick
f) Use M-25 concrete and Fe-415 steel
g) Use α = 2.82

Q.3 Answer the following.
a) What are the basic components of bridge structure? Explain with the help of sketch with their functions. **05**
b) What is economical span? Derive the equation for the same. **04**

Q.4 A RCC T beam type bridge having deck slab of 225 mm thick, wearing coat of 90 mm thick, three longitudinal girders and five cross girders. Determine the Design bending moment for all the longitudinal girders. Use following additional data. **09**
a) Carriage way width – 7.5 m
b) Span of bridge – 14 m
c) Live Load – IRC class AA Tracked
d) Kerb – 600 mm wide, 400 mm deep
e) Web thickness for Longitudinal and cross girder – 300 mm
f) Longitudinal Girder spacing – 280 mm
g) Use M-30 concrete and Fe-415 steel

Q.5 Design a slab panel having size of 3 m × 3.5 m. Consider IRC class AA tracked loading. Consider thickness of slab as 200 mm and wearing coat thickness as 80 mm. Use M-25 concrete and Fe-415 steel. Pigeuad's coefficient for DL are, m_1 = 0.049, m_2 =0.015 and Pigeuad's coefficient for LL are, m_1 = 0.085, m_2 = 0.024 **09**

Section – II

Q.6 Verify the adequacy of pier for the following data: **10**
Top width of pier - 1.7 m, Height of pier up to springing level - 7 m, C/C distance of bearing - 1.2 m, Side batter 1:12, HFL - 1.5 m below the bearing level, Span of bridge - 8 m, carriage way width - 7.5 m, Reaction due to D.L. from each span = 2000 kN, Reaction due to L.L. from each span = 600 kN, Braking force - 140 kN, wind pressure on pier - 2.4 kN/m^2. Material of pier = M20 concrete.

Estimate the maximum and minimum stress developed at the base of the pier due to critical combination of various loads for dry condition and Flood condition.

Q.7 Verify the suitability of abutment as shown in the fig 7.1 Use following data **09**
Density of soil - 19 kN/m^3, Friction angle of soil (∅) = 31°
Coefficient of friction - 0.6, Live load reaction at bearing - 350 kN, DL reaction from super structure - 2000 kN

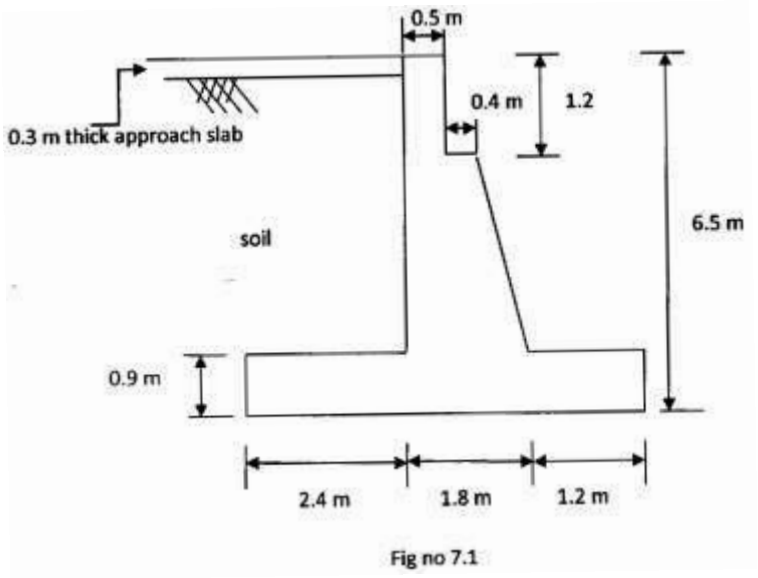

Fig no 7.1

Q.8 **a)** Design an elastomeric unreinforced bearing pad for following data **05**
Vertical load (sustained) = 195 kN
Vertical load (dynamic) = 100 kN
Horizontal force = 95 kN
Modulus of rigidity of elastomer - 1 N/mm^2
Coefficient of friction = 0.35

b) Write a note on types of expansion joints. **04**

Q.9 **Write a note on following (Any three)** **09**

a) Cantilever method of construction
b) Functions of bearing
c) Approach slab
d) Reinforced earth retaining wall
e) Types of bridge inspection

SLR-GF-23

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (BTN01613)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume any missing data suitably and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) In the ESWL concept, the total stress due to the dual wheels at any depth greater than 2S, the ESWL is considered to be equivalent to the magnitude of, _____.
a) P b) 2P
c) 0.5P d) 4P

2) In the three-layer elastic system of pavement design, what are Layer-1, 2, and 3 (From top to Bottom)?
a) Layer-1-Subgrade, Layer-2-BC and DBM and Layer-3-WMM and GSB
b) Layer-1- WMM and GSB, Layer-2-BC and DBM and Layer-3-Subgrade
c) Layer-1-Subgrade, Layer-2- WMM and GSB and Layer-3-BC and DBM
d) Layer-1-BC and DBM, Layer-2- WMM and GSB, Layer-3-Subgrade

3) What is the full form of EWLF?
a) Equivalent Weight Load Factor
b) Equivalent Wheel Load Factor
c) Equivalent Weight Larger Factor
d) Equal Weight Load Factor

4) Identify the correct statement regarding the locations of critical strains in the design of flexible pavement.
a) Tensile strain at the bottom of the subgrade and vertical compressive strain on top of the bituminous layer
b) Tensile strain at the top of the subgrade and vertical compressive strain on the bottom of the bituminous layer
c) Tensile strain at the bottom of the bituminous layer and vertical compressive strain on top of the subgrade
d) Vertical compressive strain at the bottom of the subgrade and Tensile strain at the bottom of the bituminous layer

5) The vehicle carries a rear single axle weight of 16 tonnes, what is the EWLF? (Use the fourth power rule and consider standard axle weight as 8.16 tonne)

a) 15.78 b) 14.78
c) 13.78 d) 12.78

6) Two Layer elastic layer is developed by _____.

a) Boussinesq b) Burmister
c) Telford d) John Macadam

7) In two-layer layer elastic theory E2 is considered an elastic modulus of subgrade and what is E1?

a) Elastic modulus of Granular sub-base layer
b) Elastic modulus of the base layer
c) Elastic modulus of Surface course
d) Elastic Modulus of entire flexible pavement of thickness 'h'

8) Identify the correct order of concrete pavement layers in the correct order from bottom to top.

a) GSB, Subgrade, DLC, PQC, and 125-micron Polyethylene sheet
b) 125-micron Polyethylene sheet, GSB, Subgrade, DLC and PQC
c) DLC, PQC, 125-micron Polyethylene sheet, GSB, and Subgrade
d) Subgrade, GSB, DLC, 125-micron Polyethylene sheet and PQC

9) In rigid pavement, the longitudinal joint is provided when:

a) The width of the pavement exceeds 10m
b) The width of the pavement exceeds 4.5m
c) The width of the pavement exceeds 7m
d) The width of the pavement exceeds 15m

10) Identify the three critical locations in rigid pavement _____.

a) Edge, Interior, Center b) Edge, Interior, Diagonal
c) Edge, Interior, Corner d) Edge, Interior, Middle Third

11) The modulus of the subgrade reaction is given by _____.

a) $K = \frac{P}{\Delta}$ b) $K = P \times \Delta$
c) $K = P + \Delta$ d) $K = \Delta$

12) In concrete pavement, Dry Lean Concrete (DLC) is provided at _____.

a) Top of Subgrade
b) Top of Granular Sub Base
c) Below the subgrade
d) Top of Pavement Quality Concrete (PQC)

13) What is the equivalent radius of the resisting section of a 20cm thick slab, given that the radius of the contact area is 15cm?

a) 14.07cm b) 15.07cm
c) 16.07cm d) 17.07cm

14) The tie bars are placed at _____.

a) Longitudinal joints b) Contraction Joints
c) Expansion Joints d) Construction Joints

SLR-GF-23

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (BTN01613)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume any missing data suitably and mention it clearly.

Section – I

Q.2 Answer Any Two questions. **14**

a) Draw a neat sketch of flexible pavement and show component parts of all layers. Briefly explain the function of all layers.

b) What is VDF? Determine the Equivalent Wheel Load Factor or VDF value of the following two axle loads in terms of the standard axle load of 8.16tonne.
i) LCV with a rear axle load of 2.0t
ii) HCV with a rear axle load of 15.5t

c) A flexible pavement of thickness 48cm is laid over a subgrade. A circular load of 16cm with a uniform contact pressure of 6.5kg/cm^2 is applied. Assume the elastic modulus of the subgrade as well as the pavement layer to be 900kg/cm^2. Assuming a homogenous elastic single-layer system determine the deflection of the pavement surface under the center of the load. Use the Deflection Factor chart given in Fig-I**.**

Q.4 Answer Any Two questions **14**

a) Draw a neat sketch of rigid pavement and show component parts of all layers. Briefly explain the function of all layers.

b) Find ESWL at depths of 50mm, 200mm, and 400mm for a dual wheel carrying 2044 kN each. The center-to-center tyre spacing is 200mm and the distance between the walls of the two tyres is 100mm. Use (log) equation to calculate ESWL.

c) Plate bearing tests were conducted using a 30cm diameter plate on soil subgrade and over a base course of thickness 45cm. The pressure yielded at 0.5cm deflection on the subgrade and base course was 1.25kg/cm^2 and 8kg/cm^2 respectively. Design the thickness requirement of flexible pavement for a wheel load of 5100kg with tyre pressure of 8.0kg/cm^2 for an allowable deflection of 0.5cm using the Burmister two-layer deflection factor chart shown in Fig-II.

Section – II

Q.5 Answer Any Two questions. **14**

a) What is the objective of providing dowel bars and tie bars in rigid pavement?

b) With a diagram explain the working principle of Benkelman beam for measurement of pavement deflection.

c) C.C. Pavement is constructed using the following data:

i) Modulus of elasticity 3.3 x 10^5 kg/cm^2
ii) Poisson's ratio = 0.15
iii) Thickness of CC pavement = 18 cm
iv) Modulus of subgrade reaction - 25kg/cm^3
v) Wheel load = 4100 kg
vi) Radius of loaded area = 12 cm

Calculate stresses at the Interior, Edge, and corner by Westergaard's method.

Q.6 Answer Any Two questions **14**

a) Determine the warping stresses at the interior, edge, and corner of a 25cm thick cement concrete pavement with transverse joints at 5.0m intervals and longitudinal joints at 3.6m intervals. The modulus of subgrade reaction K is 6.9kg/cm^3 and the radius of the loaded area is 15cm. Assume the temperature differential during the day to be 0.6°C per cm slab thickness (for warping stress at interior and edge) and a maximum temperature differential of 0.4°C per cm slab thickness during the night (for warping stress at the corner). Assume e = 10x10^{-6} per °C, E = 3x10^5 kg/cm^2, μ = 0.15. Use the Bradbury chart given in Figure III.

b) Write a short note (Any Two)

i) Factors affecting flexible pavement design
ii) Layered systems concepts of Pavement Design
iii) Factors Affecting Rigid Pavement Design
iv) Principles of Rigid Pavement Design as per IRC-58-2015

c) The rebound deflection values determined at 15 spots are given below. Determine the values of:

i) mean deflection
ii) standard deviation and
iii) characteristic deflection for an important highway with heavy traffic

Rebound deflection values in mm: 1.40, 1.32, 1.25, 1.35, 1.48, 1.60, 1.65, 1.55, 1.45, 1.40, 1.36, 1.46, 1.50, 1.52, 1.45

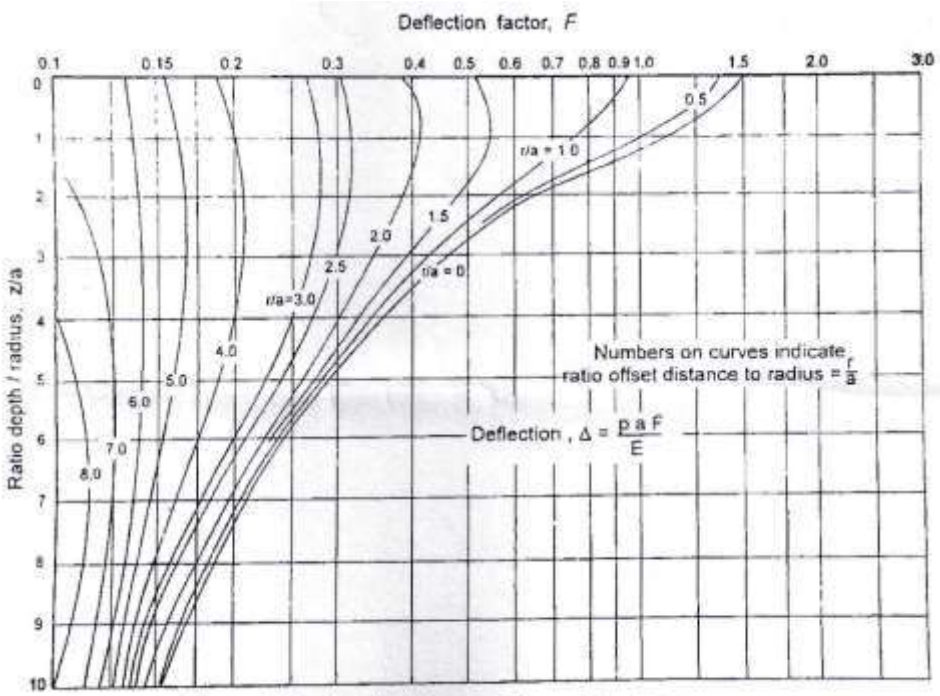

Figure-I-Deflection Factor Chart (Single Layer)

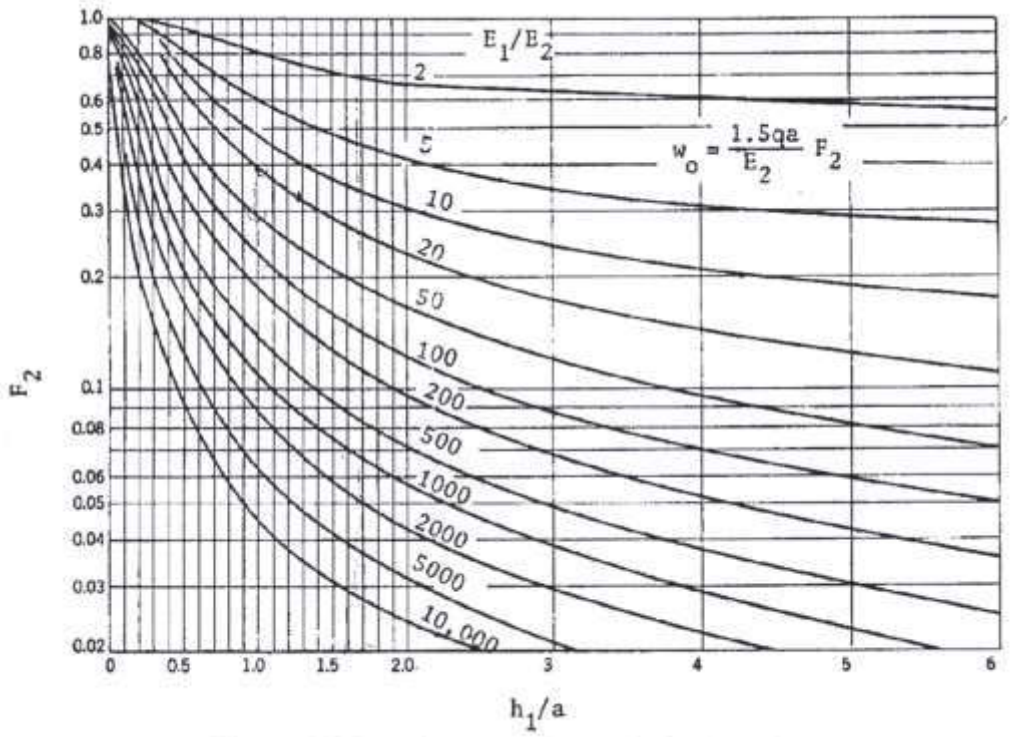

Figure-II-Burmister two-layer deflection chart

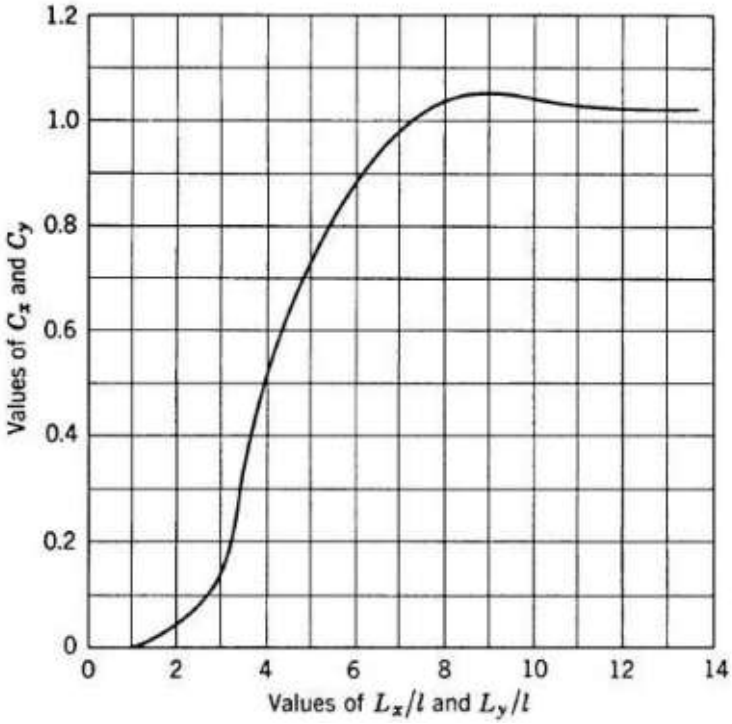

Figure III - Bradbury Chart

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (BTN01613)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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4) Assume any missing data suitably and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Identify the correct order of concrete pavement layers in the correct order from bottom to top.
a) GSB, Subgrade, DLC, PQC, and 125-micron Polyethylene sheet
b) 125-micron Polyethylene sheet, GSB, Subgrade, DLC and PQC
c) DLC, PQC, 125-micron Polyethylene sheet, GSB, and Subgrade
d) Subgrade, GSB, DLC, 125-micron Polyethylene sheet and PQC

2) In rigid pavement, the longitudinal joint is provided when:
a) The width of the pavement exceeds 10m
b) The width of the pavement exceeds 4.5m
c) The width of the pavement exceeds 7m
d) The width of the pavement exceeds 15m

3) Identify the three critical locations in rigid pavement _____.
a) Edge, Interior, Center b) Edge, Interior, Diagonal
c) Edge, Interior, Corner d) Edge, Interior, Middle Third

4) The modulus of the subgrade reaction is given by _____.
a) $K = \frac{P}{\Delta}$ b) $K = P \times \Delta$
c) $K = P + \Delta$ d) $K = \Delta$

5) In concrete pavement, Dry Lean Concrete (DLC) is provided at _____.
a) Top of Subgrade
b) Top of Granular Sub Base
c) Below the subgrade
d) Top of Pavement Quality Concrete (PQC)

6) What is the equivalent radius of the resisting section of a 20cm thick slab, given that the radius of the contact area is 15cm?
a) 14.07cm b) 15.07cm
c) 16.07cm d) 17.07cm

7) The tie bars are placed at _____.
a) Longitudinal joints b) Contraction Joints
c) Expansion Joints d) Construction Joints

8) In the ESWL concept, the total stress due to the dual wheels at any depth greater than 2S, the ESWL is considered to be equivalent to the magnitude of, _____.
a) P b) 2P
c) 0.5P d) 4P

9) In the three-layer elastic system of pavement design, what are Layer-1, 2, and 3 (From top to Bottom)?
a) Layer-1-Subgrade, Layer-2-BC and DBM and Layer-3-WMM and GSB
b) Layer-1- WMM and GSB, Layer-2-BC and DBM and Layer-3-Subgrade
c) Layer-1-Subgrade, Layer-2- WMM and GSB and Layer-3-BC and DBM
d) Layer-1-BC and DBM, Layer-2- WMM and GSB, Layer-3-Subgrade

10) What is the full form of EWLF?
a) Equivalent Weight Load Factor
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a) Tensile strain at the bottom of the subgrade and vertical compressive strain on top of the bituminous layer
b) Tensile strain at the top of the subgrade and vertical compressive strain on the bottom of the bituminous layer
c) Tensile strain at the bottom of the bituminous layer and vertical compressive strain on top of the subgrade
d) Vertical compressive strain at the bottom of the subgrade and Tensile strain at the bottom of the bituminous layer

12) The vehicle carries a rear single axle weight of 16 tonnes, what is the EWLF? (Use the fourth power rule and consider standard axle weight as 8.16 tonne)
a) 15.78 b) 14.78
c) 13.78 d) 12.78

13) Two Layer elastic layer is developed by _____.
a) Boussinesq b) Burmister
c) Telford d) John Macadam

14) In two-layer layer elastic theory E2 is considered an elastic modulus of subgrade and what is E1?
a) Elastic modulus of Granular sub-base layer
b) Elastic modulus of the base layer
c) Elastic modulus of Surface course
d) Elastic Modulus of entire flexible pavement of thickness ‘h’

SLR-GF-23

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (BTN01613)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Answer Any Two questions. **14**

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b) What is VDF? Determine the Equivalent Wheel Load Factor or VDF value of the following two axle loads in terms of the standard axle load of 8.16tonne.
i) LCV with a rear axle load of 2.0t
ii) HCV with a rear axle load of 15.5t

c) A flexible pavement of thickness 48cm is laid over a subgrade. A circular load of 16cm with a uniform contact pressure of 6.5kg/cm^2 is applied. Assume the elastic modulus of the subgrade as well as the pavement layer to be 900kg/cm^2. Assuming a homogenous elastic single-layer system determine the deflection of the pavement surface under the center of the load. Use the Deflection Factor chart given in Fig-I**.**

Q.4 Answer Any Two questions **14**

a) Draw a neat sketch of rigid pavement and show component parts of all layers. Briefly explain the function of all layers.

b) Find ESWL at depths of 50mm, 200mm, and 400mm for a dual wheel carrying 2044 kN each. The center-to-center tyre spacing is 200mm and the distance between the walls of the two tyres is 100mm. Use (log) equation to calculate ESWL.

c) Plate bearing tests were conducted using a 30cm diameter plate on soil subgrade and over a base course of thickness 45cm. The pressure yielded at 0.5cm deflection on the subgrade and base course was 1.25kg/cm^2 and 8kg/cm^2 respectively. Design the thickness requirement of flexible pavement for a wheel load of 5100kg with tyre pressure of 8.0kg/cm^2 for an allowable deflection of 0.5cm using the Burmister two-layer deflection factor chart shown in Fig-II.

Section – II

Q.5 Answer Any Two questions. **14**

a) What is the objective of providing dowel bars and tie bars in rigid pavement?

b) With a diagram explain the working principle of Benkelman beam for measurement of pavement deflection.

c) C.C. Pavement is constructed using the following data:

i) Modulus of elasticity 3.3 x 10^5 kg/cm^2
ii) Poisson's ratio = 0.15
iii) Thickness of CC pavement = 18 cm
iv) Modulus of subgrade reaction - 25kg/cm^3
v) Wheel load = 4100 kg
vi) Radius of loaded area = 12 cm

Calculate stresses at the Interior, Edge, and corner by Westergaard's method.

Q.6 Answer Any Two questions **14**

a) Determine the warping stresses at the interior, edge, and corner of a 25cm thick cement concrete pavement with transverse joints at 5.0m intervals and longitudinal joints at 3.6m intervals. The modulus of subgrade reaction K is 6.9kg/cm^3 and the radius of the loaded area is 15cm. Assume the temperature differential during the day to be 0.6°C per cm slab thickness (for warping stress at interior and edge) and a maximum temperature differential of 0.4°C per cm slab thickness during the night (for warping stress at the corner). Assume e = 10x10^{-6} per °C, E = 3x10^5 kg/cm^2, μ = 0.15. Use the Bradbury chart given in Figure III.

b) Write a short note (Any Two)

i) Factors affecting flexible pavement design
ii) Layered systems concepts of Pavement Design
iii) Factors Affecting Rigid Pavement Design
iv) Principles of Rigid Pavement Design as per IRC-58-2015

c) The rebound deflection values determined at 15 spots are given below. Determine the values of:

i) mean deflection
ii) standard deviation and
iii) characteristic deflection for an important highway with heavy traffic

Rebound deflection values in mm: 1.40, 1.32, 1.25, 1.35, 1.48, 1.60, 1.65, 1.55, 1.45, 1.40, 1.36, 1.46, 1.50, 1.52, 1.45

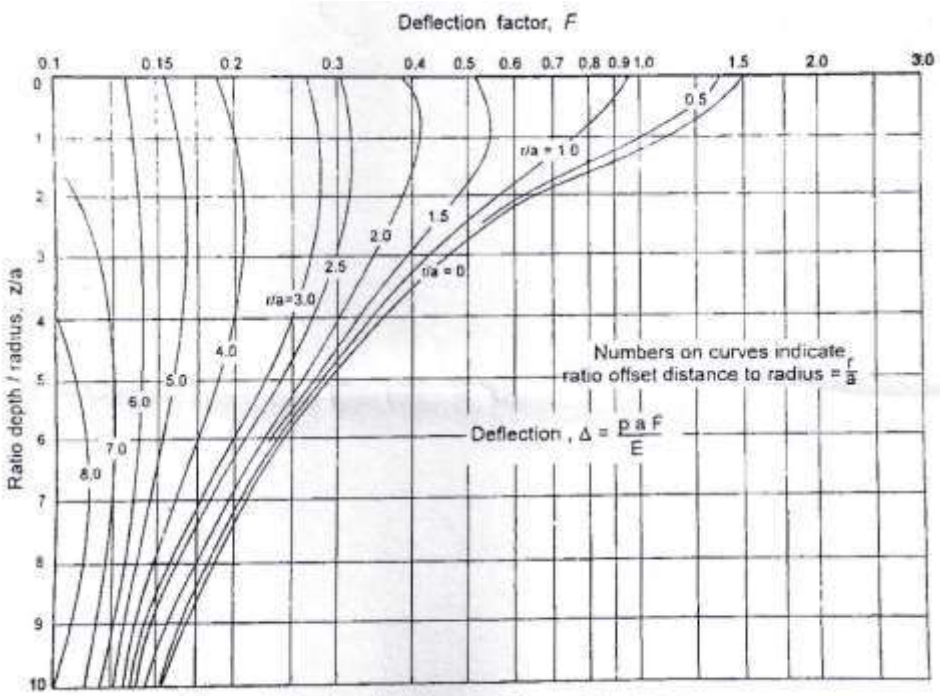

Figure-I-Deflection Factor Chart (Single Layer)

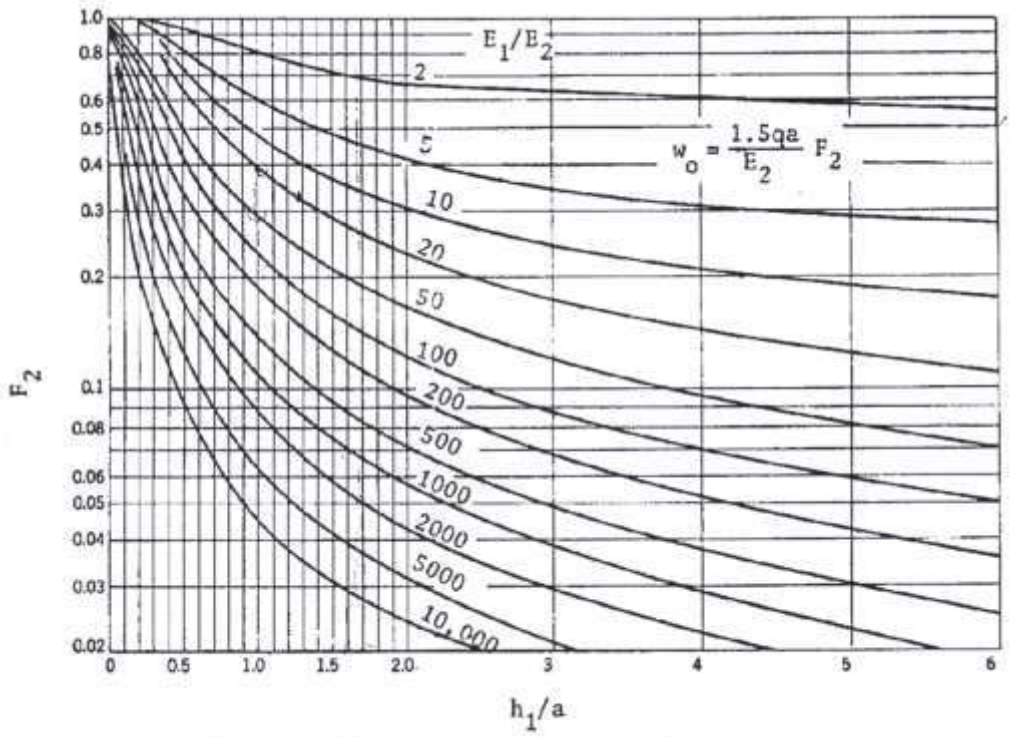

Figure-II-Burmister two-layer deflection chart

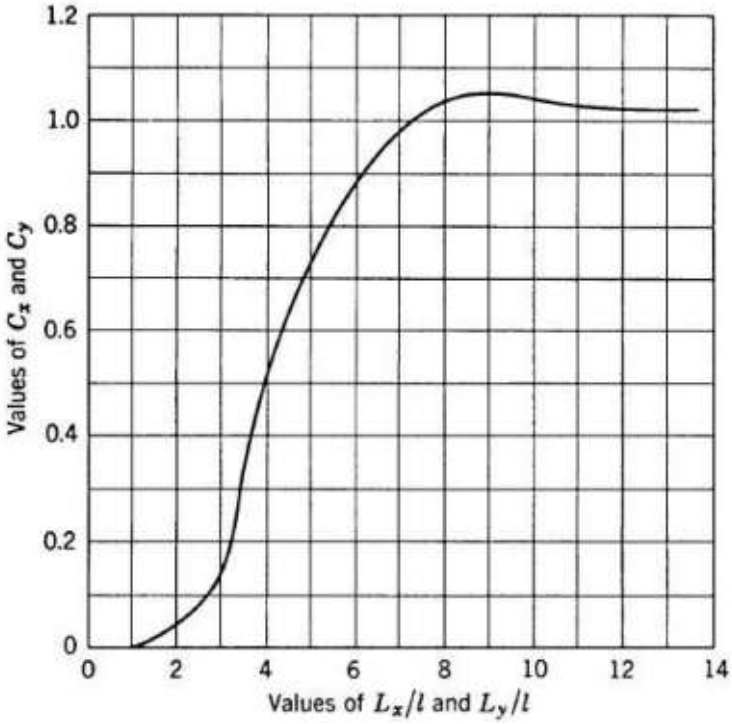

Figure III - Bradbury Chart

SLR-GF-23

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (BTN01613)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume any missing data suitably and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The modulus of the subgrade reaction is given by _____.
a) $K = \frac{P}{\Delta}$ b) $K = P \times \Delta$
c) $K = P + \Delta$ d) $K = \Delta$

2) In concrete pavement, Dry Lean Concrete (DLC) is provided at _____.
a) Top of Subgrade
b) Top of Granular Sub Base
c) Below the subgrade
d) Top of Pavement Quality Concrete (PQC)

3) What is the equivalent radius of the resisting section of a 20cm thick slab, given that the radius of the contact area is 15cm?
a) 14.07cm b) 15.07cm
c) 16.07cm d) 17.07cm

4) The tie bars are placed at _____.
a) Longitudinal joints b) Contraction Joints
c) Expansion Joints d) Construction Joints

5) In the ESWL concept, the total stress due to the dual wheels at any depth greater than 2S, the ESWL is considered to be equivalent to the magnitude of, _____.
a) P b) 2P
c) 0.5P d) 4P

6) In the three-layer elastic system of pavement design, what are Layer-1, 2, and 3 (From top to Bottom)?
a) Layer-1-Subgrade, Layer-2-BC and DBM and Layer-3-WMM and GSB
b) Layer-1- WMM and GSB, Layer-2-BC and DBM and Layer-3-Subgrade
c) Layer-1-Subgrade, Layer-2- WMM and GSB and Layer-3-BC and DBM
d) Layer-1-BC and DBM, Layer-2- WMM and GSB, Layer-3-Subgrade

7) What is the full form of EWLF?
a) Equivalent Weight Load Factor
b) Equivalent Wheel Load Factor
c) Equivalent Weight Larger Factor
d) Equal Weight Load Factor

8) Identify the correct statement regarding the locations of critical strains in the design of flexible pavement.
a) Tensile strain at the bottom of the subgrade and vertical compressive strain on top of the bituminous layer
b) Tensile strain at the top of the subgrade and vertical compressive strain on the bottom of the bituminous layer
c) Tensile strain at the bottom of the bituminous layer and vertical compressive strain on top of the subgrade
d) Vertical compressive strain at the bottom of the subgrade and Tensile strain at the bottom of the bituminous layer

9) The vehicle carries a rear single axle weight of 16 tonnes, what is the EWLF? (Use the fourth power rule and consider standard axle weight as 8.16 tonne)
a) 15.78 b) 14.78
c) 13.78 d) 12.78

10) Two Layer elastic layer is developed by _____.
a) Boussinesq b) Burmister
c) Telford d) John Macadam

11) In two-layer layer elastic theory E2 is considered an elastic modulus of subgrade and what is E1?
a) Elastic modulus of Granular sub-base layer
b) Elastic modulus of the base layer
c) Elastic modulus of Surface course
d) Elastic Modulus of entire flexible pavement of thickness ‘h’

12) Identify the correct order of concrete pavement layers in the correct order from bottom to top.
a) GSB, Subgrade, DLC, PQC, and 125-micron Polyethylene sheet
b) 125-micron Polyethylene sheet, GSB, Subgrade, DLC and PQC
c) DLC, PQC, 125-micron Polyethylene sheet, GSB, and Subgrade
d) Subgrade, GSB, DLC, 125-micron Polyethylene sheet and PQC

13) In rigid pavement, the longitudinal joint is provided when:
a) The width of the pavement exceeds 10m
b) The width of the pavement exceeds 4.5m
c) The width of the pavement exceeds 7m
d) The width of the pavement exceeds 15m

14) Identify the three critical locations in rigid pavement _____.
a) Edge, Interior, Center b) Edge, Interior, Diagonal
c) Edge, Interior, Corner d) Edge, Interior, Middle Third

SLR-GF-23

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (BTN01613)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume any missing data suitably and mention it clearly.

Section – I

Q.2 Answer Any Two questions. **14**

a) Draw a neat sketch of flexible pavement and show component parts of all layers. Briefly explain the function of all layers.

b) What is VDF? Determine the Equivalent Wheel Load Factor or VDF value of the following two axle loads in terms of the standard axle load of 8.16tonne.
i) LCV with a rear axle load of 2.0t
ii) HCV with a rear axle load of 15.5t

c) A flexible pavement of thickness 48cm is laid over a subgrade. A circular load of 16cm with a uniform contact pressure of 6.5kg/cm^2 is applied. Assume the elastic modulus of the subgrade as well as the pavement layer to be 900kg/cm^2. Assuming a homogenous elastic single-layer system determine the deflection of the pavement surface under the center of the load. Use the Deflection Factor chart given in Fig-I**.**

Q.4 Answer Any Two questions **14**

a) Draw a neat sketch of rigid pavement and show component parts of all layers. Briefly explain the function of all layers.

b) Find ESWL at depths of 50mm, 200mm, and 400mm for a dual wheel carrying 2044 kN each. The center-to-center tyre spacing is 200mm and the distance between the walls of the two tyres is 100mm. Use (log) equation to calculate ESWL.

c) Plate bearing tests were conducted using a 30cm diameter plate on soil subgrade and over a base course of thickness 45cm. The pressure yielded at 0.5cm deflection on the subgrade and base course was 1.25kg/cm^2 and 8kg/cm^2 respectively. Design the thickness requirement of flexible pavement for a wheel load of 5100kg with tyre pressure of 8.0kg/cm^2 for an allowable deflection of 0.5cm using the Burmister two-layer deflection factor chart shown in Fig-II.

Section – II

Q.5 Answer Any Two questions. **14**

a) What is the objective of providing dowel bars and tie bars in rigid pavement?

b) With a diagram explain the working principle of Benkelman beam for measurement of pavement deflection.

c) C.C. Pavement is constructed using the following data:

i) Modulus of elasticity 3.3 x 10^5 kg/cm^2
ii) Poisson's ratio = 0.15
iii) Thickness of CC pavement = 18 cm
iv) Modulus of subgrade reaction - 25kg/cm^3
v) Wheel load = 4100 kg
vi) Radius of loaded area = 12 cm

Calculate stresses at the Interior, Edge, and corner by Westergaard's method.

Q.6 Answer Any Two questions **14**

a) Determine the warping stresses at the interior, edge, and corner of a 25cm thick cement concrete pavement with transverse joints at 5.0m intervals and longitudinal joints at 3.6m intervals. The modulus of subgrade reaction K is 6.9kg/cm^3 and the radius of the loaded area is 15cm. Assume the temperature differential during the day to be 0.6°C per cm slab thickness (for warping stress at interior and edge) and a maximum temperature differential of 0.4°C per cm slab thickness during the night (for warping stress at the corner). Assume e = 10x10^{-6} per °C, E = 3x10^5 kg/cm^2, μ = 0.15. Use the Bradbury chart given in Figure III.

b) Write a short note (Any Two)

i) Factors affecting flexible pavement design
ii) Layered systems concepts of Pavement Design
iii) Factors Affecting Rigid Pavement Design
iv) Principles of Rigid Pavement Design as per IRC-58-2015

c) The rebound deflection values determined at 15 spots are given below. Determine the values of:

i) mean deflection
ii) standard deviation and
iii) characteristic deflection for an important highway with heavy traffic

Rebound deflection values in mm: 1.40, 1.32, 1.25, 1.35, 1.48, 1.60, 1.65, 1.55, 1.45, 1.40, 1.36, 1.46, 1.50, 1.52, 1.45

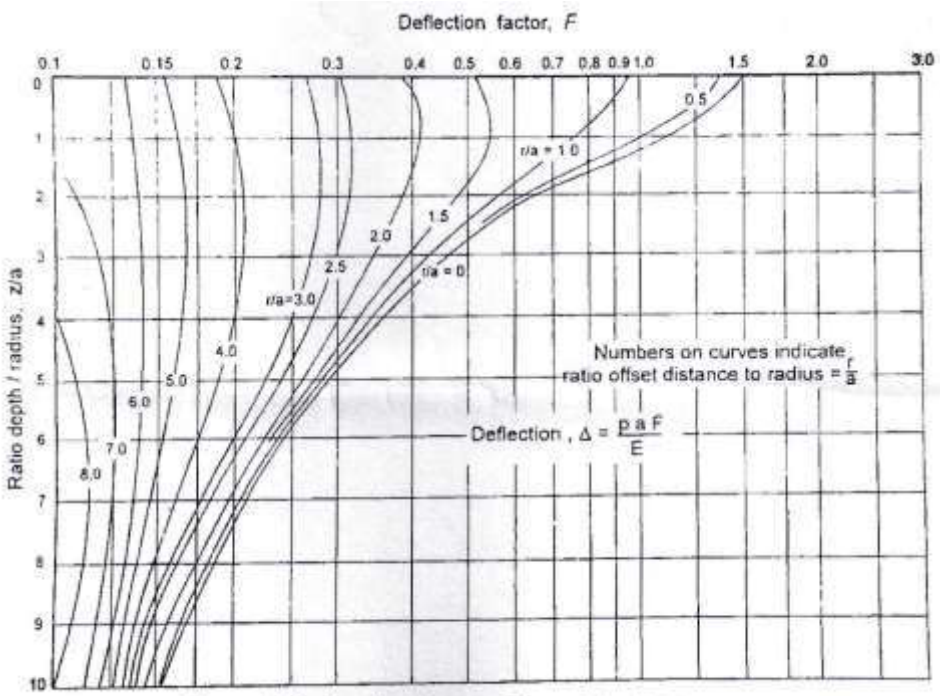

Figure-I-Deflection Factor Chart (Single Layer)

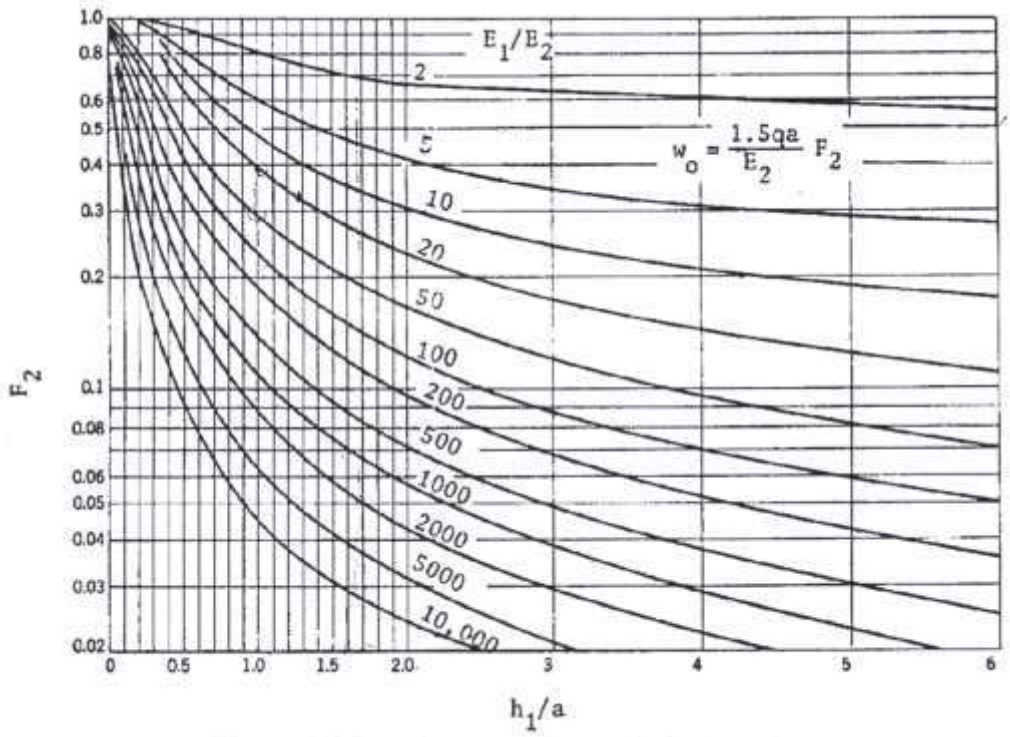

Figure-II-Burmister two-layer deflection chart

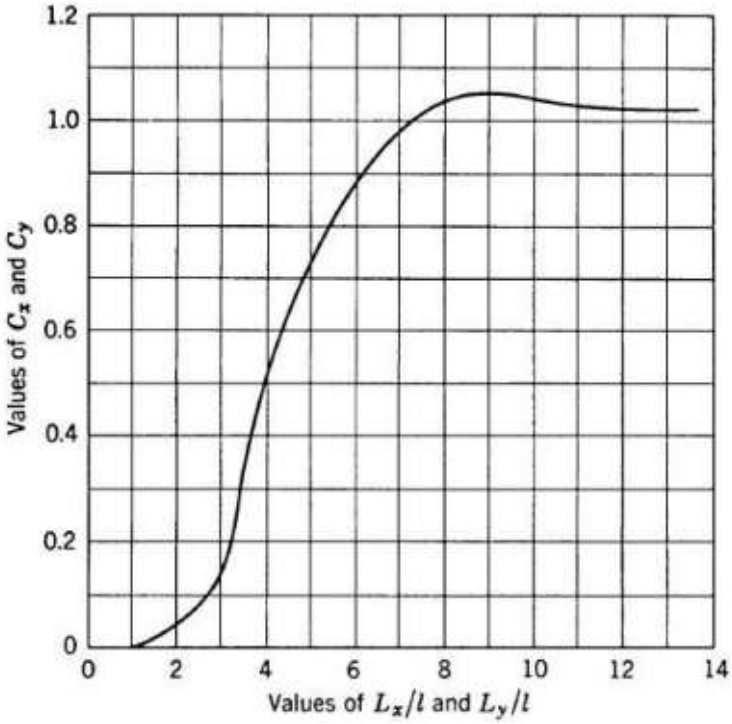

Figure III - Bradbury Chart

SLR-GF-23

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (BTN01613)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Two Layer elastic layer is developed by _____.
a) Boussinesq b) Burmister
c) Telford d) John Macadam

2) In two-layer layer elastic theory E2 is considered an elastic modulus of subgrade and what is E1?
a) Elastic modulus of Granular sub-base layer
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c) Elastic modulus of Surface course
d) Elastic Modulus of entire flexible pavement of thickness 'h'

3) Identify the correct order of concrete pavement layers in the correct order from bottom to top.
a) GSB, Subgrade, DLC, PQC, and 125-micron Polyethylene sheet
b) 125-micron Polyethylene sheet, GSB, Subgrade, DLC and PQC
c) DLC, PQC, 125-micron Polyethylene sheet, GSB, and Subgrade
d) Subgrade, GSB, DLC, 125-micron Polyethylene sheet and PQC

4) In rigid pavement, the longitudinal joint is provided when:
a) The width of the pavement exceeds 10m
b) The width of the pavement exceeds 4.5m
c) The width of the pavement exceeds 7m
d) The width of the pavement exceeds 15m

5) Identify the three critical locations in rigid pavement _____.
a) Edge, Interior, Center b) Edge, Interior, Diagonal
c) Edge, Interior, Corner d) Edge, Interior, Middle Third

6) The modulus of the subgrade reaction is given by _____.
a) $K = \frac{P}{\Delta}$ b) $K = P \times \Delta$
c) $K = P + \Delta$ d) $K = \Delta$

7) In concrete pavement, Dry Lean Concrete (DLC) is provided at _____.
a) Top of Subgrade
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c) Below the subgrade
d) Top of Pavement Quality Concrete (PQC)

8) What is the equivalent radius of the resisting section of a 20cm thick slab, given that the radius of the contact area is 15cm?
a) 14.07cm b) 15.07cm
c) 16.07cm d) 17.07cm

9) The tie bars are placed at _____.
a) Longitudinal joints b) Contraction Joints
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10) In the ESWL concept, the total stress due to the dual wheels at any depth greater than 2S, the ESWL is considered to be equivalent to the magnitude of, _____.
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11) In the three-layer elastic system of pavement design, what are Layer-1, 2, and 3 (From top to Bottom)?
a) Layer-1-Subgrade, Layer-2-BC and DBM and Layer-3-WMM and GSB
b) Layer-1- WMM and GSB, Layer-2-BC and DBM and Layer-3-Subgrade
c) Layer-1-Subgrade, Layer-2- WMM and GSB and Layer-3-BC and DBM
d) Layer-1-BC and DBM, Layer-2- WMM and GSB, Layer-3-Subgrade

12) What is the full form of EWLF?
a) Equivalent Weight Load Factor
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c) Equivalent Weight Larger Factor
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13) Identify the correct statement regarding the locations of critical strains in the design of flexible pavement.
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b) Tensile strain at the top of the subgrade and vertical compressive strain on the bottom of the bituminous layer
c) Tensile strain at the bottom of the bituminous layer and vertical compressive strain on top of the subgrade
d) Vertical compressive strain at the bottom of the subgrade and Tensile strain at the bottom of the bituminous layer

14) The vehicle carries a rear single axle weight of 16 tonnes, what is the EWLF? (Use the fourth power rule and consider standard axle weight as 8.16 tonne)
a) 15.78 b) 14.78
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SLR-GF-23

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (BTN01613)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume any missing data suitably and mention it clearly.

Section – I

Q.2 Answer Any Two questions. **14**

a) Draw a neat sketch of flexible pavement and show component parts of all layers. Briefly explain the function of all layers.

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c) A flexible pavement of thickness 48cm is laid over a subgrade. A circular load of 16cm with a uniform contact pressure of 6.5kg/cm^2 is applied. Assume the elastic modulus of the subgrade as well as the pavement layer to be 900kg/cm^2. Assuming a homogenous elastic single-layer system determine the deflection of the pavement surface under the center of the load. Use the Deflection Factor chart given in Fig-I**.**

Q.4 Answer Any Two questions **14**

a) Draw a neat sketch of rigid pavement and show component parts of all layers. Briefly explain the function of all layers.

b) Find ESWL at depths of 50mm, 200mm, and 400mm for a dual wheel carrying 2044 kN each. The center-to-center tyre spacing is 200mm and the distance between the walls of the two tyres is 100mm. Use (log) equation to calculate ESWL.

c) Plate bearing tests were conducted using a 30cm diameter plate on soil subgrade and over a base course of thickness 45cm. The pressure yielded at 0.5cm deflection on the subgrade and base course was 1.25kg/cm^2 and 8kg/cm^2 respectively. Design the thickness requirement of flexible pavement for a wheel load of 5100kg with tyre pressure of 8.0kg/cm^2 for an allowable deflection of 0.5cm using the Burmister two-layer deflection factor chart shown in Fig-II.

Section – II

Q.5 Answer Any Two questions. **14**

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b) With a diagram explain the working principle of Benkelman beam for measurement of pavement deflection.

c) C.C. Pavement is constructed using the following data:

i) Modulus of elasticity 3.3 x 10^5 kg/cm^2
ii) Poisson's ratio = 0.15
iii) Thickness of CC pavement = 18 cm
iv) Modulus of subgrade reaction - 25kg/cm^3
v) Wheel load = 4100 kg
vi) Radius of loaded area = 12 cm

Calculate stresses at the Interior, Edge, and corner by Westergaard's method.

Q.6 Answer Any Two questions **14**

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b) Write a short note (Any Two)

i) Factors affecting flexible pavement design
ii) Layered systems concepts of Pavement Design
iii) Factors Affecting Rigid Pavement Design
iv) Principles of Rigid Pavement Design as per IRC-58-2015

c) The rebound deflection values determined at 15 spots are given below. Determine the values of:

i) mean deflection
ii) standard deviation and
iii) characteristic deflection for an important highway with heavy traffic

Rebound deflection values in mm: 1.40, 1.32, 1.25, 1.35, 1.48, 1.60, 1.65, 1.55, 1.45, 1.40, 1.36, 1.46, 1.50, 1.52, 1.45

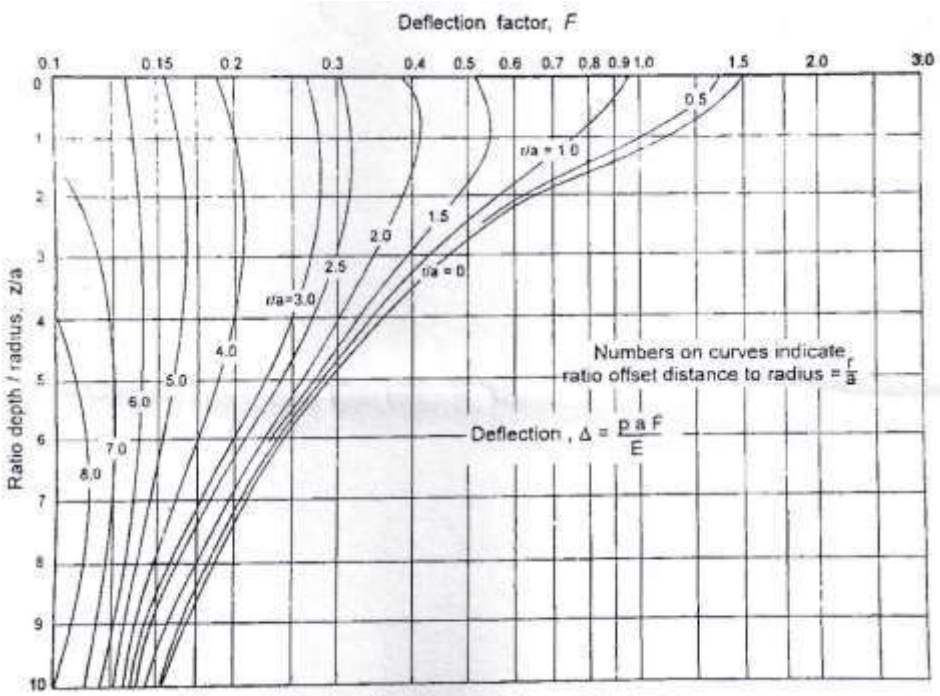

Figure-I-Deflection Factor Chart (Single Layer)

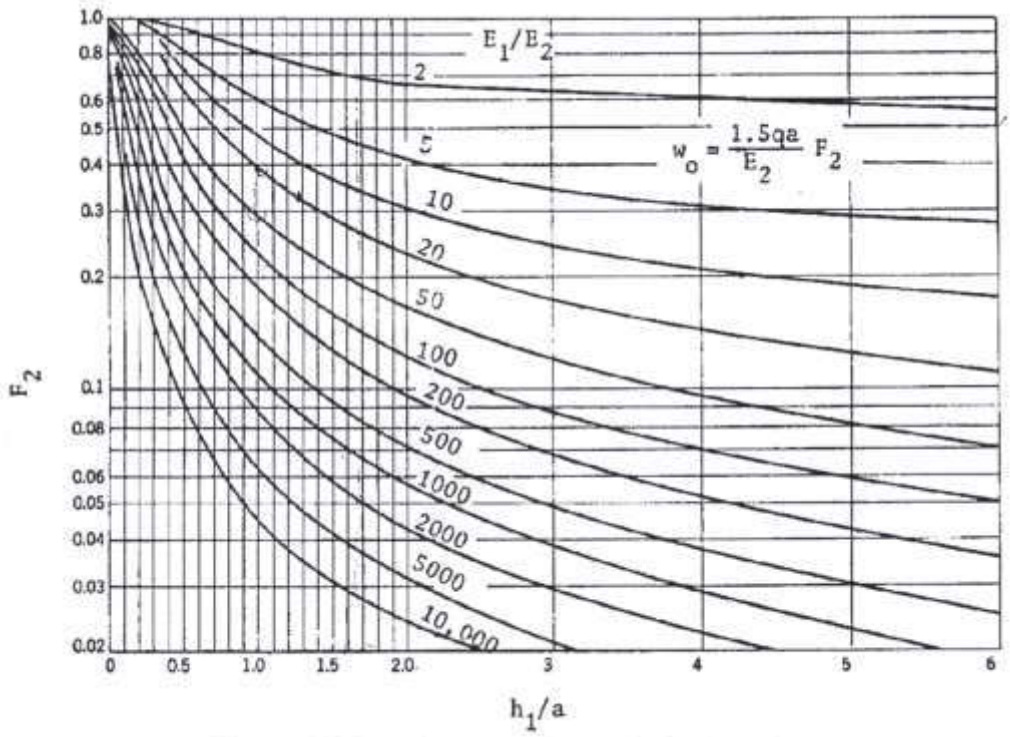

Figure-II-Burmister two-layer deflection chart

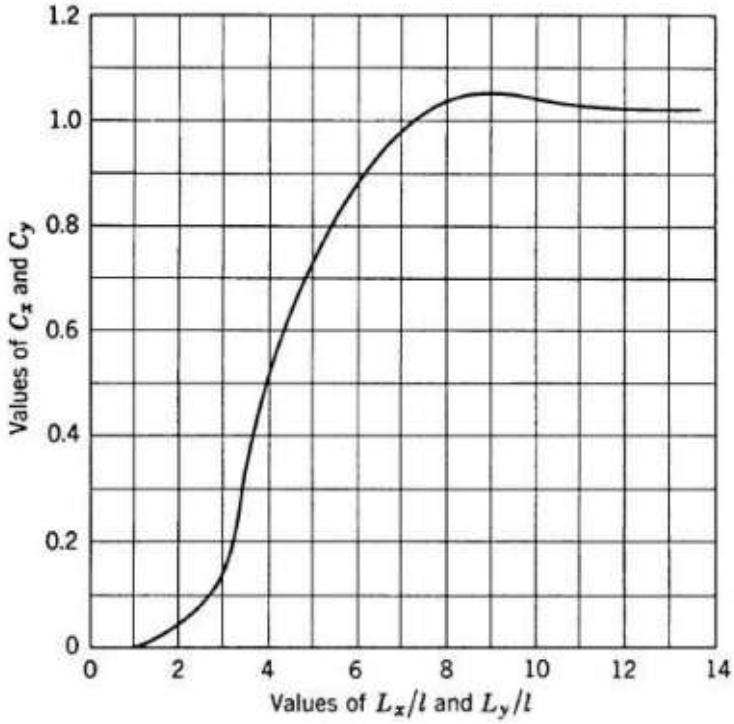

Figure III - Bradbury Chart

SLR-GF-26

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Efflorescence in cement is caused due to an excess of _____.
a) Alumina b) Alkalis
c) Silica d) None of these

2) Which of the following cement is used in sewage and water treatment plants?
a) Sulphate Resisting Cement b) Quick Setting Cement
c) Low Heat Cement d) Rapid Hardening Cement

3) What percentage of aggregates are required in concrete in terms of volume?
a) 75-85% b) 60-75%
c) 70% d) 50%

4) An example of non-destructive testing _____.
a) Ultrasonic test b) Compression test
c) Both (a) and (b) d) Neither (a) nor (b)

5) Fineness of cement is done by the sieve _____.
a) 600u b) 300u
c) 150u d) 90u

6) The workability of concrete by slump test is expressed as _____.
a) mm b) mm^2
c) mm^3 d) Unit less

7) Vicat's apparatus is used for _____.
a) Consistency test b) Fineness test
c) Strength test d) Soundness test

8) _____ cement content to avoid shrinkage cracking due to temperature cycle in mass concrete.
a) Minimum b) Nominal
c) 0.5 d) Maximum

9) Quality control helps to minimize the risks of overdesign that _____ the overall cost.

a) increases b) decrease
c) half the d) None of the above

10) Quality control of RMC can include following areas _____.

a) Forward control b) Retrospective control
c) a and b d) None of the above

11) Reduction in cement consumption by _____ % is possible in RMC due to better handling & proper mixing.

a) 5-10% b) 20-30%
c) 3-5% d) 10-12%

12) A lower W/C ratio leads to _____.

a) Higher strength & durability
b) Higher strength but lower durability
c) Lower strength but higher durability
d) Lower strength & durability

13) Testing of hard concrete can be done by _____.

a) Schmidt's Rebound hammer b) Penetration Techniques
c) Dynamic Method d) All the above

14) Pozzolana cement is used with confidence for construction of _____.

a) dams b) massive foundations
c) abutments d) All the above

Seat No.	

Set | P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Solve any two questions. **08**
- **a)** Explain briefly heat of hydration process occurred in the cement.
- **b)** Write history of cement in detail.
- **c)** Explain in detail blended cement.

Q.3 Solve any two questions. **10**
- **a)** Explain the effect using admixture in the concrete.
- **b)** Define Admixture and explain the different types of admixture in detail.
- **c)** Explain in detail fly ash, rise husk ash, silica fume.

Q.4 Solve any two questions. **10**
- **a)** Define workability and factors affecting workability.
- **b)** Explain the term segregation, bleeding, cohesion of concrete, hardness of concrete.
- **c)** Explain the effect of impermeability and particle size on concrete.

Q.5 Solve any one question. **10**
- **a)** Write a short note on special concrete explain each in details.
  - i) High performance concrete
  - ii) High strength concrete
  - iii) Fibre reinforced concrete
  - iv) Light weight concrete
- **b)** Write a short note on:
  - i) High volume fly ash concrete
  - ii) Self-compacting concrete
  - iii) Recycled concrete
  - iv) High density concrete
  - v) Radiation shielding concrete

Section – II

Q.6 Solve any two questions. **08**
- **a)** Short note on Ferrocement Concrete.
- **b)** Short note on Sprayed Concrete.
- **c)** Explain in detail Mass Concrete.

Q.7 Solve any two questions. **10**

a) Draw a neat schematic diagram of RMC Plant.

b) Short note on Ready Mix Concrete and its applications to the construction industries.

c) Explain in details different type of RMC Plants.

Q.8 Solve any two questions. **10**

a) Short note on Quality assurance.

b) Write short note on a repair technique of concrete.

c) Why and when NDT Test are performed, explain with its application.

Q.9 Solve any one question. **10**

a) Explain types of concrete vibrators. Also state the advantages and disadvantages of revibration of Concrete.

b) What is mix design? Write down design steps of concrete mix design using IS 10262:2009 methods.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) _____ cement content to avoid shrinkage cracking due to temperature cycle in mass concrete.
a) Minimum b) Nominal
c) 0.5 d) Maximum

2) Quality control helps to minimize the risks of overdesign that _____ the overall cost.
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a) Forward control b) Retrospective control
c) a and b d) None of the above

4) Reduction in cement consumption by _____ % is possible in RMC due to better handling & proper mixing.
a) 5-10% b) 20-30%
c) 3-5% d) 10-12%

5) A lower W/C ratio leads to _____.
a) Higher strength & durability
b) Higher strength but lower durability
c) Lower strength but higher durability
d) Lower strength & durability

6) Testing of hard concrete can be done by _____.
a) Schmidt's Rebound hammer b) Penetration Techniques
c) Dynamic Method d) All the above

7) Pozzolana cement is used with confidence for construction of _____.
a) dams b) massive foundations
c) abutments d) All the above

8) Efflorescence in cement is caused due to an excess of _____.
a) Alumina b) Alkalis
c) Silica d) None of these

9) Which of the following cement is used in sewage and water treatment plants?

a) Sulphate Resisting Cement b) Quick Setting Cement
c) Low Heat Cement d) Rapid Hardening Cement

10) What percentage of aggregates are required in concrete in terms of volume?

a) 75-85% b) 60-75%
c) 70% d) 50%

11) An example of non-destructive testing _____.

a) Ultrasonic test b) Compression test
c) Both (a) and (b) d) Neither (a) nor (b)

12) Fineness of cement is done by the sieve _____.

a) 600u b) 300u
c) 150u d) 90u

13) The workability of concrete by slump test is expressed as _____.

a) mm b) mm^2
c) mm^3 d) Unit less

14) Vicat's apparatus is used for _____.

a) Consistency test b) Fineness test
c) Strength test d) Soundness test

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Solve any two questions. **08**
- **a)** Explain briefly heat of hydration process occurred in the cement.
- **b)** Write history of cement in detail.
- **c)** Explain in detail blended cement.

Q.3 Solve any two questions. **10**
- **a)** Explain the effect using admixture in the concrete.
- **b)** Define Admixture and explain the different types of admixture in detail.
- **c)** Explain in detail fly ash, rise husk ash, silica fume.

Q.4 Solve any two questions. **10**
- **a)** Define workability and factors affecting workability.
- **b)** Explain the term segregation, bleeding, cohesion of concrete, hardness of concrete.
- **c)** Explain the effect of impermeability and particle size on concrete.

Q.5 Solve any one question. **10**
- **a)** Write a short note on special concrete explain each in details.
  - i) High performance concrete
  - ii) High strength concrete
  - iii) Fibre reinforced concrete
  - iv) Light weight concrete
- **b)** Write a short note on:
  - i) High volume fly ash concrete
  - ii) Self-compacting concrete
  - iii) Recycled concrete
  - iv) High density concrete
  - v) Radiation shielding concrete

Section – II

Q.6 Solve any two questions. **08**
- **a)** Short note on Ferrocement Concrete.
- **b)** Short note on Sprayed Concrete.
- **c)** Explain in detail Mass Concrete.

Q.7 Solve any two questions. **10**

a) Draw a neat schematic diagram of RMC Plant.

b) Short note on Ready Mix Concrete and its applications to the construction industries.

c) Explain in details different type of RMC Plants.

Q.8 Solve any two questions. **10**

a) Short note on Quality assurance.

b) Write short note on a repair technique of concrete.

c) Why and when NDT Test are performed, explain with its application.

Q.9 Solve any one question. **10**

a) Explain types of concrete vibrators. Also state the advantages and disadvantages of revibration of Concrete.

b) What is mix design? Write down design steps of concrete mix design using IS 10262:2009 methods.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Reduction in cement consumption by _____ % is possible in RMC due to better handling & proper mixing.
a) 5-10% b) 20-30%
c) 3-5% d) 10-12%

2) A lower W/C ratio leads to _____.
a) Higher strength & durability
b) Higher strength but lower durability
c) Lower strength but higher durability
d) Lower strength & durability

3) Testing of hard concrete can be done by _____.
a) Schmidt's Rebound hammer b) Penetration Techniques
c) Dynamic Method d) All the above

4) Pozzolana cement is used with confidence for construction of _____.
a) dams b) massive foundations
c) abutments d) All the above

5) Efflorescence in cement is caused due to an excess of _____.
a) Alumina b) Alkalis
c) Silica d) None of these

6) Which of the following cement is used in sewage and water treatment plants?
a) Sulphate Resisting Cement b) Quick Setting Cement
c) Low Heat Cement d) Rapid Hardening Cement

7) What percentage of aggregates are required in concrete in terms of volume?
a) 75-85% b) 60-75%
c) 70% d) 50%

8) An example of non-destructive testing _____.
a) Ultrasonic test b) Compression test
c) Both (a) and (b) d) Neither (a) nor (b)

9) Fineness of cement is done by the sieve _____.
a) 600u b) 300u
c) 150u d) 90u

10) The workability of concrete by slump test is expressed as _____.
a) mm b) mm^2
c) mm^3 d) Unit less

11) Vicat's apparatus is used for _____.
a) Consistency test b) Fineness test
c) Strength test d) Soundness test

12) _____ cement content to avoid shrinkage cracking due to temperature cycle in mass concrete.
a) Minimum b) Nominal
c) 0.5 d) Maximum

13) Quality control helps to minimize the risks of overdesign that _____ the overall cost.
a) increases b) decrease
c) half the d) None of the above

14) Quality control of RMC can include following areas _____.
a) Forward control b) Retrospective control
c) a and b d) None of the above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Wednesday,20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Solve any two questions. **08**
- **a)** Explain briefly heat of hydration process occurred in the cement.
- **b)** Write history of cement in detail.
- **c)** Explain in detail blended cement.

Q.3 Solve any two questions. **10**
- **a)** Explain the effect using admixture in the concrete.
- **b)** Define Admixture and explain the different types of admixture in detail.
- **c)** Explain in detail fly ash, rise husk ash, silica fume.

Q.4 Solve any two questions. **10**
- **a)** Define workability and factors affecting workability.
- **b)** Explain the term segregation, bleeding, cohesion of concrete, hardness of concrete.
- **c)** Explain the effect of impermeability and particle size on concrete.

Q.5 Solve any one question. **10**
- **a)** Write a short note on special concrete explain each in details.
  - i) High performance concrete
  - ii) High strength concrete
  - iii) Fibre reinforced concrete
  - iv) Light weight concrete
- **b)** Write a short note on:
  - i) High volume fly ash concrete
  - ii) Self-compacting concrete
  - iii) Recycled concrete
  - iv) High density concrete
  - v) Radiation shielding concrete

Section – II

Q.6 Solve any two questions. **08**
- **a)** Short note on Ferrocement Concrete.
- **b)** Short note on Sprayed Concrete.
- **c)** Explain in detail Mass Concrete.

Q.7 Solve any two questions. **10**

a) Draw a neat schematic diagram of RMC Plant.

b) Short note on Ready Mix Concrete and its applications to the construction industries.

c) Explain in details different type of RMC Plants.

Q.8 Solve any two questions. **10**

a) Short note on Quality assurance.

b) Write short note on a repair technique of concrete.

c) Why and when NDT Test are performed, explain with its application.

Q.9 Solve any one question. **10**

a) Explain types of concrete vibrators. Also state the advantages and disadvantages of revibration of Concrete.

b) What is mix design? Write down design steps of concrete mix design using IS 10262:2009 methods.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The workability of concrete by slump test is expressed as _____.
a) mm b) mm^2
c) mm^3 d) Unit less

2) Vicat's apparatus is used for _____.
a) Consistency test b) Fineness test
c) Strength test d) Soundness test

3) _____ cement content to avoid shrinkage cracking due to temperature cycle in mass concrete.
a) Minimum b) Nominal
c) 0.5 d) Maximum

4) Quality control helps to minimize the risks of overdesign that _____ the overall cost.
a) increases b) decrease
c) half the d) None of the above

5) Quality control of RMC can include following areas _____.
a) Forward control b) Retrospective control
c) a and b d) None of the above

6) Reduction in cement consumption by _____ % is possible in RMC due to better handling & proper mixing.
a) 5-10% b) 20-30%
c) 3-5% d) 10-12%

7) A lower W/C ratio leads to _____.
a) Higher strength & durability
b) Higher strength but lower durability
c) Lower strength but higher durability
d) Lower strength & durability

8) Testing of hard concrete can be done by _____.
a) Schmidt's Rebound hammer b) Penetration Techniques
c) Dynamic Method d) All the above

9) Pozzolana cement is used with confidence for construction of _____.
a) dams b) massive foundations
c) abutments d) All the above

10) Efflorescence in cement is caused due to an excess of _____.
a) Alumina b) Alkalis
c) Silica d) None of these

11) Which of the following cement is used in sewage and water treatment plants?
a) Sulphate Resisting Cement b) Quick Setting Cement
c) Low Heat Cement d) Rapid Hardening Cement

12) What percentage of aggregates are required in concrete in terms of volume?
a) 75-85% b) 60-75%
c) 70% d) 50%

13) An example of non-destructive testing _____.
a) Ultrasonic test b) Compression test
c) Both (a) and (b) d) Neither (a) nor (b)

14) Fineness of cement is done by the sieve _____.
a) 600u b) 300u
c) 150u d) 90u

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Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (BTN01616)

Day & Date: Wednesday,20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Solve any two questions. **08**
- **a)** Explain briefly heat of hydration process occurred in the cement.
- **b)** Write history of cement in detail.
- **c)** Explain in detail blended cement.

Q.3 Solve any two questions. **10**
- **a)** Explain the effect using admixture in the concrete.
- **b)** Define Admixture and explain the different types of admixture in detail.
- **c)** Explain in detail fly ash, rise husk ash, silica fume.

Q.4 Solve any two questions. **10**
- **a)** Define workability and factors affecting workability.
- **b)** Explain the term segregation, bleeding, cohesion of concrete, hardness of concrete.
- **c)** Explain the effect of impermeability and particle size on concrete.

Q.5 Solve any one question. **10**
- **a)** Write a short note on special concrete explain each in details.
  - i) High performance concrete
  - ii) High strength concrete
  - iii) Fibre reinforced concrete
  - iv) Light weight concrete
- **b)** Write a short note on:
  - i) High volume fly ash concrete
  - ii) Self-compacting concrete
  - iii) Recycled concrete
  - iv) High density concrete
  - v) Radiation shielding concrete

Section – II

Q.6 Solve any two questions. **08**
- **a)** Short note on Ferrocement Concrete.
- **b)** Short note on Sprayed Concrete.
- **c)** Explain in detail Mass Concrete.

Q.7 Solve any two questions. **10**

a) Draw a neat schematic diagram of RMC Plant.

b) Short note on Ready Mix Concrete and its applications to the construction industries.

c) Explain in details different type of RMC Plants.

Q.8 Solve any two questions. **10**

a) Short note on Quality assurance.

b) Write short note on a repair technique of concrete.

c) Why and when NDT Test are performed, explain with its application.

Q.9 Solve any one question. **10**

a) Explain types of concrete vibrators. Also state the advantages and disadvantages of revibration of Concrete.

b) What is mix design? Write down design steps of concrete mix design using IS 10262:2009 methods.

SLR-GF-27

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel flow & River Hydraulics (BTN01617)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat sketches wherever necessary.
5) Use of non-programmable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If the Froude's number is 10 then the jump is known as _____.
a) Steady b) Oscillating
c) Undular d) Strong

2) Specific force represents the sum of pressure force and _____.
a) Datum head
b) Momentum flux per unit weight
c) Momentum flux and datum head
d) None

3) The ratio of inertia force and gravitational force is called as _____.
a) Reynolds number b) Stokes number
c) Froude's number d) Euler's number

4) The ratio of Hydraulic radius and Hydraulic depth is ½ and the top width of the channel is 6m, calculate the hydraulic depth of the channel.
a) 1m b) 2m
c) 3m d) 4m

5) River plains are made up of _____.
a) Black soil b) Red soil
c) Alluvium d) None

6) Which geometric parameter determines the efficiency of the channel?
a) Hydraulic depth b) Hydraulic radius
c) Section factor d) Normal depth

7) The mean velocity in Lacey's regime channel is proportional to _____.
a) $11\ R^{1/2}S_0^{1/2}$ b) $10.8\ D^{2/3}S_0^{1/3}$
c) $11\ DS_0$ d) None

8) The momentum correction factor, β is given as _____.
a) $1/\mathrm{V}^2\mathrm{A}\int.\mathrm{V}^3.\mathrm{dA}$ b) $1/\mathrm{VA}\int.\mathrm{V}.\mathrm{dA}$
c) $1/\mathrm{V}^3\mathrm{A}\int.\mathrm{V}^2.\mathrm{dA}$ d) $1/\mathrm{V}^2\mathrm{A}\int.\mathrm{V}^2.\mathrm{dA}$

9) What type of force is completely responsible for the bed load movement?
a) Forces of Turbulence b) Drag Force
c) Capillary Force d) Gravity Force

10) Extreme condition of meanders is called as _____.
a) Leavee b) Spurs
c) Cut-off d) Island

11) Which category of river training work deals with flood control?
a) Training for Sediment b) Low Water Training
c) Training for Depth d) Training for Discharge

12) The Lacey's equation for a regime channel consists of a set of 'x' independent equation relating to flow, where 'x' is equal to _____.
a) 1 b) 3
c) 5 d) 8

13) The similarity between the motion of model and prototype is _____.
a) Dynamic similarity b) Potential similarity
c) Kinematic similarity d) Design similarity

14) Which among the following is not a criteria to achieve similitude?
a) Geometric similarity b) Kinematic similarity
c) Dynamic similarity d) Conditional similarity

SLR-GF-27

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel flow & River Hydraulics (BTN01617)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Use of non-programmable calculator is permitted.

Section – I

Q.2 Attempt any four. **16**

a) Derive the modified Gradually Varied Flow equation. Draw a neat sketch show all details.

b) Define kinetic energy correction factor (α) and momentum correction factor (β)

c) A 3.2 m wide rectangular channel conveys 14 m^3/s of water with velocity 5.0 m/s. state is there formation of hydraulic jump if yes calculate height, length and strength of Jump and what is loss of energy per kg of water.

d) Find the rate of and conveyance for a rectangular channel 7.2m wide for uniform flow at depth of 2.8 m. The channel is having bed slope as 1/1000. Take n = 0.015.

e) Define Hydraulic jump and classify it on the basis of Froude's number.

Q.3 Attempt any two. **12**

a) What is specific energy curve? Draw a neat sketch and show all details.

b) A discharge of 700 m^3/s flows down a spillway and then passes on a 70 m. Wide concrete apron (n = 0.015) the velocity of water at the toe of spillway is 8.5 m/s. A tail water depth of 4.20 m the channel below causes a hydraulic jump on the horizontal apron. Determine
1) Depth before the jump
2) Length of jump
3) Energy loss in jump
4) Specific force at the toe

c) What do you understand by most economical channel section? Derive most economical trapezoidal channel section.

Section – II

Q.4 Attempt any four **16**

a) Explain
   1) Regime channel
   2) Meandering of river

b) Enlist methods of River gauging and explain any one of it.

c) Derive 'Froude's model law' for model and state giving examples where it can be used?

d) What do you understand by River training works? What are its types?

e) A model of water meter is tested in 100 mm diameter pipe. The discharge was 60 lit/sec and pressure difference is 0.15 N/mm^2. What will be the discharge in pipe of 500 mm diameter pipe and what will be the pressure.

Q.5 Attempt any TWO **12**

a) Draw a neat sketch of current meter and explain its working in details.

b) Write procedure for Kennedy's theory for the design of channel.

c) Design a regime channel by using Lacey's theory from the data, discharge = $60 m^3/s$ and silt factor = 1.14

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel flow & River Hydraulics (BTN01617)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat sketches wherever necessary.
5) Use of non-programmable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The momentum correction factor, β is given as _____.
a) $1/V^2A\int.V^3.dA$ b) $1/VA\int.V.dA$
c) $1/V^3A\int.V^2.dA$ d) $1/V^2A\int.V^2.dA$

2) What type of force is completely responsible for the bed load movement?
a) Forces of Turbulence b) Drag Force
c) Capillary Force d) Gravity Force

3) Extreme condition of meanders is called as _____.
a) Leavee b) Spurs
c) Cut-off d) Island

4) Which category of river training work deals with flood control?
a) Training for Sediment b) Low Water Training
c) Training for Depth d) Training for Discharge

5) The Lacey's equation for a regime channel consists of a set of 'x' independent equation relating to flow, where 'x' is equal to _____.
a) 1 b) 3
c) 5 d) 8

6) The similarity between the motion of model and prototype is _____.
a) Dynamic similarity b) Potential similarity
c) Kinematic similarity d) Design similarity

7) Which among the following is not a criteria to achieve similitude?
a) Geometric similarity b) Kinematic similarity
c) Dynamic similarity d) Conditional similarity

8) If the Froude's number is 10 then the jump is known as _____.
a) Steady b) Oscillating
c) Undular d) Strong

9) Specific force represents the sum of pressure force and _____.
a) Datum head
b) Momentum flux per unit weight
c) Momentum flux and datum head
d) None

10) The ratio of inertia force and gravitational force is called as _____.
a) Reynolds number b) Stokes number
c) Froude's number d) Euler's number

11) The ratio of Hydraulic radius and Hydraulic depth is ½ and the top width of the channel is 6m, calculate the hydraulic depth of the channel.
a) 1m b) 2m
c) 3m d) 4m

12) River plains are made up of _____.
a) Black soil b) Red soil
c) Alluvium d) None

13) Which geometric parameter determines the efficiency of the channel?
a) Hydraulic depth b) Hydraulic radius
c) Section factor d) Normal depth

14) The mean velocity in Lacey's regime channel is proportional to _____.
a) $11\ \mathrm{R}^{1/2}\mathrm{S}_0^{1/2}$ b) $10.8\ \mathrm{D}^{2/3}\mathrm{S}_0^{1/3}$
c) $11\ \mathrm{DS}_0$ d) None

SLR-GF-27

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel flow & River Hydraulics (BTN01617)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Use of non-programmable calculator is permitted.

Section – I

Q.2 Attempt any four. **16**

a) Derive the modified Gradually Varied Flow equation. Draw a neat sketch show all details.

b) Define kinetic energy correction factor (α) and momentum correction factor (β)

c) A 3.2 m wide rectangular channel conveys 14 m^3/s of water with velocity 5.0 m/s. state is there formation of hydraulic jump if yes calculate height, length and strength of Jump and what is loss of energy per kg of water.

d) Find the rate of and conveyance for a rectangular channel 7.2m wide for uniform flow at depth of 2.8 m. The channel is having bed slope as 1/1000. Take n = 0.015.

e) Define Hydraulic jump and classify it on the basis of Froude's number.

Q.3 Attempt any two. **12**

a) What is specific energy curve? Draw a neat sketch and show all details.

b) A discharge of 700 m^3/s flows down a spillway and then passes on a 70 m. Wide concrete apron (n = 0.015) the velocity of water at the toe of spillway is 8.5 m/s. A tail water depth of 4.20 m the channel below causes a hydraulic jump on the horizontal apron. Determine
1) Depth before the jump
2) Length of jump
3) Energy loss in jump
4) Specific force at the toe

c) What do you understand by most economical channel section? Derive most economical trapezoidal channel section.

Section – II

Q.4 Attempt any four **16**

a) Explain
   1) Regime channel
   2) Meandering of river

b) Enlist methods of River gauging and explain any one of it.

c) Derive 'Froude's model law' for model and state giving examples where it can be used?

d) What do you understand by River training works? What are its types?

e) A model of water meter is tested in 100 mm diameter pipe. The discharge was 60 lit/sec and pressure difference is 0.15 N/mm^2. What will be the discharge in pipe of 500 mm diameter pipe and what will be the pressure.

Q.5 Attempt any TWO **12**

a) Draw a neat sketch of current meter and explain its working in details.

b) Write procedure for Kennedy's theory for the design of channel.

c) Design a regime channel by using Lacey's theory from the data, discharge = $60 m^3/s$ and silt factor = 1.14

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel flow & River Hydraulics (BTN01617)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat sketches wherever necessary.
5) Use of non-programmable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which category of river training work deals with flood control?
a) Training for Sediment b) Low Water Training
c) Training for Depth d) Training for Discharge

2) The Lacey's equation for a regime channel consists of a set of 'x' independent equation relating to flow, where 'x' is equal to _____.
a) 1 b) 3
c) 5 d) 8

3) The similarity between the motion of model and prototype is _____.
a) Dynamic similarity b) Potential similarity
c) Kinematic similarity d) Design similarity

4) Which among the following is not a criteria to achieve similitude?
a) Geometric similarity b) Kinematic similarity
c) Dynamic similarity d) Conditional similarity

5) If the Froude's number is 10 then the jump is known as _____.
a) Steady b) Oscillating
c) Undular d) Strong

6) Specific force represents the sum of pressure force and _____.
a) Datum head
b) Momentum flux per unit weight
c) Momentum flux and datum head
d) None

7) The ratio of inertia force and gravitational force is called as _____.
a) Reynolds number b) Stokes number
c) Froude's number d) Euler's number

8) The ratio of Hydraulic radius and Hydraulic depth is ½ and the top width of the channel is 6m, calculate the hydraulic depth of the channel.
a) 1m b) 2m
c) 3m d) 4m

9) River plains are made up of _____.
a) Black soil b) Red soil
c) Alluvium d) None

10) Which geometric parameter determines the efficiency of the channel?
a) Hydraulic depth b) Hydraulic radius
c) Section factor d) Normal depth

11) The mean velocity in Lacey's regime channel is proportional to _____.
a) $11\ \mathrm{R}^{1/2}\mathrm{S}_0^{1/2}$ b) $10.8\ \mathrm{D}^{2/3}\mathrm{S}_0^{1/3}$
c) $11\ \mathrm{DS}_0$ d) None

12) The momentum correction factor, β is given as _____.
a) $1/\mathrm{V}^2\mathrm{A}\int.\mathrm{V}^3.\mathrm{dA}$ b) $1/\mathrm{VA}\int.\mathrm{V}.\mathrm{dA}$
c) $1/\mathrm{V}^3\mathrm{A}\int.\mathrm{V}^2.\mathrm{dA}$ d) $1/\mathrm{V}^2\mathrm{A}\int.\mathrm{V}^2.\mathrm{dA}$

13) What type of force is completely responsible for the bed load movement?
a) Forces of Turbulence b) Drag Force
c) Capillary Force d) Gravity Force

14) Extreme condition of meanders is called as _____.
a) Leavee b) Spurs
c) Cut-off d) Island

SLR-GF-27

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel flow & River Hydraulics (BTN01617)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Use of non-programmable calculator is permitted.

Section – I

Q.2 Attempt any four. **16**

a) Derive the modified Gradually Varied Flow equation. Draw a neat sketch show all details.

b) Define kinetic energy correction factor (α) and momentum correction factor (β)

c) A 3.2 m wide rectangular channel conveys 14 m^3/s of water with velocity 5.0 m/s. state is there formation of hydraulic jump if yes calculate height, length and strength of Jump and what is loss of energy per kg of water.

d) Find the rate of and conveyance for a rectangular channel 7.2m wide for uniform flow at depth of 2.8 m. The channel is having bed slope as 1/1000. Take n = 0.015.

e) Define Hydraulic jump and classify it on the basis of Froude's number.

Q.3 Attempt any two. **12**

a) What is specific energy curve? Draw a neat sketch and show all details.

b) A discharge of 700 m^3/s flows down a spillway and then passes on a 70 m. Wide concrete apron (n = 0.015) the velocity of water at the toe of spillway is 8.5 m/s. A tail water depth of 4.20 m the channel below causes a hydraulic jump on the horizontal apron. Determine
1) Depth before the jump
2) Length of jump
3) Energy loss in jump
4) Specific force at the toe

c) What do you understand by most economical channel section? Derive most economical trapezoidal channel section.

Section – II

Q.4 Attempt any four **16**

a) Explain
   1) Regime channel
   2) Meandering of river

b) Enlist methods of River gauging and explain any one of it.

c) Derive 'Froude's model law' for model and state giving examples where it can be used?

d) What do you understand by River training works? What are its types?

e) A model of water meter is tested in 100 mm diameter pipe. The discharge was 60 lit/sec and pressure difference is 0.15 N/mm^2. What will be the discharge in pipe of 500 mm diameter pipe and what will be the pressure.

Q.5 Attempt any TWO **12**

a) Draw a neat sketch of current meter and explain its working in details.

b) Write procedure for Kennedy's theory for the design of channel.

c) Design a regime channel by using Lacey's theory from the data, discharge = $60 m^3/s$ and silt factor = 1.14

SLR-GF-27

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel flow & River Hydraulics (BTN01617)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat sketches wherever necessary.
5) Use of non-programmable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which geometric parameter determines the efficiency of the channel?
a) Hydraulic depth b) Hydraulic radius
c) Section factor d) Normal depth

2) The mean velocity in Lacey's regime channel is proportional to _____.
a) $11\ R^{1/2}S_0^{1/2}$ b) $10.8\ D^{2/3}S_0^{1/3}$
c) $11\ DS_0$ d) None

3) The momentum correction factor, β is given as _____.
a) $1/V^2A\int.V^3.dA$ b) $1/VA\int.V.dA$
c) $1/V^3A\int.V^2.dA$ d) $1/V^2A\int.V^2.dA$

4) What type of force is completely responsible for the bed load movement?
a) Forces of Turbulence b) Drag Force
c) Capillary Force d) Gravity Force

5) Extreme condition of meanders is called as _____.
a) Leavee b) Spurs
c) Cut-off d) Island

6) Which category of river training work deals with flood control?
a) Training for Sediment b) Low Water Training
c) Training for Depth d) Training for Discharge

7) The Lacey's equation for a regime channel consists of a set of 'x' independent equation relating to flow, where 'x' is equal to _____.
a) 1 b) 3
c) 5 d) 8

8) The similarity between the motion of model and prototype is _____.
a) Dynamic similarity b) Potential similarity
c) Kinematic similarity d) Design similarity

9) Which among the following is not a criteria to achieve similitude?
a) Geometric similarity b) Kinematic similarity
c) Dynamic similarity d) Conditional similarity

10) If the Froude's number is 10 then the jump is known as _____.
a) Steady b) Oscillating
c) Undular d) Strong

11) Specific force represents the sum of pressure force and _____.
a) Datum head
b) Momentum flux per unit weight
c) Momentum flux and datum head
d) None

12) The ratio of inertia force and gravitational force is called as _____.
a) Reynolds number b) Stokes number
c) Froude's number d) Euler's number

13) The ratio of Hydraulic radius and Hydraulic depth is ½ and the top width of the channel is 6m, calculate the hydraulic depth of the channel.
a) 1m b) 2m
c) 3m d) 4m

14) River plains are made up of _____.
a) Black soil b) Red soil
c) Alluvium d) None

SLR-GF-27

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel flow & River Hydraulics (BTN01617)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Use of non-programmable calculator is permitted.

Section – I

Q.2 Attempt any four. **16**

a) Derive the modified Gradually Varied Flow equation. Draw a neat sketch show all details.

b) Define kinetic energy correction factor (α) and momentum correction factor (β)

c) A 3.2 m wide rectangular channel conveys 14 m^3/s of water with velocity 5.0 m/s. state is there formation of hydraulic jump if yes calculate height, length and strength of Jump and what is loss of energy per kg of water.

d) Find the rate of and conveyance for a rectangular channel 7.2m wide for uniform flow at depth of 2.8 m. The channel is having bed slope as 1/1000. Take n = 0.015.

e) Define Hydraulic jump and classify it on the basis of Froude's number.

Q.3 Attempt any two. **12**

a) What is specific energy curve? Draw a neat sketch and show all details.

b) A discharge of 700 m^3/s flows down a spillway and then passes on a 70 m. Wide concrete apron (n = 0.015) the velocity of water at the toe of spillway is 8.5 m/s. A tail water depth of 4.20 m the channel below causes a hydraulic jump on the horizontal apron. Determine
1) Depth before the jump
2) Length of jump
3) Energy loss in jump
4) Specific force at the toe

c) What do you understand by most economical channel section? Derive most economical trapezoidal channel section.

Section – II

Q.4 Attempt any four **16**

a) Explain
   1) Regime channel
   2) Meandering of river

b) Enlist methods of River gauging and explain any one of it.

c) Derive 'Froude's model law' for model and state giving examples where it can be used?

d) What do you understand by River training works? What are its types?

e) A model of water meter is tested in 100 mm diameter pipe. The discharge was 60 lit/sec and pressure difference is 0.15 N/mm^2. What will be the discharge in pipe of 500 mm diameter pipe and what will be the pressure.

Q.5 Attempt any TWO **12**

a) Draw a neat sketch of current meter and explain its working in details.

b) Write procedure for Kennedy's theory for the design of channel.

c) Design a regime channel by using Lacey's theory from the data, discharge = $60 m^3/s$ and silt factor = 1.14

SLR-GF-28

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) According to CPCB the major criteria considered for selection of technologies are _____.
a) Waste quantity b) Chemical analysis
c) Lead content d) Mercury content

2) E- Waste Handling rule was enacted in year _____.
a) 2011 b) 2012
c) 2015 d) 2018

3) The goal of Hazardous Waste Management Unit is _____.
a) Protect health and environment by risks of HW
b) Chemical Analysis
c) Import
d) Export

4) M R F's term in SWM is used for _____.
a) Major relief funds b) Material recovery facilities
c) Minimum raw food d) None of the above

5) Characteristics of hazardous waste includes _____.
a) Ignitibility b) Reactivity
c) Both of the above d) None of the above

6) Separation, processing of solid waste are used to reduce _____.
a) Volume of S.W. b) Weight of S.W.
c) Both a) and b) d) None of these

7) What is the normal storage time of incinerable hazardous waste at the incinerator site?
a) 4 months b) 5 months
c) 6 months d) 7 months

8) Hazard identification mainly focus on _____.
a) Chemical Analysis
b) Chemical source and concentration
c) Chemical exposure
d) Chemical pathway

9) Which of the following is the most important variable in the construction of soil liners?

a) Type of compaction b) Permeability
c) Flammability d) Ignitability

10) Who is responsible for safe disposal of the generated hazardous waste_____.

a) Generator b) Receiver
c) Waste facility d) TSDF

11) Biomedical wastes and management rules was implemented in year _____.

a) 1980 b) 1998
c) 2000 d) 2016

12) The pyrolysis process of SWM is _____ in nature.

a) Endothermic b) Exothermic
c) Herothermic d) None of the above

13) Removing all wastes from the waste management unit and decontaminate or remove all equipment is known as _____ closure.

a) Partial b) Full
c) Clean d) Decontaminate

14) What is the first stage of risk assessment?

a) Exposure assessment b) Hazard identification
c) Toxicity study d) Risk characterization

SLR-GF-28

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 from section I and Q. No. 6 from section II is compulsory. Solve any two from remaining questions each from Section I and Section II.
2) Figures to right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 a) Estimate the moisture content of solid waste sample of 100 kg using the following data. **05**

Sr. No.	Component	% by mass	Moisture content (%)
1	Food waste	12	70
2	Paper	38	07
3	Cardboards	05	05
4	Plastic	10	08
5	Grass	12	56
6	Wood	08	04
7	Metals	15	05

b) Write a note on waste minimization and resource recovery. **05**

Q.3 a) Explain the importance of Planning and Organization in Solid Waste Management. **05**
b) Explain the General Provision of Law for specific categories of waste collected by Municipal Authorities. **04**

Q.4 a) Explain the TCLP procedure in detail. **05**
b) Explain methodology of incineration with the help of flow sheet diagram. **04**

Q.5 a) Explain SWM rules in detail. **05**
b) Explain Chemical characteristics of solid waste in detail. **04**

Section – II

Q.6 a) Explain various types of hazards using practical examples. **05**
b) Explain the geomorphological hazards. **05**

Q.7 a) Analyse the risk assessment plan in case of earthquake. **05**
b) Discus various qualitative assessments of damage. **04**

Q.8	**a)**	Explain treatment methods of biomedical waste.	**05**
	b)	Elucidate characteristics of hazardous waste using examples.	**04**
Q.9	**a)**	Explain biological degradation phases in the Landfill.	**05**
	b)	With the help of neat diagram, explain the working of engineering landfill.	**04**

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Hazard identification mainly focus on _____.
a) Chemical Analysis
b) Chemical source and concentration
c) Chemical exposure
d) Chemical pathway

2) Which of the following is the most important variable in the construction of soil liners?
a) Type of compaction b) Permeability
c) Flammability d) Ignitability

3) Who is responsible for safe disposal of the generated hazardous waste_____.
a) Generator b) Receiver
c) Waste facility d) TSDF

4) Biomedical wastes and management rules was implemented in year _____.
a) 1980 b) 1998
c) 2000 d) 2016

5) The pyrolysis process of SWM is _____ in nature.
a) Endothermic b) Exothermic
c) Herothermic d) None of the above

6) Removing all wastes from the waste management unit and decontaminate or remove all equipment is known as _____ closure.
a) Partial b) Full
c) Clean d) Decontaminate

7) What is the first stage of risk assessment?
a) Exposure assessment b) Hazard identification
c) Toxicity study d) Risk characterization

8) According to CPCB the major criteria considered for selection of technologies are _____.
a) Waste quantity b) Chemical analysis
c) Lead content d) Mercury content

9) E- Waste Handling rule was enacted in year _____.
a) 2011 b) 2012
c) 2015 d) 2018

10) The goal of Hazardous Waste Management Unit is _____.
a) Protect health and environment by risks of HW
b) Chemical Analysis
c) Import
d) Export

11) M R F's term in SWM is used for _____.
a) Major relief funds b) Material recovery facilities
c) Minimum raw food d) None of the above

12) Characteristics of hazardous waste includes _____.
a) Ignitibility b) Reactivity
c) Both of the above d) None of the above

13) Separation, processing of solid waste are used to reduce _____.
a) Volume of S.W. b) Weight of S.W.
c) Both a) and b) d) None of these

14) What is the normal storage time of incinerable hazardous waste at the incinerator site?
a) 4 months b) 5 months
c) 6 months d) 7 months

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Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 from section I and Q. No. 6 from section II is compulsory. Solve any two from remaining questions each from Section I and Section II.
2) Figures to right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 a) Estimate the moisture content of solid waste sample of 100 kg using the following data. **05**

Sr. No.	Component	% by mass	Moisture content (%)
1	Food waste	12	70
2	Paper	38	07
3	Cardboards	05	05
4	Plastic	10	08
5	Grass	12	56
6	Wood	08	04
7	Metals	15	05

b) Write a note on waste minimization and resource recovery. **05**

Q.3 a) Explain the importance of Planning and Organization in Solid Waste Management. **05**
b) Explain the General Provision of Law for specific categories of waste collected by Municipal Authorities. **04**

Q.4 a) Explain the TCLP procedure in detail. **05**
b) Explain methodology of incineration with the help of flow sheet diagram. **04**

Q.5 a) Explain SWM rules in detail. **05**
b) Explain Chemical characteristics of solid waste in detail. **04**

Section – II

Q.6 a) Explain various types of hazards using practical examples. **05**
b) Explain the geomorphological hazards. **05**

Q.7 a) Analyse the risk assessment plan in case of earthquake. **05**
b) Discus various qualitative assessments of damage. **04**

Q.8	**a)**	Explain treatment methods of biomedical waste.	**05**
	b)	Elucidate characteristics of hazardous waste using examples.	**04**
Q.9	**a)**	Explain biological degradation phases in the Landfill.	**05**
	b)	With the help of neat diagram, explain the working of engineering landfill.	**04**

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Biomedical wastes and management rules was implemented in year _____.
a) 1980 b) 1998
c) 2000 d) 2016

2) The pyrolysis process of SWM is _____ in nature.
a) Endothermic b) Exothermic
c) Herothermic d) None of the above

3) Removing all wastes from the waste management unit and decontaminate or remove all equipment is known as _____ closure.
a) Partial b) Full
c) Clean d) Decontaminate

4) What is the first stage of risk assessment?
a) Exposure assessment b) Hazard identification
c) Toxicity study d) Risk characterization

5) According to CPCB the major criteria considered for selection of technologies are _____.
a) Waste quantity b) Chemical analysis
c) Lead content d) Mercury content

6) E- Waste Handling rule was enacted in year _____.
a) 2011 b) 2012
c) 2015 d) 2018

7) The goal of Hazardous Waste Management Unit is _____.
a) Protect health and environment by risks of HW
b) Chemical Analysis
c) Import
d) Export

8) M R F's term in SWM is used for _____.
a) Major relief funds b) Material recovery facilities
c) Minimum raw food d) None of the above

9) Characteristics of hazardous waste includes _____.
a) Ignitibility b) Reactivity
c) Both of the above d) None of the above

10) Separation, processing of solid waste are used to reduce _____.
a) Volume of S.W. b) Weight of S.W.
c) Both a) and b) d) None of these

11) What is the normal storage time of incinerable hazardous waste at the incinerator site?
a) 4 months b) 5 months
c) 6 months d) 7 months

12) Hazard identification mainly focus on _____.
a) Chemical Analysis
b) Chemical source and concentration
c) Chemical exposure
d) Chemical pathway

13) Which of the following is the most important variable in the construction of soil liners?
a) Type of compaction b) Permeability
c) Flammability d) Ignitability

14) Who is responsible for safe disposal of the generated hazardous waste_____.
a) Generator b) Receiver
c) Waste facility d) TSDF

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Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 a) Estimate the moisture content of solid waste sample of 100 kg using the following data. **05**

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Section – II

Q.6 a) Explain various types of hazards using practical examples. **05**
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SLR-GF-28

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Separation, processing of solid waste are used to reduce _____.
a) Volume of S.W. b) Weight of S.W.
c) Both a) and b) d) None of these

2) What is the normal storage time of incinerable hazardous waste at the incinerator site?
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12) The goal of Hazardous Waste Management Unit is _____.
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c) Import
d) Export

13) M R F's term in SWM is used for _____.
a) Major relief funds b) Material recovery facilities
c) Minimum raw food d) None of the above

14) Characteristics of hazardous waste includes _____.
a) Ignitibility b) Reactivity
c) Both of the above d) None of the above

SLR-GF-28

Seat No.	

Set S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (BTN01618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 from section I and Q. No. 6 from section II is compulsory. Solve any two from remaining questions each from Section I and Section II.
2) Figures to right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 a) Estimate the moisture content of solid waste sample of 100 kg using the following data. **05**

Sr. No.	Component	% by mass	Moisture content (%)
1	Food waste	12	70
2	Paper	38	07
3	Cardboards	05	05
4	Plastic	10	08
5	Grass	12	56
6	Wood	08	04
7	Metals	15	05

b) Write a note on waste minimization and resource recovery. **05**

Q.3 a) Explain the importance of Planning and Organization in Solid Waste Management. **05**
b) Explain the General Provision of Law for specific categories of waste collected by Municipal Authorities. **04**

Q.4 a) Explain the TCLP procedure in detail. **05**
b) Explain methodology of incineration with the help of flow sheet diagram. **04**

Q.5 a) Explain SWM rules in detail. **05**
b) Explain Chemical characteristics of solid waste in detail. **04**

Section – II

Q.6 a) Explain various types of hazards using practical examples. **05**
b) Explain the geomorphological hazards. **05**

Q.7 a) Analyse the risk assessment plan in case of earthquake. **05**
b) Discus various qualitative assessments of damage. **04**

Q.8	**a)**	Explain treatment methods of biomedical waste.	**05**
	b)	Elucidate characteristics of hazardous waste using examples.	**04**
Q.9	**a)**	Explain biological degradation phases in the Landfill.	**05**
	b)	With the help of neat diagram, explain the working of engineering landfill.	**04**

SLR-GF-30

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book)
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5) While solving MCQ, IS 456-2000, IS 3370 and IS 1343 are not allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) If longitudinally spanning stairs are casted along with their landings, the maximum bending moment per metre width, is taken as _____. 01
a) $wl^2/4$ b) $wl^2/8$
c) $wl^2/10$ d) $wl^2/12$

2) In stair case design find weight of steps per meter run if thickness of slab is 280 mm, Riser of 150 mm and tread of 300 mm and unit weight of concrete is 2500 kg/m^3 _____. 01
a) 3.48 kN/m b) 1.88 kN/m
c) 3.75 kN/m d) 7.55 kN/m

3) What will be the size of footing required. If a square column carries a load of 600 kN use M-20 grade of Concrete and Fe-415 grade of steel. SBC of soil is 180 kN/m^2 _____. 01
a) 6.66 m^2 b) 5.28 m^2
c) 3.33 m^2 d) 3.67 m^2

4) All are the component of retaining wall except? 01
a) Toe Slab b) Heel Slab
c) Stem d) Surcharge

5) In water tank, for Fe_{500} the permissible tensile stress is _____. 01
a) 130 N/mm^2 b) 150 N/mm^2
c) 125 N/mm^2 d) 190 N/mm^2

6) In design of P.S.C. beam section, the no. of fundamental stress conditions to be considered are _____. 01
a) Two b) Four
c) Zero d) Three

7) Which one of the following is categorised as a long-term loss of prestress in a pre-stressed concrete member? 01

a) Loss due to elastic shortening
b) Loss due to relaxation of strands
c) Loss due to friction
d) Loss due to anchorage slip

8) After pre-stressing process is completed, a loss of stress is due to _____. 01

a) Shrinkage of concrete b) Creep of Concrete
c) Elastic shortening of concrete d) All of above

9) Find the area and the depth of foundation required for a column carrying on axial load of 1250 kN. The safe bearing capacity of the soil is 120 kN/m^2. The soil at the sight weighs 18 kN/m^3 and has an angle of repose of 30°. 02

a) 12.46 m^2, 0.75 m b) 10 m^2, 0.6 m
c) 11.46 m^2, 0.74 m d) 11m^2, 0.8 m

10) A concrete beam of rectangular cross section 200 mm × 400 mm is prestressed with a force of 400 kN at an eccentricity of 100 mm. The maximum compressive stress in the concrete is _____. 02

a) 12.5 MPa b) 7.5 MPa
c) 5 MPa d) 2.5 MPa

11) A rectangular beam 250 mm × 600 mm is prestresses by 4 bars 14 mm diameter high tension steel wires located at 200 mm from suffix of the beam. Effective stress in steel wires is 700 MPa. What is the maximum bending moment (due to DL + LL) that can be applied so that no tension developed at the soffit? 02

a) 80 kN-m b) 81.6 kN-m
c) 85 kN-m d) 90 kN-m

SLR-GF-30

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

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Section – I

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Q.3 Design a rectangular footing for column axially loaded of size 400 mm × 400 mm carrying 1250 kN load. The SBC of soil is 180 kN/m^2. Use M20 concrete and Fe415 steel. Sketch the details of reinforcement. **10**

Q.4 Design the stem slab of a cantilever retaining wall, if the overall height is 5.2 m. SBC of soil is 180 kN/m^2, angle of repose of the soil is 300 and unit weight of soil 18 kN/m^3, width of the slab base is 3.1 m, toe projection is 0.6 m. Use M25 concrete and Fe500 steel. **10**

Q.5 Design a square water tank having size 5m × 4m × 3.2m, resting on firm ground is free at top, bottom as well as vertical edges are fixed, with following details: depth of water 3.2 m, assume free board of 250 mm and solve by IS code method. Use M25 concrete and Fe415 steel. **10**

Section – II

Q.6 A prestressed concrete beam 400 mm × 650 mm in section has a span 8 m and is subjected to a uniformly distributed load of 8 kN/m including the self wt. of the beam. The external load on the beam consists of a concentrated load of 190 kN at mid span. The prestressing tendons are located at 150 mm form bottom of the section. Calculate the extreme stress in concrete for the mid span. The effective prestressing force is 1275 kN. Solve by following methods: Stress concept method, Strain concept method, load balancing concept. **08**

Q.7 A post tensioned concrete beam 250 mm × 450 mm has a span of 12m. The beam is prestressed by steel wires of area 375 mm^2 provided at a uniform eccentricity of 60 mm with an initial prestress of 1200 N/mm^2. Determine the percentage loss of stress in the wires. Take Es = 210 kN/mm^2, Ec = 35 kN/mm^2, Shrinkage of concrete = 215×10^{-6}, Ultimate creep strain = 22×10^{-6} mm/mm per N/mm^2, shrinkage of concrete = 215×10^{-6}.
Relaxation of steel stress = 5% of the initial stress. Anchorage Slip = 1.25 mm, Friction coefficient for wave effect K = 0.00015 m. **10**

Q.8 Design PSC I section beam for the following span = 15m, superimposed load of 35 kN/m, cube strength of concrete at 28 days is 35 kN/m^2, safe stress in concrete at transfer = 0.5 fck, allowable tensile stress in concrete is $0.129\sqrt{(fck)}$, safe stress in steel is 60% of ultimate stress, total loss of stress 18%, ultimate stress in steel 1450 MPa. **10**

Q.9 A prestressed concrete beam 250 wide and 700 mm deep is subjected to an effective prestressing force of 1390 kN along the longitudinal centroidal axis. The cable may be assumed to be symmetrically placed over mild steel anchor plate in an area 125 mm×325 mm. Design the end block by IS code method. **10**

SLR-GF-30

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

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Duration: 30 Minutes Marks:14

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a) 130 N/mm^2 b) 150 N/mm^2
c) 125 N/mm^2 d) 190 N/mm^2

2) In design of P.S.C. beam section, the no. of fundamental stress conditions to be considered are _____. 01
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a) 3.48 kN/m b) 1.88 kN/m
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7) What will be the size of footing required. If a square column carries a load of 600 kN use M-20 grade of Concrete and Fe-415 grade of steel. SBC of soil is 180 kN/m^2 _____. 01

a) 6.66 m^2 b) 5.28 m^2
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8) All are the component of retaining wall except? 01

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9) A concrete beam of rectangular cross section 200 mm × 400 mm is prestressed with a force of 400 kN at an eccentricity of 100 mm. The maximum compressive stress in the concrete is _____. 02

a) 12.5 MPa b) 7.5 MPa
c) 5 MPa d) 2.5 MPa

10) A rectangular beam 250 mm × 600 mm is prestresses by 4 bars 14 mm diameter high tension steel wires located at 200 mm from suffix of the beam. Effective stress in steel wires is 700 MPa. What is the maximum bending moment (due to DL + LL) that can be applied so that no tension developed at the soffit? 02

a) 80 kN-m b) 81.6 kN-m
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11) Find the area and the depth of foundation required for a column carrying on axial load of 1250 kN. The safe bearing capacity of the soil is 120 kN/m^2. The soil at the sight weighs 18 kN/m^3 and has an angle of repose of 30°. 02

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SLR-GF-30

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
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Section – II

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Seat No.		Set	R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
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MCQ/Objective Type Questions

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10) Find the area and the depth of foundation required for a column carrying on axial load of 1250 kN. The safe bearing capacity of the soil is 120 kN/m^2. The soil at the sight weighs 18 kN/m^3 and has an angle of repose of 30°. 02

a) 12.46 m^2, 0.75 m b) 10 m^2, 0.6 m
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11) A concrete beam of rectangular cross section 200 mm × 400 mm is prestressed with a force of 400 kN at an eccentricity of 100 mm. The maximum compressive stress in the concrete is _____. 02

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SLR-GF-30

Seat No.	

Set R

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CIVIL ENGINEERING
Design of Concrete Structures II (BTN01603)

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Section – I

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Section – II

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SLR-GF-30

Seat No.		Set	S

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SLR-GF-30

Seat No.		Set	S

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4) Draw neat sketches where required and assume suitable data if required and state it clearly.

Section – I

Q.2 Design the dog-legged type staircase for a residential building using following data: floor to floor height = 3.2 m, No. of flight per floor = 2, size of steps = 150 mm riser and 250 mm tread, live load is 3 kN/m^2 and assume width of stair is 1.05 m. Use M20 concrete and Fe500 steel. The stair is supported at top and bottom risers by beam spanning parallel with risers at the landing slab on either side. **08**

Q.3 Design a rectangular footing for column axially loaded of size 400 mm × 400 mm carrying 1250 kN load. The SBC of soil is 180 kN/m^2. Use M20 concrete and Fe415 steel. Sketch the details of reinforcement. **10**

Q.4 Design the stem slab of a cantilever retaining wall, if the overall height is 5.2 m. SBC of soil is 180 kN/m^2, angle of repose of the soil is 300 and unit weight of soil 18 kN/m^3, width of the slab base is 3.1 m, toe projection is 0.6 m. Use M25 concrete and Fe500 steel. **10**

Q.5 Design a square water tank having size 5m × 4m × 3.2m, resting on firm ground is free at top, bottom as well as vertical edges are fixed, with following details: depth of water 3.2 m, assume free board of 250 mm and solve by IS code method. Use M25 concrete and Fe415 steel. **10**

Section – II

Q.6 A prestressed concrete beam 400 mm × 650 mm in section has a span 8 m and is subjected to a uniformly distributed load of 8 kN/m including the self wt. of the beam. The external load on the beam consists of a concentrated load of 190 kN at mid span. The prestressing tendons are located at 150 mm form bottom of the section. Calculate the extreme stress in concrete for the mid span. The effective prestressing force is 1275 kN. Solve by following methods: Stress concept method, Strain concept method, load balancing concept. **08**

Q.7 A post tensioned concrete beam 250 mm × 450 mm has a span of 12m. The beam is prestressed by steel wires of area 375 mm^2 provided at a uniform eccentricity of 60 mm with an initial prestress of 1200 N/mm^2. Determine the percentage loss of stress in the wires. Take Es = 210 kN/mm^2, Ec = 35 kN/mm^2, Shrinkage of concrete = 215×10^{-6}, Ultimate creep strain = 22×10^{-6} mm/mm per N/mm^2, shrinkage of concrete = 215×10^{-6}.
Relaxation of steel stress = 5% of the initial stress. Anchorage Slip = 1.25 mm, Friction coefficient for wave effect K = 0.00015 m. **10**

Q.8 Design PSC I section beam for the following span = 15m, superimposed load of 35 kN/m, cube strength of concrete at 28 days is 35 kN/m^2, safe stress in concrete at transfer = 0.5 fck, allowable tensile stress in concrete is $0.129\sqrt{(fck)}$, safe stress in steel is 60% of ultimate stress, total loss of stress 18%, ultimate stress in steel 1450 MPa. **10**

Q.9 A prestressed concrete beam 250 wide and 700 mm deep is subjected to an effective prestressing force of 1390 kN along the longitudinal centroidal axis. The cable may be assumed to be symmetrically placed over mild steel anchor plate in an area 125 mm×325 mm. Design the end block by IS code method. **10**

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Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (BTN01604)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention question paper set (P/Q/R/S) on top of page.
3) Assume suitable data wherever necessary & mention it clearly.
4) Use of Non-Programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Functional organization is invented by _____.
a) Gilberth b) Peter Drucker
c) Fayol d) Taylor

2) An LPP is said to be _____ if has no solution that satisfies all the constraints.
a) Feasible b) Bounded
c) Infeasible d) None of these

3) Simplex method is the method used for _____.
a) value analysis b) network analysis
c) linear programming d) queuing theory

4) Transportation problem can be solved if _____.
a) No. of rows = no. of columns b) No. of rows $\geq$ no. of columns
c) No. of rows $\leq$ no. of columns d) All of these

5) Hungarian trial and error method is suitable for solving _____.
a) Transportation problem b) Assignment problem
c) Games theory d) Simplex method

6) Decision making under Certainty is _____.
a) Deterministic b) Probabilistic
c) Uncertain d) None of these

7) Games without a saddle point require players to play _____.
a) Pure strategy b) Mixed strategy
c) Market strategy d) none

8) In ABC analysis high monitoring and control is required for _____.
a) A class items b) B class items
c) C class items d) All of these

9) The cost of keeping items in inventory is called _____.

a) Set up cost b) Holding cost
c) Shortage cost d) None of these

10) EOQ model helps to find _____.

a) Optimum size of order b) Time interval between order
c) Both a) and b) d) None of these

11) What is at the heart of any ERP system?

a) Information b) Employees
c) Customers d) Database

12) Break even analysis consists of _____.

a) fixed expenses b) variable cost
c) sales revenue d) All of these

13) Average Chart and Range Chart is used for _____.

a) Attributes b) Variables
c) Both (a) and (b) d) None

14) _____ is a tool for monitoring how lean principles are working in an organization.

a) Poka-yoke b) Andon
c) Gemba d) Lean Audit

SLR-GF-31

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (BTN01604)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory section I and section II.
2) Figures to the right indicates full marks.
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4) Use of Non-Programmable calculator is allowed.

Section – I

Q.2 Attempt below question.

a) Enlist and write a note on the "Function of Management". **04**

b) A firm produces two products. These products are processed on three different machines. The time required to manufacture one of each of the three products and the daily capacity of three machines is given in the table below: **04**

Machines	Timer Per unit (minutes)		Machines capacity (minute/day)
M1	3	4	410
M2	4	3	430
M3	2	5	440

Formulate the above data in LPP which is required to determine the daily number of units to be manufactured for each product. The profit per units for product 1 and 2 is Rs. 50/- and Rs. 55/- respectively.

Q.3 Attempt below question.

a) Use Graphic Method to solve the following LPP. **05**

$\text{Max.} Z = 10x_1 + 15x_2$

Subject to

$2x_1 + x_2 \leq 26$

$2x_1 + 4x_2 \leq 56$

$x_1 - x_2 \geq -5$

$x_1, x_2 \geq 0$

b) Find the initial basic feasible solution by North West Cost Method. **04**

	W1	W2	W3	W4	Supply
F1	19	30	50	10	7
F2	70	30	40	60	9
F3	40	8	70	20	18
Demand	5	8	7	14	

Q.4 Attempt below question.

a) A company is bringing out a new product in market with three strategy of production line like full, partial and minimal. The state of nature may be Good demand, fair demand and poor demand with following payoff of profit as shown in table below: **03**

State of Nature (Demand)	Production Lines		
	Full	Partial	Minimal
Good	90	80	60
Fair	60	55	50
Poor	-35	-20	0

Take optimal decision under each of the following decision rules:

1) Maximax
2) Maximin
3) Laplace

b) Construct the dual to the primal problem: **04**

$\text{Max.} Z = 30x_1 + 50x_2$

Subject to

$20x_1 + 60x_2 \leq 500$

$30x_1 + 20x_2 \leq 350$

$50x_1 - 30x_2 \leq 100$

$x_1, x_2 \geq 0$

c) Write a brief note on "Lean Construction Concept in Construction Sector". **04**

Section – II

Q.5 Attempt above question.

a) Explain in brief about "Inventory and cost associated with Inventory" along with objective of Inventory management? **05**

b) A construction company consumes 4000 bags of cement per month. Price per bag of cement is Rs. 320/-. Inventory cost is Rs. 30/- and procurement cost per order is Rs. 500/- Find economic order quantity and number of order to be placed per month? **04**

Q.6 Attempt above question.

a) Write a brief note on "ERP" system and its use in Civil construction sector. **04**

c) Explain in brief with various technical terms of "Economic Order Quantity" with neat sketch? **06**

Q.7 Attempt above question.

a) Explain in brief "Statistical Quality Control Technique in construction sector" **04**

b) Construct R Control Chart using following data as given below: **05**
$A_2 = 0.58$, $D_2 = 0$ and $D_3 = 2.11$.

	Sample Observation				
Sample No.	I	II	III	IV	V
1	42	65	75	81	87
2	42	45	68	70	90
3	19	24	80	81	81
4	36	54	69	77	84
5	42	51	60	59	78

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Principles of Management and Quantitative Techniques (BTN01604)

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4) Use of Non-Programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In ABC analysis high monitoring and control is required for _____.
a) A class items b) B class items
c) C class items d) All of these

2) The cost of keeping items in inventory is called _____.
a) Set up cost b) Holding cost
c) Shortage cost d) None of these

3) EOQ model helps to find _____.
a) Optimum size of order b) Time interval between order
c) Both a) and b) d) None of these

4) What is at the heart of any ERP system?
a) Information b) Employees
c) Customers d) Database

5) Break even analysis consists of _____.
a) fixed expenses b) variable cost
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6) Average Chart and Range Chart is used for _____.
a) Attributes b) Variables
c) Both (a) and (b) d) None

7) _____ is a tool for monitoring how lean principles are working in an organization.
a) Poka-yoke b) Andon
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13) Decision making under Certainty is _____.
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Seat No.	

Set Q

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CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (BTN01604)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory section I and section II.
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4) Use of Non-Programmable calculator is allowed.

Section – I

Q.2 Attempt below question.

a) Enlist and write a note on the "Function of Management". **04**

b) A firm produces two products. These products are processed on three different machines. The time required to manufacture one of each of the three products and the daily capacity of three machines is given in the table below: **04**

Machines	Timer Per unit (minutes)		Machines capacity (minute/day)
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Formulate the above data in LPP which is required to determine the daily number of units to be manufactured for each product. The profit per units for product 1 and 2 is Rs. 50/- and Rs. 55/- respectively.

Q.3 Attempt below question.

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Subject to

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$2x_1 + 4x_2 \leq 56$

$x_1 - x_2 \geq -5$

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	W1	W2	W3	W4	Supply
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Take optimal decision under each of the following decision rules:

1) Maximax
2) Maximin
3) Laplace

b) Construct the dual to the primal problem: **04**

$\text{Max.} Z = 30x_1 + 50x_2$

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$20x_1 + 60x_2 \leq 500$

$30x_1 + 20x_2 \leq 350$

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c) Write a brief note on "Lean Construction Concept in Construction Sector". **04**

Section – II

Q.5 Attempt above question.

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b) A construction company consumes 4000 bags of cement per month. Price per bag of cement is Rs. 320/-. Inventory cost is Rs. 30/- and procurement cost per order is Rs. 500/- Find economic order quantity and number of order to be placed per month? **04**

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Seat No.		Set	R

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Principles of Management and Quantitative Techniques (BTN01604)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What is at the heart of any ERP system?
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2) Break even analysis consists of _____.
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Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Principles of Management and Quantitative Techniques (BTN01604)

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Time: 10:00 AM To 01:00 PM

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Section – I

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Q.4 Attempt below question.

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1) Maximax
2) Maximin
3) Laplace

b) Construct the dual to the primal problem: **04**

$\text{Max.} Z = 30x_1 + 50x_2$

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$30x_1 + 20x_2 \leq 350$

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$x_1, x_2 \geq 0$

c) Write a brief note on "Lean Construction Concept in Construction Sector". **04**

Section – II

Q.5 Attempt above question.

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b) A construction company consumes 4000 bags of cement per month. Price per bag of cement is Rs. 320/-. Inventory cost is Rs. 30/- and procurement cost per order is Rs. 500/- Find economic order quantity and number of order to be placed per month? **04**

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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Principles of Management and Quantitative Techniques (BTN01604)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

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SLR-GF-31

Seat No.		Set	S

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Principles of Management and Quantitative Techniques (BTN01604)

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Instructions: 1) All questions are compulsory section I and section II.
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$20x_1 + 60x_2 \leq 500$

$30x_1 + 20x_2 \leq 350$

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$x_1, x_2 \geq 0$

c) Write a brief note on "Lean Construction Concept in Construction Sector". **04**

Section – II

Q.5 Attempt above question.

a) Explain in brief about "Inventory and cost associated with Inventory" along with objective of Inventory management? **05**

b) A construction company consumes 4000 bags of cement per month. Price per bag of cement is Rs. 320/-. Inventory cost is Rs. 30/- and procurement cost per order is Rs. 500/- Find economic order quantity and number of order to be placed per month? **04**

Q.6 Attempt above question.

a) Write a brief note on "ERP" system and its use in Civil construction sector. **04**

c) Explain in brief with various technical terms of "Economic Order Quantity" with neat sketch? **06**

Q.7 Attempt above question.

a) Explain in brief "Statistical Quality Control Technique in construction sector" **04**

b) Construct R Control Chart using following data as given below: **05**
$A_2 = 0.58$, $D_2 = 0$ and $D_3 = 2.11$.

	Sample Observation				
Sample No.	I	II	III	IV	V
1	42	65	75	81	87
2	42	45	68	70	90
3	19	24	80	81	81
4	36	54	69	77	84
5	42	51	60	59	78

SLR-GF-32

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Railway, Airport & Harbour Engineering (BTN01605)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume any missing data suitably and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In 52kg rail, 52kg means:
a) It is the weight of the sleeper per meter
b) It is the weight of the rail per meter
c) It is the rail number laid under the PSC sleeper
d) It is the sleeper number for flat-footed rail

2) For a sleeper density of (n+5), the number of sleepers required for constructing a Broad Gauge (BG) railway track of length 650m is:
a) 975 b) 918
c) 900 d) 880

3) Pandrol clips or Elastic Clips are used for _____.
a) Holding the rails to the concrete sleepers
b) Fixing the Double-headed rails to the wooden sleepers
c) Fixing the Bull-headed rails to the wooden sleepers
d) Fixing the Flat-footed rails to the cast iron sleepers

4) The grade compensation of a 4° curve on a Broad-Gauge railway track is ____.
a) 0.20% b) 0.16%
c) 0.12% d) 0.08%

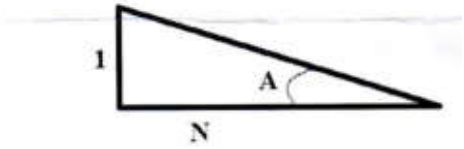
5) The groove rubber pad is fixed between _____.
a) Sleeper and Ballast b) Ballast and rail
c) Rail and Sleeper d) Rail and wheel

6) Cant deficiency occurs when a vehicle travels around a curve at?
a) Equilibrium speed
b) Speeds higher than the equilibrium speed
c) Speed lower than equilibrium speed
d) Booked speed

7) What is the curve resistance for a 50 tonnes train on a BG track on a 4° curve?

a) 0.05 tonne
b) 0.06 tonne
c) 0.08 tonne
d) 0.01 tonne

8) If A is the angle formed by two-gauge faces, the crossing number will be _____.



a) tanA
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9) When Semaphore and Warner are installed on the same post, then the stop indication is given when _____.

a) Both arms are horizontal
b) Semaphore arm lowered but Warner arm horizontal
c) Both Semaphore and Warner lowered
d) None of the above

10) At a certain station, the mean of the average temperature is 25°C and the mean of the maximum daily temperature is 40°C. What is the airport reference temperature (ART)?

a) 46.6°C
b) 45°C
c) 35°C
d) 30°C

11) The runway length after correcting for elevation and temperature is 2845m. If the effective gradient on the runway is 0.5%, then the revised runway length will be, _____.

a) 2845.5m
b) 2910.5m
c) 3030.5m
d) 3129.5m

12) The best direction of a runway is along the direction of:

a) Longest line on the wind rose diagram
b) Shortest line on the wind rose diagram
c) Line clear of wind rose diagram
d) None of these

13) _____ is a structure constructed at the tip of a breakwater near the harbour entrance.

a) Dolphin
b) Wharf
c) Pier heads
d) Jetties

14) Which of the following structures protects the shore by trapping littoral drift?

a) Seawalls
b) Groynes
c) Revetments
d) Moles

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Railway, Airport & Harbour Engineering (BTN01605)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
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Section – I

Q.2 Answer any two questions. **14**

a) What do you understand by gauge? Mention the different gauges used on Indian Railways and their suitability.

b) Discuss the necessity and effects of coning of wheels and tilting of rails.

c) Calculate the maximum permissible load that a BG locomotive with three pairs of driving wheels bearing an axle load of 22 t each can pull on a straight level track at a speed of 80 km/h. Also, calculate the reduction in speed if the train has to run on a rising gradient of 1 in 200. Assume the coefficient of friction to be 0.2.

d) Write short Notes on any two
i) Hauling Capacity and Tractive Effort
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iv) Creep of rails

Q.3 Answer any two questions. **14**

a) Calculate the superelevation and the maximum permissible speed for a 2° BG transitioned curve on a high-speed route with a maximum sanctioned speed of 110 km/h. The speed for calculating the equilibrium superelevation as decided by the chief engineer is 80 km/h and the booked speed of goods trains is 50 km/h. Assume G = 1750mm and Radius = 875m.

b) A 5° curve diverges from a 3° main curve in the reverse direction in the layout of a B.G yard. If the speed on the branch line is restricted to 35 kmph. Determine the restricted speed on the mainline. Consider G = 1.676m C_d = 76mm and 30m chord length.

c) Briefly describe the locations and purposes of the following signals.
1) Warner 2) Outer 3) Home
4) Starter 5) Advance starter

d) Calculate all the necessary elements required to set out a 1 in 8.5 turnout taking off from a straight B.G track with its curve starting from the toe of the switch i.e., tangential to the gauge face of the outer main rail and passes through the theoretical nose of crossing. Adopt Method- I of turnout design. Consider heel divergence(d) = 11.4cm.

Section – II

Q.4 Answer any two questions. **14**

a) What are the imaginary surfaces? Explain any two imaginary surfaces with a neat sketch.

b) What is a wind rose diagram? What are its types and explain any one with neat sketch.

c) Summarize briefly the various runway geometries as recommended by ICAO.

d) The length of the runway under standard conditions is 1620m. The airport site has an elevation of 270m. Its reference temperature is 32.94°C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length. Check total correction for elevation plus temperature.

Q.5 Answer any two questions. **14**

a) Design an exit taxiway joining a runway and a parallel main taxiway. The total angle of turn is 35° and the maximum turn-off speed is 80 kmph. Assume the radius of the entrance curve = 731m, runway width = 45m, taxiway width = 22.5m. Draw a neat sketch showing all the design elements. Assume the separation clearance as 217.75m

b) Define breakwater and list the different types of breakwaters. Explain anyone with a sketch.

c) What are the fenders? Why are they used? Describe various types of fenders with sketches.

d) What are dolphins? Describe their types.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Railway, Airport & Harbour Engineering (BTN01605)

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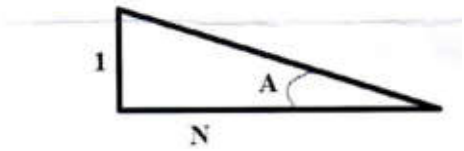
MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) If A is the angle formed by two-gauge faces, the crossing number will be _____.



a) tanA b) cotA
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2) When Semaphore and Warner are installed on the same post, then the stop indication is given when _____.
a) Both arms are horizontal
b) Semaphore arm lowered but Warner arm horizontal
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3) At a certain station, the mean of the average temperature is 25°C and the mean of the maximum daily temperature is 40°C. What is the airport reference temperature (ART)?
a) 46.6°C b) 45°C
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4) The runway length after correcting for elevation and temperature is 2845m. If the effective gradient on the runway is 0.5%, then the revised runway length will be, _____.
a) 2845.5m b) 2910.5m
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5) The best direction of a runway is along the direction of:
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6) _____ is a structure constructed at the tip of a breakwater near the harbour entrance.
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7) Which of the following structures protects the shore by trapping littoral drift?
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8) In 52kg rail, 52kg means:
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9) For a sleeper density of (n+5), the number of sleepers required for constructing a Broad Gauge (BG) railway track of length 650m is:
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14) What is the curve resistance for a 50 tonnes train on a BG track on a 4° curve?
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Seat No.	

Set **Q**

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CIVIL ENGINEERING
Railway, Airport & Harbour Engineering (BTN01605)

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Section – I

Q.2 Answer any two questions. **14**

a) What do you understand by gauge? Mention the different gauges used on Indian Railways and their suitability.

b) Discuss the necessity and effects of coning of wheels and tilting of rails.

c) Calculate the maximum permissible load that a BG locomotive with three pairs of driving wheels bearing an axle load of 22 t each can pull on a straight level track at a speed of 80 km/h. Also, calculate the reduction in speed if the train has to run on a rising gradient of 1 in 200. Assume the coefficient of friction to be 0.2.

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a) Calculate the superelevation and the maximum permissible speed for a 2° BG transitioned curve on a high-speed route with a maximum sanctioned speed of 110 km/h. The speed for calculating the equilibrium superelevation as decided by the chief engineer is 80 km/h and the booked speed of goods trains is 50 km/h. Assume G = 1750mm and Radius = 875m.

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c) Briefly describe the locations and purposes of the following signals.
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Section – II

Q.4 Answer any two questions. **14**

a) What are the imaginary surfaces? Explain any two imaginary surfaces with a neat sketch.

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c) Summarize briefly the various runway geometries as recommended by ICAO.

d) The length of the runway under standard conditions is 1620m. The airport site has an elevation of 270m. Its reference temperature is 32.94°C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length. Check total correction for elevation plus temperature.

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b) Define breakwater and list the different types of breakwaters. Explain anyone with a sketch.

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Seat No.	

Set **R**

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

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a) 2845.5m b) 2910.5m
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2) The best direction of a runway is along the direction of:
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3) _____ is a structure constructed at the tip of a breakwater near the harbour entrance.
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4) Which of the following structures protects the shore by trapping littoral drift?
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5) In 52kg rail, 52kg means:
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6) For a sleeper density of (n+5), the number of sleepers required for constructing a Broad Gauge (BG) railway track of length 650m is:
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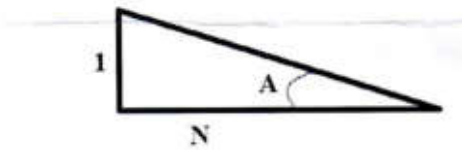

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Seat No.	

Set **R**

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Railway, Airport & Harbour Engineering (BTN01605)

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Section – I

Q.2 Answer any two questions. **14**

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a) Calculate the superelevation and the maximum permissible speed for a 2° BG transitioned curve on a high-speed route with a maximum sanctioned speed of 110 km/h. The speed for calculating the equilibrium superelevation as decided by the chief engineer is 80 km/h and the booked speed of goods trains is 50 km/h. Assume G = 1750mm and Radius = 875m.

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Section – II

Q.4 Answer any two questions. **14**

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Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Railway, Airport & Harbour Engineering (BTN01605)

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Duration: 30 Minutes Marks: 14

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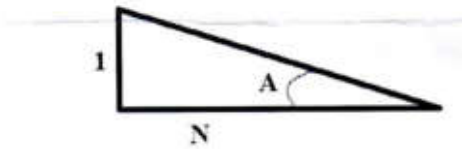

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SLR-GF-32

Seat No.		Set	S

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Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section - I, Q. No. 2 is compulsory and solve any TWO questions from remaining questions (Q. No. 3, 4 & 5).
2) In Section - II, Q. No. 6 is compulsory and solve any TWO questions from remaining questions (Q. No. 7, 8 & 9).
3) Figures to the right indicates full marks.
4) Assume any missing data suitably and mention it clearly.

Section – I

Q.2 Answer any two questions. **14**

a) What do you understand by gauge? Mention the different gauges used on Indian Railways and their suitability.

b) Discuss the necessity and effects of coning of wheels and tilting of rails.

c) Calculate the maximum permissible load that a BG locomotive with three pairs of driving wheels bearing an axle load of 22 t each can pull on a straight level track at a speed of 80 km/h. Also, calculate the reduction in speed if the train has to run on a rising gradient of 1 in 200. Assume the coefficient of friction to be 0.2.

d) Write short Notes on any two
i) Hauling Capacity and Tractive Effort
ii) Equilibrium cant and cant deficiency
iii) Negative Superelevation
iv) Creep of rails

Q.3 Answer any two questions. **14**

a) Calculate the superelevation and the maximum permissible speed for a 2° BG transitioned curve on a high-speed route with a maximum sanctioned speed of 110 km/h. The speed for calculating the equilibrium superelevation as decided by the chief engineer is 80 km/h and the booked speed of goods trains is 50 km/h. Assume G = 1750mm and Radius = 875m.

b) A 5° curve diverges from a 3° main curve in the reverse direction in the layout of a B.G yard. If the speed on the branch line is restricted to 35 kmph. Determine the restricted speed on the mainline. Consider G = 1.676m C_d = 76mm and 30m chord length.

c) Briefly describe the locations and purposes of the following signals.
1) Warner 2) Outer 3) Home
4) Starter 5) Advance starter

d) Calculate all the necessary elements required to set out a 1 in 8.5 turnout taking off from a straight B.G track with its curve starting from the toe of the switch i.e., tangential to the gauge face of the outer main rail and passes through the theoretical nose of crossing. Adopt Method- I of turnout design. Consider heel divergence(d) = 11.4cm.

Section – II

Q.4 Answer any two questions. **14**

a) What are the imaginary surfaces? Explain any two imaginary surfaces with a neat sketch.

b) What is a wind rose diagram? What are its types and explain any one with neat sketch.

c) Summarize briefly the various runway geometries as recommended by ICAO.

d) The length of the runway under standard conditions is 1620m. The airport site has an elevation of 270m. Its reference temperature is 32.94°C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length. Check total correction for elevation plus temperature.

Q.5 Answer any two questions. **14**

a) Design an exit taxiway joining a runway and a parallel main taxiway. The total angle of turn is 35° and the maximum turn-off speed is 80 kmph. Assume the radius of the entrance curve = 731m, runway width = 45m, taxiway width = 22.5m. Draw a neat sketch showing all the design elements. Assume the separation clearance as 217.75m

b) Define breakwater and list the different types of breakwaters. Explain anyone with a sketch.

c) What are the fenders? Why are they used? Describe various types of fenders with sketches.

d) What are dolphins? Describe their types.

SLR-GF-33

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 Each question carries one mark.
2) Answer MCQ/Objective type question on page No. 3only. Don't forgot to mention, Q.P. set (P/Q/R/S) on Top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) How many steps are there in the disaster recovery process?
a) 7 b) 4
c) 8 d) 5

2) Which one of the following is not a Natural Disaster?
a) Volcano eruption b) Flood
c) Blow-out d) Tsunami

3) Which one of the following is the nodal ministry at the center for coordinating disaster management activities for all-natural disasters except drought?
a) ministry of agricultural
b) ministry of home affairs
c) ministry of civil aviation
d) ministry of health and family welfare

4) Which of the following is NOT a phase of emergency management?
a) Resource b) Mitigation
c) Response d) Recovery

5) Find out the main objectives of the search and rescue team from the following.
I) rescue the survivors trapped under debris
II) provide first-aid service to the trapped survivors
III) hand over, recover and dispose of the deceased bodies
IV) listen to all sources of information
a) I, II and IV b) I, III and IV
c) II, III and IV d) I, II and III

6) Who among the following is the first to respond when a disaster strikes?
a) N.G.O. b) local administration
c) affected community members d) local community members

7) Who among the following is the most affected during the famine?
a) bank workers b) doctors
c) traders d) workers

8) Which one of the following is mainly considered manmade disaster?
a) Fire
b) Landslide
c) Drought
d) Erosion

9) Disaster management plan was launched by ministry of home affair in _____.
a) 2005
b) 2011
c) 2016
d) 2020

10) Arrange activities of disaster management cycle:
1) Emergency response activities
2) Response and recovery activities
3) Mitigation and preparedness
a) 3, 2, 1
b) 1, 3, 2
c) 1, 2, 3
d) 2, 3, 1

11) Preparedness are the measures taken before a disaster event that is aimed to minimize:
a) Loss of life
b) Disruption of critical services
c) Damage when disaster occurs
d) All of the above

12) National Institute of Disaster Management was inaugurated on _____.
a) September 23, 2002
b) August 14, 2001
c) October 16, 2003
d) August 14, 2004

13) Head office of the National Institute of Disaster Management is situated in India's city/ state?
a) Kolkata
b) New Delhi
c) Hyderabad
d) Manipur

14) Where is the Tsunami Warning Center located in India?
a) New Delhi
b) Hyderabad
c) Gujarat
d) Kolkata

SLR-GF-33

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section - I (Q2, Q3, Q4).
2) Solve any two questions from Section - II (Q5, Q6, Q7).
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed & mention it clearly.

Section – I

Q.2	**a)**	Define disaster preparedness and explain disaster preparedness measures.	**07**
	b)	Write a short note on disaster preparedness with special needs.	**07**
Q.3	**a)**	Explain concept and significance of disaster preparedness plan.	**07**
	b)	Explain basic essentials of disaster preparedness plan.	**07**
Q.4	**a)**	Explain the role of government in disaster preparedness.	**07**
	b)	Explain the role of education and communication in disaster preparedness.	**07**

Section – II

Q.5	**a)**	Explain identification, propositioning and deployment function in disaster response.	**07**
	b)	Explain resources management.	**07**
Q.6	**a)**	Explain disaster response plan.	**07**
	b)	Explain relief and recovery medical health response of different disasters.	**07**
Q.7	**a)**	Explain impact of media coverage and public communication on disaster preparedness.	**07**
	b)	Explain role of media in disaster mitigation.	**07**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 Each question carries one mark.
2) Answer MCQ/Objective type question on page No. 3only. Don't forgot to mention, Q.P. set (P/Q/R/S) on Top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which one of the following is mainly considered manmade disaster?
a) Fire b) Landslide
c) Drought d) Erosion

2) Disaster management plan was launched by ministry of home affair in _____.
a) 2005 b) 2011
c) 2016 d) 2020

3) Arrange activities of disaster management cycle:
1) Emergency response activities
2) Response and recovery activities
3) Mitigation and preparedness
a) 3, 2, 1 b) 1, 3, 2
c) 1, 2, 3 d) 2, 3, 1

4) Preparedness are the measures taken before a disaster event that is aimed to minimize:
a) Loss of life
b) Disruption of critical services
c) Damage when disaster occurs
d) All of the above

5) National Institute of Disaster Management was inaugurated on _____.
a) September 23, 2002 b) August 14, 2001
c) October 16, 2003 d) August 14, 2004

6) Head office of the National Institute of Disaster Management is situated in India's city/ state?
a) Kolkata b) New Delhi
c) Hyderabad d) Manipur

7) Where is the Tsunami Warning Center located in India?
a) New Delhi b) Hyderabad
c) Gujarat d) Kolkata

8) How many steps are there in the disaster recovery process?
a) 7 b) 4
c) 8 d) 5

9) Which one of the following is not a Natural Disaster?
a) Volcano eruption b) Flood
c) Blow-out d) Tsunami

10) Which one of the following is the nodal ministry at the center for coordinating disaster management activities for all-natural disasters except drought?
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b) ministry of home affairs
c) ministry of civil aviation
d) ministry of health and family welfare

11) Which of the following is NOT a phase of emergency management?
a) Resource b) Mitigation
c) Response d) Recovery

12) Find out the main objectives of the search and rescue team from the following.
I) rescue the survivors trapped under debris
II) provide first-aid service to the trapped survivors
III) hand over, recover and dispose of the deceased bodies
IV) listen to all sources of information
a) I, II and IV b) I, III and IV
c) II, III and IV d) I, II and III

13) Who among the following is the first to respond when a disaster strikes?
a) N.G.O. b) local administration
c) affected community members d) local community members

14) Who among the following is the most affected during the famine?
a) bank workers b) doctors
c) traders d) workers

SLR-GF-33

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section - I (Q2, Q3, Q4).
2) Solve any two questions from Section - II (Q5, Q6, Q7).
3) Figures to the right indicate full marks.
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Section – I

Q.2	**a)**	Define disaster preparedness and explain disaster preparedness measures.	**07**
	b)	Write a short note on disaster preparedness with special needs.	**07**
Q.3	**a)**	Explain concept and significance of disaster preparedness plan.	**07**
	b)	Explain basic essentials of disaster preparedness plan.	**07**
Q.4	**a)**	Explain the role of government in disaster preparedness.	**07**
	b)	Explain the role of education and communication in disaster preparedness.	**07**

Section – II

Q.5	**a)**	Explain identification, propositioning and deployment function in disaster response.	**07**
	b)	Explain resources management.	**07**
Q.6	**a)**	Explain disaster response plan.	**07**
	b)	Explain relief and recovery medical health response of different disasters.	**07**
Q.7	**a)**	Explain impact of media coverage and public communication on disaster preparedness.	**07**
	b)	Explain role of media in disaster mitigation.	**07**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 Each question carries one mark.
2) Answer MCQ/Objective type question on page No. 3only. Don't forgot to mention, Q.P. set (P/Q/R/S) on Top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Preparedness are the measures taken before a disaster event that is aimed to minimize:
a) Loss of life
b) Disruption of critical services
c) Damage when disaster occurs
d) All of the above

2) National Institute of Disaster Management was inaugurated on _____.
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a) I, II and IV
b) I, III and IV
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3) Mitigation and preparedness

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b) 1, 3, 2
c) 1, 2, 3
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SLR-GF-33

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section - I (Q2, Q3, Q4).
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Section – I

Q.2	**a)**	Define disaster preparedness and explain disaster preparedness measures.	**07**
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	b)	Explain the role of education and communication in disaster preparedness.	**07**

Section – II

Q.5	**a)**	Explain identification, propositioning and deployment function in disaster response.	**07**
	b)	Explain resources management.	**07**
Q.6	**a)**	Explain disaster response plan.	**07**
	b)	Explain relief and recovery medical health response of different disasters.	**07**
Q.7	**a)**	Explain impact of media coverage and public communication on disaster preparedness.	**07**
	b)	Explain role of media in disaster mitigation.	**07**

SLR-GF-33

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

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c) ministry of civil aviation
d) ministry of health and family welfare

13) Which of the following is NOT a phase of emergency management?
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c) Response d) Recovery

14) Find out the main objectives of the search and rescue team from the following.
I) rescue the survivors trapped under debris
II) provide first-aid service to the trapped survivors
III) hand over, recover and dispose of the deceased bodies
IV) listen to all sources of information
a) I, II and IV b) I, III and IV
c) II, III and IV d) I, II and III

SLR-GF-33

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Preparedness and Response (BTN01620)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section - I (Q2, Q3, Q4).
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4) Assume suitable data wherever needed & mention it clearly.

Section – I

Q.2	**a)**	Define disaster preparedness and explain disaster preparedness measures.	**07**
	b)	Write a short note on disaster preparedness with special needs.	**07**
Q.3	**a)**	Explain concept and significance of disaster preparedness plan.	**07**
	b)	Explain basic essentials of disaster preparedness plan.	**07**
Q.4	**a)**	Explain the role of government in disaster preparedness.	**07**
	b)	Explain the role of education and communication in disaster preparedness.	**07**

Section – II

Q.5	**a)**	Explain identification, propositioning and deployment function in disaster response.	**07**
	b)	Explain resources management.	**07**
Q.6	**a)**	Explain disaster response plan.	**07**
	b)	Explain relief and recovery medical health response of different disasters.	**07**
Q.7	**a)**	Explain impact of media coverage and public communication on disaster preparedness.	**07**
	b)	Explain role of media in disaster mitigation.	**07**

SLR-GF-34

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct alternative (One mark each) **14**

1) The index map shows _____.
a) Topography b) Soil
c) Area of the site d) Plan

2) Detailed size drawings are prepared in which sheet?
a) A1 b) A2
c) A3 d) A4

3) The report that includes all the works including soil, bridges, topography, material studies and drainage studies is called as _____.
a) Feasibility report b) Detailed project report
c) Survey report d) Primary report

4) Which of the following must be considered while conducting a road survey?
a) Density b) Alignment of the curves
c) Specific gravity d) Atmospheric condition

5) Which of the following indicates the objective of road survey?
a) Specific gravity b) Density
c) Pavement design d) Detailed layout of road way

6) Transition curve is introduced in _____.
a) Horizontal curve
b) Circular curve
c) Between horizontal curve and circular curve
d) Vertical curve

7) In India, the type of traffic assumed to design pavements is?
a) Low traffic b) Heavy traffic
c) Mixed traffic flow d) Very low traffic

8) EIA is defined as _____.
a) process of identifying, predicting, and evaluating the likely impacts of a proposed project or development to define mitigation actions to reduce negative impacts and to provide positive contributions to the natural environment and well-being
b) report written by government representatives on the planned development impacts of environment, socio- economic issues and culture
c) project life-cycle assessment
d) None of above

9) What is essential in an EIA?
a) that it allows decision makers to assess a project's impacts in all its phases
b) that it allows the public and other stakeholders to present their views and inputs on the planned development
c) that it contributes to and improve the project design, so that environmental as well as Socio economic measures are core parts of it
d) All of the above

10) EIA is study of probable change in socio economic and characteristics of environment due to proposed action.
a) biophysical b) geological
c) hydrological d) Potential

11) The DPR consists of how many components?
a) One b) Two
c) Three d) Four

12) The first step in the detail checklist of DPR is _____.
a) Executive summary b) Background
c) Roadway features d) General details of the project

13) Group index method of design of flexible pavement is _____.
a) A theoretical method
b) An empirical method based on physical properties of sub-grade soil
c) An empirical method based on strength characteristics of subgrade soil
d) A semi-empirical method

14) In highway construction, rolling starts from _____.
a) Sides and proceed to center
b) Center and proceed to sides
c) One side and proceed to another side
d) Any of the above

SLR- GF-34

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Attempt the Following (Any Two). (7 Marks each) **14**

a) Write down salient features of ongoing Road project in India.
b) Define HR structure of construction industry. Write how to implement HR structure in project.
c) Explain Origin and Distinction Studies. What are the various uses of O & D Studies?

Q.3 Attempt the Following (Any Two) (7 Marks each) **14**

a) Write down material survey, which type of test conducted on highway material.
b) A vertical summit curve is formed when an ascending gradient of 3% another descending gradient of 5%. Find the length of summit curve to provide the required stopping sight distance for a design speed of 80 kmph. Take reaction time of driver is 2.5 sec and F=0.35.
c) Enumerate the various design factors controlling the vertical alignment of highways.

Section – II

Q.4 Attempt the Following (Any Two) (7 Marks each) **14**

a) Describe the various components of process of EIA.
b) Describe stepwise the procedure for environment appraisal.
c) Which type of drawing required for DPR Project explain any one in details.

Q.5 Attempt the Following (Any Two) (7 Marks each) **14**

a) Difference between - Technical and Financial Evaluation
b) Write stepwise procedure of construction of bituminous road.
c) What are the desirable properties of sub grade soil? Enumerate the identification and classification teste of soils.

SLR-GF-34

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct alternative (One mark each) **14**

1) EIA is defined as _____.
a) process of identifying, predicting, and evaluating the likely impacts of a proposed project or development to define mitigation actions to reduce negative impacts and to provide positive contributions to the natural environment and well-being
b) report written by government representatives on the planned development impacts of environment, socio- economic issues and culture
c) project life-cycle assessment
d) None of above

2) What is essential in an EIA?
a) that it allows decision makers to assess a project's impacts in all its phases
b) that it allows the public and other stakeholders to present their views and inputs on the planned development
c) that it contributes to and improve the project design, so that environmental as well as Socio economic measures are core parts of it
d) All of the above

3) EIA is study of probable change in socio economic and characteristics of environment due to proposed action.
a) biophysical b) geological
c) hydrological d) Potential

4) The DPR consists of how many components?
a) One b) Two
c) Three d) Four

5) The first step in the detail checklist of DPR is _____.
a) Executive summary b) Background
c) Roadway features d) General details of the project

6) Group index method of design of flexible pavement is _____.
a) A theoretical method
b) An empirical method based on physical properties of sub-grade soil
c) An empirical method based on strength characteristics of subgrade soil
d) A semi-empirical method

7) In highway construction, rolling starts from _____.
a) Sides and proceed to center
b) Center and proceed to sides
c) One side and proceed to another side
d) Any of the above

8) The index map shows _____.
a) Topography b) Soil
c) Area of the site d) Plan

9) Detailed size drawings are prepared in which sheet?
a) A1 b) A2
c) A3 d) A4

10) The report that includes all the works including soil, bridges, topography, material studies and drainage studies is called as _____.
a) Feasibility report b) Detailed project report
c) Survey report d) Primary report

11) Which of the following must be considered while conducting a road survey?
a) Density b) Alignment of the curves
c) Specific gravity d) Atmospheric condition

12) Which of the following indicates the objective of road survey?
a) Specific gravity b) Density
c) Pavement design d) Detailed layout of road way

13) Transition curve is introduced in _____.
a) Horizontal curve
b) Circular curve
c) Between horizontal curve and circular curve
d) Vertical curve

14) In India, the type of traffic assumed to design pavements is?
a) Low traffic b) Heavy traffic
c) Mixed traffic flow d) Very low traffic

SLR- GF-34

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Attempt the Following (Any Two). (7 Marks each) **14**

a) Write down salient features of ongoing Road project in India.
b) Define HR structure of construction industry. Write how to implement HR structure in project.
c) Explain Origin and Distinction Studies. What are the various uses of O & D Studies?

Q.3 Attempt the Following (Any Two) (7 Marks each) **14**

a) Write down material survey, which type of test conducted on highway material.
b) A vertical summit curve is formed when an ascending gradient of 3% another descending gradient of 5%. Find the length of summit curve to provide the required stopping sight distance for a design speed of 80 kmph. Take reaction time of driver is 2.5 sec and F=0.35.
c) Enumerate the various design factors controlling the vertical alignment of highways.

Section – II

Q.4 Attempt the Following (Any Two) (7 Marks each) **14**

a) Describe the various components of process of EIA.
b) Describe stepwise the procedure for environment appraisal.
c) Which type of drawing required for DPR Project explain any one in details.

Q.5 Attempt the Following (Any Two) (7 Marks each) **14**

a) Difference between - Technical and Financial Evaluation
b) Write stepwise procedure of construction of bituminous road.
c) What are the desirable properties of sub grade soil? Enumerate the identification and classification teste of soils.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct alternative (One mark each) **14**

1) The DPR consists of how many components?
a) One b) Two
c) Three d) Four

2) The first step in the detail checklist of DPR is _____.
a) Executive summary b) Background
c) Roadway features d) General details of the project

3) Group index method of design of flexible pavement is _____.
a) A theoretical method
b) An empirical method based on physical properties of sub-grade soil
c) An empirical method based on strength characteristics of subgrade soil
d) A semi-empirical method

4) In highway construction, rolling starts from _____.
a) Sides and proceed to center
b) Center and proceed to sides
c) One side and proceed to another side
d) Any of the above

5) The index map shows _____.
a) Topography b) Soil
c) Area of the site d) Plan

6) Detailed size drawings are prepared in which sheet?
a) A1 b) A2
c) A3 d) A4

7) The report that includes all the works including soil, bridges, topography, material studies and drainage studies is called as _____.
a) Feasibility report b) Detailed project report
c) Survey report d) Primary report

8) Which of the following must be considered while conducting a road survey?
a) Density b) Alignment of the curves
c) Specific gravity d) Atmospheric condition

9) Which of the following indicates the objective of road survey?
a) Specific gravity b) Density
c) Pavement design d) Detailed layout of road way

10) Transition curve is introduced in _____.
a) Horizontal curve
b) Circular curve
c) Between horizontal curve and circular curve
d) Vertical curve

11) In India, the type of traffic assumed to design pavements is?
a) Low traffic b) Heavy traffic
c) Mixed traffic flow d) Very low traffic

12) EIA is defined as _____.
a) process of identifying, predicting, and evaluating the likely impacts of a proposed project or development to define mitigation actions to reduce negative impacts and to provide positive contributions to the natural environment and well-being
b) report written by government representatives on the planned development impacts of environment, socio- economic issues and culture
c) project life-cycle assessment
d) None of above

13) What is essential in an EIA?
a) that it allows decision makers to assess a project's impacts in all its phases
b) that it allows the public and other stakeholders to present their views and inputs on the planned development
c) that it contributes to and improve the project design, so that environmental as well as Socio economic measures are core parts of it
d) All of the above

14) EIA is study of probable change in socio economic and characteristics of environment due to proposed action.
a) biophysical b) geological
c) hydrological d) Potential

SLR- GF-34

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Attempt the Following (Any Two). (7 Marks each) **14**

a) Write down salient features of ongoing Road project in India.
b) Define HR structure of construction industry. Write how to implement HR structure in project.
c) Explain Origin and Distinction Studies. What are the various uses of O & D Studies?

Q.3 Attempt the Following (Any Two) (7 Marks each) **14**

a) Write down material survey, which type of test conducted on highway material.
b) A vertical summit curve is formed when an ascending gradient of 3% another descending gradient of 5%. Find the length of summit curve to provide the required stopping sight distance for a design speed of 80 kmph. Take reaction time of driver is 2.5 sec and F=0.35.
c) Enumerate the various design factors controlling the vertical alignment of highways.

Section – II

Q.4 Attempt the Following (Any Two) (7 Marks each) **14**

a) Describe the various components of process of EIA.
b) Describe stepwise the procedure for environment appraisal.
c) Which type of drawing required for DPR Project explain any one in details.

Q.5 Attempt the Following (Any Two) (7 Marks each) **14**

a) Difference between - Technical and Financial Evaluation
b) Write stepwise procedure of construction of bituminous road.
c) What are the desirable properties of sub grade soil? Enumerate the identification and classification teste of soils.

SLR-GF-34

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct alternative (One mark each) **14**

1) Transition curve is introduced in _____.
a) Horizontal curve
b) Circular curve
c) Between horizontal curve and circular curve
d) Vertical curve

2) In India, the type of traffic assumed to design pavements is?
a) Low traffic b) Heavy traffic
c) Mixed traffic flow d) Very low traffic

3) EIA is defined as _____.
a) process of identifying, predicting, and evaluating the likely impacts of a proposed project or development to define mitigation actions to reduce negative impacts and to provide positive contributions to the natural environment and well-being
b) report written by government representatives on the planned development impacts of environment, socio- economic issues and culture
c) project life-cycle assessment
d) None of above

4) What is essential in an EIA?
a) that it allows decision makers to assess a project's impacts in all its phases
b) that it allows the public and other stakeholders to present their views and inputs on the planned development
c) that it contributes to and improve the project design, so that environmental as well as Socio economic measures are core parts of it
d) All of the above

5) EIA is study of probable change in socio economic and characteristics of environment due to proposed action.
a) biophysical b) geological
c) hydrological d) Potential

6) The DPR consists of how many components?
a) One b) Two
c) Three d) Four

7) The first step in the detail checklist of DPR is _____.
a) Executive summary b) Background
c) Roadway features d) General details of the project

8) Group index method of design of flexible pavement is _____.
a) A theoretical method
b) An empirical method based on physical properties of sub-grade soil
c) An empirical method based on strength characteristics of subgrade soil
d) A semi-empirical method

9) In highway construction, rolling starts from _____.
a) Sides and proceed to center
b) Center and proceed to sides
c) One side and proceed to another side
d) Any of the above

10) The index map shows _____.
a) Topography b) Soil
c) Area of the site d) Plan

11) Detailed size drawings are prepared in which sheet?
a) A1 b) A2
c) A3 d) A4

12) The report that includes all the works including soil, bridges, topography, material studies and drainage studies is called as _____.
a) Feasibility report b) Detailed project report
c) Survey report d) Primary report

13) Which of the following must be considered while conducting a road survey?
a) Density b) Alignment of the curves
c) Specific gravity d) Atmospheric condition

14) Which of the following indicates the objective of road survey?
a) Specific gravity b) Density
c) Pavement design d) Detailed layout of road way

SLR- GF-34

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Roads and Highway Project Development (BTN01621)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Attempt the Following (Any Two). (7 Marks each) **14**

a) Write down salient features of ongoing Road project in India.
b) Define HR structure of construction industry. Write how to implement HR structure in project.
c) Explain Origin and Distinction Studies. What are the various uses of O & D Studies?

Q.3 Attempt the Following (Any Two) (7 Marks each) **14**

a) Write down material survey, which type of test conducted on highway material.
b) A vertical summit curve is formed when an ascending gradient of 3% another descending gradient of 5%. Find the length of summit curve to provide the required stopping sight distance for a design speed of 80 kmph. Take reaction time of driver is 2.5 sec and F=0.35.
c) Enumerate the various design factors controlling the vertical alignment of highways.

Section – II

Q.4 Attempt the Following (Any Two) (7 Marks each) **14**

a) Describe the various components of process of EIA.
b) Describe stepwise the procedure for environment appraisal.
c) Which type of drawing required for DPR Project explain any one in details.

Q.5 Attempt the Following (Any Two) (7 Marks each) **14**

a) Difference between - Technical and Financial Evaluation
b) Write stepwise procedure of construction of bituminous road.
c) What are the desirable properties of sub grade soil? Enumerate the identification and classification teste of soils.

SLR-GF-35

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions **14**

1) Which of the following is not the pillar of sustainability?
a) Economy b) Environment
c) Ecology d) Society

2) Earth charter deals with _____.
a) Global consensus
b) Product of decade long, worldwide cross-cultural dialogue
c) Product of dialogue of common goals and shared values
d) All of these

3) Principles of sustainability doesn't include _____.
a) Balance & equity b) System thinking
c) Spiritual values d) None of these

4) Which of the following are parameters of good governance?
a) Accountability b) Participatory
c) Responsive d) All of these

5) Sustainability can't be achieved if _____.
a) Different societies work with unique mindset
b) Different societies work with different mindsets
c) Similar societies work with singular mindset
d) Similar societies work with different mindsets

6) _____ is the invisible part of Mushroom.
a) Mycelium b) Straw Bale
c) Both a & b d) None of these

7) Which of the following is not an economic benefit for a green building?
a) 20 - 30 % energy used b) 20 - 30 % less water used
c) Enhance asset value d) None of these

8) GRIHA has been prepared by _____.
a) USGBC b) TERI
c) LEED d) By own self

9) Which of the following green rating systems are currently working in India?
a) LEED
b) GRIHA
c) Both a and b
d) None of the above

10) Which of the following elements should be used optimum to make a green building?
a) Agni
b) Jal
c) Prithvi
d) All of the above

11) LEED gives rating in form of _____.
a) 1 star, 2 star, 3 star, 4 star, 5 star
b) Platinum, Gold, Silver
c) Both a and b
d) None of the above

12) Which of the following is not the purpose of a green building?
a) To reduce use of water
b) To minimize damage of the environment
c) Re-use of waste materials
d) None of the above

13) The principle of radiator of an engine cooling system is to _____.
a) Increase the air speed as it flows over the hot surface
b) Spread out the hot water over a large area
c) Acts as a reservoir for the water
d) Causes a heat flow by convection currents

14) What is the standard size of mini watershed?
a) 1 - 10 ha
b) 10 - 50 ha
c) 50 - 100 ha
d) 10 - 100 ha

SLR-GF-35

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	What is sustainability? Explain pillars of sustainability with a neat diagram. Discuss interaction between pillars in the sustainability.	**05**
	b)	Explain principles of Sustainability while planning the city of 1 lakh population.	**05**
Q.3	**a)**	Discuss reuse of any five construction materials in detail.	**05**
	b)	Elucidate four dimensions of Sustainability in detail.	**04**
Q.4	**a)**	Provide characteristics and application of Fly ash bricks in detail.	**05**
	b)	Define self-weight concrete? Provide minimum three advantages of self-weight concrete in construction of green building.	**04**
Q.5	**a)**	Explain benefits of Nano technology in cement concrete used in conventional RCC building.	**05**
	b)	Elucidate applications of cement fibre board in green building.	**04**

Section – II

Q.6	**a)**	What is LEED? Explain various sections allocated in the LEED in detail.	**05**
	b)	Explain applications of renewable energy resources in green building in detail.	**05**
Q.7	**a)**	What is GRIHA? Explain various sections allocated in the GRIHA in detail.	**05**
	b)	Provide minimum four Novel water conservation systems in green building.	**04**
Q.8	**a)**	Explain 5 R's and their applications in constructing Green Buildings.	**05**
	b)	Discuss numerous applications of sustainable technology in 'Building Stock Management'.	**04**

Q.9 Discuss the following:

i)	Cooling and heating systems in green building	**03**
ii)	Principles of green building	**03**
iii)	Structure of green building	**03**

SLR-GF-35

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions **14**

1) GRIHA has been prepared by _____.
a) USGBC b) TERI
c) LEED d) By own self

2) Which of the following green rating systems are currently working in India?
a) LEED b) GRIHA
c) Both a and b d) None of the above

3) Which of the following elements should be used optimum to make a green building?
a) Agni b) Jal
c) Prithvi d) All of the above

4) LEED gives rating in form of _____.
a) 1 star, 2 star, 3 star, 4 star, 5 star
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c) Both a and b
d) None of the above

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b) To minimize damage of the environment
c) Re-use of waste materials
d) None of the above

6) The principle of radiator of an engine cooling system is to _____.
a) Increase the air speed as it flows over the hot surface
b) Spread out the hot water over a large area
c) Acts as a reservoir for the water
d) Causes a heat flow by convection currents

7) What is the standard size of mini watershed?
a) 1 - 10 ha b) 10 - 50 ha
c) 50 - 100 ha d) 10 - 100 ha

8) Which of the following is not the pillar of sustainability?
a) Economy b) Environment
c) Ecology d) Society

9) Earth charter deals with _____.
a) Global consensus
b) Product of decade long, worldwide cross-cultural dialogue
c) Product of dialogue of common goals and shared values
d) All of these

10) Principles of sustainability doesn't include _____.
a) Balance & equity b) System thinking
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11) Which of the following are parameters of good governance?
a) Accountability b) Participatory
c) Responsive d) All of these

12) Sustainability can't be achieved if _____.
a) Different societies work with unique mindset
b) Different societies work with different mindsets
c) Similar societies work with singular mindset
d) Similar societies work with different mindsets

13) _____ is the invisible part of Mushroom.
a) Mycelium b) Straw Bale
c) Both a & b d) None of these

14) Which of the following is not an economic benefit for a green building?
a) 20 - 30 % energy used b) 20 - 30 % less water used
c) Enhance asset value d) None of these

SLR-GF-35

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	What is sustainability? Explain pillars of sustainability with a neat diagram. Discuss interaction between pillars in the sustainability.	**05**
	b)	Explain principles of Sustainability while planning the city of 1 lakh population.	**05**
Q.3	**a)**	Discuss reuse of any five construction materials in detail.	**05**
	b)	Elucidate four dimensions of Sustainability in detail.	**04**
Q.4	**a)**	Provide characteristics and application of Fly ash bricks in detail.	**05**
	b)	Define self-weight concrete? Provide minimum three advantages of self-weight concrete in construction of green building.	**04**
Q.5	**a)**	Explain benefits of Nano technology in cement concrete used in conventional RCC building.	**05**
	b)	Elucidate applications of cement fibre board in green building.	**04**

Section – II

Q.6	**a)**	What is LEED? Explain various sections allocated in the LEED in detail.	**05**
	b)	Explain applications of renewable energy resources in green building in detail.	**05**
Q.7	**a)**	What is GRIHA? Explain various sections allocated in the GRIHA in detail.	**05**
	b)	Provide minimum four Novel water conservation systems in green building.	**04**
Q.8	**a)**	Explain 5 R's and their applications in constructing Green Buildings.	**05**
	b)	Discuss numerous applications of sustainable technology in 'Building Stock Management'.	**04**

Q.9 Discuss the following:

i)	Cooling and heating systems in green building	**03**
ii)	Principles of green building	**03**
iii)	Structure of green building	**03**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions **14**

1) LEED gives rating in form of _____.
a) 1 star, 2 star, 3 star, 4 star, 5 star
b) Platinum, Gold, Silver
c) Both a and b
d) None of the above

2) Which of the following is not the purpose of a green building?
a) To reduce use of water
b) To minimize damage of the environment
c) Re-use of waste materials
d) None of the above

3) The principle of radiator of an engine cooling system is to _____.
a) Increase the air speed as it flows over the hot surface
b) Spread out the hot water over a large area
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4) What is the standard size of mini watershed?
a) 1 - 10 ha b) 10 - 50 ha
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6) Earth charter deals with _____.
a) Global consensus
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8) Which of the following are parameters of good governance?
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13) Which of the following green rating systems are currently working in India?
a) LEED b) GRIHA
c) Both a and b d) None of the above

14) Which of the following elements should be used optimum to make a green building?
a) Agni b) Jal
c) Prithvi d) All of the above

SLR-GF-35

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	What is sustainability? Explain pillars of sustainability with a neat diagram. Discuss interaction between pillars in the sustainability.	**05**
	b)	Explain principles of Sustainability while planning the city of 1 lakh population.	**05**
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	b)	Elucidate four dimensions of Sustainability in detail.	**04**
Q.4	**a)**	Provide characteristics and application of Fly ash bricks in detail.	**05**
	b)	Define self-weight concrete? Provide minimum three advantages of self-weight concrete in construction of green building.	**04**
Q.5	**a)**	Explain benefits of Nano technology in cement concrete used in conventional RCC building.	**05**
	b)	Elucidate applications of cement fibre board in green building.	**04**

Section – II

Q.6	**a)**	What is LEED? Explain various sections allocated in the LEED in detail.	**05**
	b)	Explain applications of renewable energy resources in green building in detail.	**05**
Q.7	**a)**	What is GRIHA? Explain various sections allocated in the GRIHA in detail.	**05**
	b)	Provide minimum four Novel water conservation systems in green building.	**04**
Q.8	**a)**	Explain 5 R's and their applications in constructing Green Buildings.	**05**
	b)	Discuss numerous applications of sustainable technology in 'Building Stock Management'.	**04**

Q.9 Discuss the following:

i)	Cooling and heating systems in green building	**03**
ii)	Principles of green building	**03**
iii)	Structure of green building	**03**

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions **14**

1) _____ is the invisible part of Mushroom.
a) Mycelium b) Straw Bale
c) Both a & b d) None of these

2) Which of the following is not an economic benefit for a green building?
a) 20 - 30 % energy used b) 20 - 30 % less water used
c) Enhance asset value d) None of these

3) GRIHA has been prepared by _____.
a) USGBC b) TERI
c) LEED d) By own self

4) Which of the following green rating systems are currently working in India?
a) LEED b) GRIHA
c) Both a and b d) None of the above

5) Which of the following elements should be used optimum to make a green building?
a) Agni b) Jal
c) Prithvi d) All of the above

6) LEED gives rating in form of _____.
a) 1 star, 2 star, 3 star, 4 star, 5 star
b) Platinum, Gold, Silver
c) Both a and b
d) None of the above

7) Which of the following is not the purpose of a green building?
a) To reduce use of water
b) To minimize damage of the environment
c) Re-use of waste materials
d) None of the above

8) The principle of radiator of an engine cooling system is to _____.
a) Increase the air speed as it flows over the hot surface
b) Spread out the hot water over a large area
c) Acts as a reservoir for the water
d) Causes a heat flow by convection currents

9) What is the standard size of mini watershed?
a) 1 - 10 ha b) 10 - 50 ha
c) 50 - 100 ha d) 10 - 100 ha

10) Which of the following is not the pillar of sustainability?
a) Economy b) Environment
c) Ecology d) Society

11) Earth charter deals with _____.
a) Global consensus
b) Product of decade long, worldwide cross-cultural dialogue
c) Product of dialogue of common goals and shared values
d) All of these

12) Principles of sustainability doesn't include _____.
a) Balance & equity b) System thinking
c) Spiritual values d) None of these

13) Which of the following are parameters of good governance?
a) Accountability b) Participatory
c) Responsive d) All of these

14) Sustainability can't be achieved if _____.
a) Different societies work with unique mindset
b) Different societies work with different mindsets
c) Similar societies work with singular mindset
d) Similar societies work with different mindsets

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Seat No.	

Set S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Materials and Green Buildings (BTN01622)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** What is sustainability? Explain pillars of sustainability with a neat diagram. Discuss interaction between pillars in the sustainability. **05**

b) Explain principles of Sustainability while planning the city of 1 lakh population. **05**

Q.3 **a)** Discuss reuse of any five construction materials in detail. **05**

b) Elucidate four dimensions of Sustainability in detail. **04**

Q.4 **a)** Provide characteristics and application of Fly ash bricks in detail. **05**

b) Define self-weight concrete? Provide minimum three advantages of self-weight concrete in construction of green building. **04**

Q.5 **a)** Explain benefits of Nano technology in cement concrete used in conventional RCC building. **05**

b) Elucidate applications of cement fibre board in green building. **04**

Section – II

Q.6 **a)** What is LEED? Explain various sections allocated in the LEED in detail. **05**

b) Explain applications of renewable energy resources in green building in detail. **05**

Q.7 **a)** What is GRIHA? Explain various sections allocated in the GRIHA in detail. **05**

b) Provide minimum four Novel water conservation systems in green building. **04**

Q.8 **a)** Explain 5 R's and their applications in constructing Green Buildings. **05**

b) Discuss numerous applications of sustainable technology in 'Building Stock Management'. **04**

Q.9 Discuss the following:

i) Cooling and heating systems in green building **03**

ii) Principles of green building **03**

iii) Structure of green building **03**

SLR-GF-36

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) Which of the following field in which optimization is used?
a) Finance b) Demand and Supply
c) Airline d) All of these

2) Optimization Algorithm are _____.
a) Single Variables Algorithm b) Multi-Variable Algorithm
c) Specialized Algorithm d) All of these

3) Which of the following is not Gradient based method?
a) Steep Descent Method b) Newton Raphson Method
c) Bisection Method d) Golden section Method

4) Bracketing methods are _____.
a) Extensive search method b) Bound phase Method
c) Both a and b d) None of these

5) Region Elimination Methods are _____.
a) Fibonacci search Method b) Golden section Method
c) Both a and b d) None of these.

6) Unidirectional Search is _____.
a) Converting multivariable problem to Single variable problem
b) Finding optimized solution
c) Both a and b
d) None of these

7) Which of the following is not direct search method?
a) Newton Method
b) Powell's Conjugate direction method
c) Box evolutionary search method
d) All of these

8) Optimization Algorithms are _____.
a) Stepwise Procedure b) Maximizing Problem
c) Minimizing Problem d) All of these

9) Number of search direction required in unidirectional search are _____.

a) One b) Two
c) Three d) Four

10) Number of search direction required in Powell's Conjugate Direction Method search are _____.

a) One b) Two
c) Three d) Four

11) Which of the following are specialized methods?

a) Integer Programming b) Geometric Programming
c) Simulated Annealing d) All of these

12) Types of integer programming are _____.

a) Linear Integer Programming
b) Non-Linear Integer Programming
c) Both a and b
d) None of these

13) Process involves in Genetic Algorithm are _____.

a) Mutation b) Crossover
c) Selection d) All of these

14) Which of the following is not type of crossover?

a) One-point crossover b) Two-point crossover
c) Three-point crossover d) Uniform crossover

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Answer the following (Any Two) **12**

a) Formulate Optimization Problem in any field.
b) Describe 'Optimization Algorithm' in detail.
c) Explain various application of Optimization.

Q.3 Answer the following (Any Two) **08**

a) Optimize the given function.
$f(x) = x^2 + \frac{54}{x}$ Using Extensive search method.
$a = 0, b = 10, n = 50$

b) Optimize the given function
$f(x) = x^2 - 2x + 1$ Using Bisection method.
$a = 0, b = 5, \varepsilon = 10^{-3}$

c) Optimize the given function using 'Fibonacci Search Method.'
$f(x) = x^2 + \frac{64}{x}$
$F_0 = 1, F_1 = 1, F_2 = 2, F_3 = 3, F_4 = 5, F_5 = 8$
$a = 0, b = 5, n = 3, k = 2$

Q.4 Answer the following (Any Two) **08**

a) Optimize the given function using uni-directional search method.
$f(x) = (x_1 - 4)^2 + (x_2 - 5)^2$
$x^{(0)} = (1,0), \quad s = (1,1), \quad \varepsilon = 10^{-3}$

b) Optimize the given function using Steep-Descent Method.
$f(x) = x_1^2 - x_2 + 2$
$x^{(0)} = (1,1), \quad s = (1,0), \quad \varepsilon = 10^{-3}$

c) Optimize the given function using Powell's conjugate directional Method.
$f(x) = x_1^2 - 3x_1x_2 + x_2^2$
$x^{(0)} = (1,1), \quad s_1 = (1,0), \quad s_2 = (0,1), \quad \varepsilon = 10^{-3}$

Section – II

Q.5 Answer the following (Any Two) **12**

a) Optimize the given function using Integer programming.
$z = 10x + 6y$
Subject to constraints
$x + 2y \leq 16$
$5x + 3y \leq 45$
$x, y \geq 0$

b) Optimize the given function using 'Geometric Programming'.
$f(x) = x_1 - x_1 x_2 + x_2^2$

c) Optimize the given function using Simulated Annealing.
$f(x) = 500 - {x_2}^2 - 2x_1 x_2 - {x_1}^2$

$x^{(0)} = (1,1), \ \varepsilon = 10^{-3}$

Q.6 Answer the following (Any Two) **08**

a) Explain 'Genetic Algorithm' in Details.
b) Write computer programme for 'Simulated Annealing'.
c) What is difference between 'Genetic Algorithm' & 'Traditional Techniques'.

Q.7 Answer the following. (Any Two) **08**

a) Describe various 'Reanalysis' Techniques.
b) What is the concept of 'Multi-Level Optimization'?
c) Explain the concept 'Reduction in size of optimization problem' with example.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) Optimization Algorithms are _____.
a) Stepwise Procedure b) Maximizing Problem
c) Minimizing Problem d) All of these

2) Number of search direction required in unidirectional search are _____.
a) One b) Two
c) Three d) Four

3) Number of search direction required in Powell's Conjugate Direction Method search are _____.
a) One b) Two
c) Three d) Four

4) Which of the following are specialized methods?
a) Integer Programming b) Geometric Programming
c) Simulated Annealing d) All of these

5) Types of integer programming are _____.
a) Linear Integer Programming
b) Non-Linear Integer Programming
c) Both a and b
d) None of these

6) Process involves in Genetic Algorithm are _____.
a) Mutation b) Crossover
c) Selection d) All of these

7) Which of the following is not type of crossover?
a) One-point crossover b) Two-point crossover
c) Three-point crossover d) Uniform crossover

8) Which of the following field in which optimization is used?
a) Finance b) Demand and Supply
c) Airline d) All of these

9) Optimization Algorithm are _____.
a) Single Variables Algorithm b) Multi-Variable Algorithm
c) Specialized Algorithm d) All of these

10) Which of the following is not Gradient based method?
a) Steep Descent Method b) Newton Raphson Method
c) Bisection Method d) Golden section Method

11) Bracketing methods are _____.
a) Extensive search method b) Bound phase Method
c) Both a and b d) None of these

12) Region Elimination Methods are _____.
a) Fibonacci search Method b) Golden section Method
c) Both a and b d) None of these.

13) Unidirectional Search is _____.
a) Converting multivariable problem to Single variable problem
b) Finding optimized solution
c) Both a and b
d) None of these

14) Which of the following is not direct search method?
a) Newton Method
b) Powell's Conjugate direction method
c) Box evolutionary search method
d) All of these

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Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Answer the following (Any Two) **12**

a) Formulate Optimization Problem in any field.
b) Describe 'Optimization Algorithm' in detail.
c) Explain various application of Optimization.

Q.3 Answer the following (Any Two) **08**

a) Optimize the given function.
$f(x) = x^2 + \frac{54}{x}$ Using Extensive search method.
$a = 0, b = 10, n = 50$

b) Optimize the given function
$f(x) = x^2 - 2x + 1$ Using Bisection method.
$a = 0, b = 5, \varepsilon = 10^{-3}$

c) Optimize the given function using 'Fibonacci Search Method.'
$f(x) = x^2 + \frac{64}{x}$
$F_0 = 1, F_1 = 1, F_2 = 2, F_3 = 3, F_4 = 5, F_5 = 8$
$a = 0, b = 5, n = 3, k = 2$

Q.4 Answer the following (Any Two) **08**

a) Optimize the given function using uni-directional search method.
$f(x) = (x_1 - 4)^2 + (x_2 - 5)^2$
$x^{(0)} = (1,0), \quad s = (1,1), \quad \varepsilon = 10^{-3}$

b) Optimize the given function using Steep-Descent Method.
$f(x) = x_1^2 - x_2 + 2$
$x^{(0)} = (1,1), \quad s = (1,0), \quad \varepsilon = 10^{-3}$

c) Optimize the given function using Powell's conjugate directional Method.
$f(x) = x_1^2 - 3x_1x_2 + x_2^2$
$x^{(0)} = (1,1), \quad s_1 = (1,0), \quad s_2 = (0,1), \quad \varepsilon = 10^{-3}$

Section – II

Q.5 Answer the following (Any Two) **12**

a) Optimize the given function using Integer programming.
$z = 10x + 6y$
Subject to constraints
$x + 2y \leq 16$
$5x + 3y \leq 45$
$x, y \geq 0$

b) Optimize the given function using 'Geometric Programming'.
$f(x) = x_1 - x_1 x_2 + x_2^2$

c) Optimize the given function using Simulated Annealing.
$f(x) = 500 - {x_2}^2 - 2x_1 x_2 - {x_1}^2$

$x^{(0)} = (1,1), \ \varepsilon = 10^{-3}$

Q.6 Answer the following (Any Two) **08**

a) Explain 'Genetic Algorithm' in Details.
b) Write computer programme for 'Simulated Annealing'.
c) What is difference between 'Genetic Algorithm' & 'Traditional Techniques'.

Q.7 Answer the following. (Any Two) **08**

a) Describe various 'Reanalysis' Techniques.
b) What is the concept of 'Multi-Level Optimization'?
c) Explain the concept 'Reduction in size of optimization problem' with example.

SLR-GF-36

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) Which of the following are specialized methods?
a) Integer Programming b) Geometric Programming
c) Simulated Annealing d) All of these

2) Types of integer programming are _____.
a) Linear Integer Programming
b) Non-Linear Integer Programming
c) Both a and b
d) None of these

3) Process involves in Genetic Algorithm are _____.
a) Mutation b) Crossover
c) Selection d) All of these

4) Which of the following is not type of crossover?
a) One-point crossover b) Two-point crossover
c) Three-point crossover d) Uniform crossover

5) Which of the following field in which optimization is used?
a) Finance b) Demand and Supply
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6) Optimization Algorithm are _____.
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7) Which of the following is not Gradient based method?
a) Steep Descent Method b) Newton Raphson Method
c) Bisection Method d) Golden section Method

8) Bracketing methods are _____.
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10) Unidirectional Search is _____.
a) Converting multivariable problem to Single variable problem
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c) Both a and b
d) None of these

11) Which of the following is not direct search method?
a) Newton Method
b) Powell's Conjugate direction method
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12) Optimization Algorithms are _____.
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13) Number of search direction required in unidirectional search are _____.
a) One b) Two
c) Three d) Four

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SLR-GF-36

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Answer the following (Any Two) **12**

a) Formulate Optimization Problem in any field.
b) Describe 'Optimization Algorithm' in detail.
c) Explain various application of Optimization.

Q.3 Answer the following (Any Two) **08**

a) Optimize the given function.
$f(x) = x^2 + \frac{54}{x}$ Using Extensive search method.
$a = 0, b = 10, n = 50$

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$f(x) = x^2 - 2x + 1$ Using Bisection method.
$a = 0, b = 5, \varepsilon = 10^{-3}$

c) Optimize the given function using 'Fibonacci Search Method.'
$f(x) = x^2 + \frac{64}{x}$
$F_0 = 1, F_1 = 1, F_2 = 2, F_3 = 3, F_4 = 5, F_5 = 8$
$a = 0, b = 5, n = 3, k = 2$

Q.4 Answer the following (Any Two) **08**

a) Optimize the given function using uni-directional search method.
$f(x) = (x_1 - 4)^2 + (x_2 - 5)^2$
$x^{(0)} = (1,0), \quad s = (1,1), \quad \varepsilon = 10^{-3}$

b) Optimize the given function using Steep-Descent Method.
$f(x) = x_1^2 - x_2 + 2$
$x^{(0)} = (1,1), \quad s = (1,0), \quad \varepsilon = 10^{-3}$

c) Optimize the given function using Powell's conjugate directional Method.
$f(x) = x_1^2 - 3x_1x_2 + x_2^2$
$x^{(0)} = (1,1), \quad s_1 = (1,0), \quad s_2 = (0,1), \quad \varepsilon = 10^{-3}$

Section – II

Q.5 Answer the following (Any Two) **12**

a) Optimize the given function using Integer programming.
$z = 10x + 6y$
Subject to constraints
$x + 2y \leq 16$
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$x, y \geq 0$

b) Optimize the given function using 'Geometric Programming'.
$f(x) = x_1 - x_1 x_2 + x_2^2$

c) Optimize the given function using Simulated Annealing.
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a) Explain 'Genetic Algorithm' in Details.
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Q.7 Answer the following. (Any Two) **08**

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b) What is the concept of 'Multi-Level Optimization'?
c) Explain the concept 'Reduction in size of optimization problem' with example.

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) Unidirectional Search is _____.
a) Converting multivariable problem to Single variable problem
b) Finding optimized solution
c) Both a and b
d) None of these

2) Which of the following is not direct search method?
a) Newton Method
b) Powell's Conjugate direction method
c) Box evolutionary search method
d) All of these

3) Optimization Algorithms are _____.
a) Stepwise Procedure b) Maximizing Problem
c) Minimizing Problem d) All of these

4) Number of search direction required in unidirectional search are _____.
a) One b) Two
c) Three d) Four

5) Number of search direction required in Powell's Conjugate Direction Method search are _____.
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12) Which of the following is not Gradient based method?
a) Steep Descent Method b) Newton Raphson Method
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13) Bracketing methods are _____.
a) Extensive search method b) Bound phase Method
c) Both a and b d) None of these

14) Region Elimination Methods are _____.
a) Fibonacci search Method b) Golden section Method
c) Both a and b d) None of these.

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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering System Design Optimization (BTN01623)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Answer the following (Any Two) **12**

a) Formulate Optimization Problem in any field.
b) Describe 'Optimization Algorithm' in detail.
c) Explain various application of Optimization.

Q.3 Answer the following (Any Two) **08**

a) Optimize the given function.
$f(x) = x^2 + \frac{54}{x}$ Using Extensive search method.
$a = 0, b = 10, n = 50$

b) Optimize the given function
$f(x) = x^2 - 2x + 1$ Using Bisection method.
$a = 0, b = 5, \varepsilon = 10^{-3}$

c) Optimize the given function using 'Fibonacci Search Method.'
$f(x) = x^2 + \frac{64}{x}$
$F_0 = 1, F_1 = 1, F_2 = 2, F_3 = 3, F_4 = 5, F_5 = 8$
$a = 0, b = 5, n = 3, k = 2$

Q.4 Answer the following (Any Two) **08**

a) Optimize the given function using uni-directional search method.
$f(x) = (x_1 - 4)^2 + (x_2 - 5)^2$
$x^{(0)} = (1,0), \quad s = (1,1), \quad \varepsilon = 10^{-3}$

b) Optimize the given function using Steep-Descent Method.
$f(x) = x_1^2 - x_2 + 2$
$x^{(0)} = (1,1), \quad s = (1,0), \quad \varepsilon = 10^{-3}$

c) Optimize the given function using Powell's conjugate directional Method.
$f(x) = x_1^2 - 3x_1x_2 + x_2^2$
$x^{(0)} = (1,1), \quad s_1 = (1,0), \quad s_2 = (0,1), \quad \varepsilon = 10^{-3}$

Section – II

Q.5 Answer the following (Any Two) **12**

a) Optimize the given function using Integer programming.
$z = 10x + 6y$
Subject to constraints
$x + 2y \leq 16$
$5x + 3y \leq 45$
$x, y \geq 0$

b) Optimize the given function using 'Geometric Programming'.
$f(x) = x_1 - x_1 x_2 + x_2^2$

c) Optimize the given function using Simulated Annealing.
$f(x) = 500 - {x_2}^2 - 2x_1 x_2 - {x_1}^2$

$x^{(0)} = (1,1), \ \varepsilon = 10^{-3}$

Q.6 Answer the following (Any Two) **08**

a) Explain 'Genetic Algorithm' in Details.
b) Write computer programme for 'Simulated Annealing'.
c) What is difference between 'Genetic Algorithm' & 'Traditional Techniques'.

Q.7 Answer the following. (Any Two) **08**

a) Describe various 'Reanalysis' Techniques.
b) What is the concept of 'Multi-Level Optimization'?
c) Explain the concept 'Reduction in size of optimization problem' with example.

SLR-GF-37

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Foundation Engineering (197042601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Auger boring is suitable for _____.
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2) The weight of hammer in SPT _____.
a) 63 kg b) 64 kg
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Duration: 30 Minutes Marks: 14

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Seat No.	

Set | R

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SLR-GF-37

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b) Explain different function of geotextile with suitable example. **04**

Section – II

Q.6 **a)** Calculate the factor of safety with respect to cohesion of a clay slope laid at 1 in 2 to a height of 10m, if the angle of internal friction $\phi = 10°$, $c = 25\ \mathrm{kN/m^2}$ and $\gamma = 19\ \mathrm{kN/m^3}$, What will be the critical height of the slope in this soil? Take (S_n=0.064). **05**

b) Design a combined footing having two square column C_1 - 450 × 450 mm & C_2 - 500 × 500 mm carrying 1000kN and 1200kN respectively. Both columns are 3.5 m away from each other. Column C_1 is 0.5m away from the property line the bearing capacity of soil is 200 mpa. **05**

Q.7 **a)** A group of 9 pile of 600mm diameter is arranged in a square pattern with center to center spacing of 1.2m. The piles are 10m long and are embedded in soft clay with cohesion of 30 kN/m^2. End bearing resistance may be neglected for the piles. Adhesion factor is 0.6. Determine the ultimate load capacity of the pile group. **05**

b) A wooden pile is being driven with a drop hammer weighing 20 kN and having a free fall of 1m, the penetration in the last blow is 5mm. Determine the load carrying capacity of the pile according to the Engineering news formula. **04**

Q.8 **a)** A 5m deep canal has sides slopes of 1:1. The properties of soils are $c = 20\mathrm{kN/m^2}, \phi = 10°\ e = 0.8, G = 2.8$. Taylors stability number is 0.108, determine the factor of safety with respect to cohesion, when the canal runs full. Also find the same in case of sudden drawdown if stability number for this condition is 0.137. **05**

b) Briefly explain the procedure of friction circle method to determine stability of slopes. **04**

Q.9 **a)** Draw a neat labeled sketch of a slope and enlist causes of failure of slope. **04**

b) Design a cantilever sheet pile which is having following details **05**

1) $\gamma = 16\ \mathrm{kN/m^3}$
2) $\phi = 30°$
3) Length of sheet pile 5.0 m

SLR-GF-38

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (197042602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) While planning a water supply reservoir, as compared to an irrigation reservoir, the design yield may be kept: _____.
a) higher
b) lower
c) medium
d) lower or higher, as per designer's discretion.

2) The 'dead storage' in a dam reservoir is the available volume for collection of silt and sediment, between: _____.
a) bed level of the reservoir and minimum reservoir level
b) bed level of the reservoir and the maximum conservation level in the reservoir
c) bed level of the reservoir and the normal reservoir level
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3) The vertical downward earthquake acceleration, α_y = 0.1 g, acting on a gravity dam, will _____.
a) increase the resisting weight of the dam by 10%
b) decrease the resisting weight of the dam by 10%
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4) The type of an arch dam, which generally requires 'overhangs at abutments', is of: _____.
a) constant radius type b) variable radius type
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5) The only provision among the following, which can help control the seepage through the body of an earthen dam and, thus, to keep the phreatic line well within the dam width, is:
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a) gate and the u/s groove guide b) gate and the d/s groove guide
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8) Point out the incorrect statement in relation to the design of weirs and barrages: _____.
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9) The gated regulator, which is constructed in the parent canal near the site of an off taking canal, is called a: _____.
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10) The DBL of a canal and the HFI of a drain at their crossing point are, respectively, 212 m and 210 m. The adopted cross-drainage work here, will be a: _____.
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11) Water-logging of cropped land leads to reduced crop yields, due to: _____.
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12) Denehey's spur is: _____.
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13) Identify the correct statement in regard to hydropower: _____.
a) hydropower stations are generally labour oriented
b) Gestation period for hydro-power plant is usually small
c) the hydro generators give high efficiency over a wide range of load
d) in a hydropower scheme, the firm power is usually high, as compared to total power

14) Pondage requirement in a hydropower plant includes the need: _____.
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Seat No.	

Set **P**

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CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (197042602)

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Section –I

Q.2 **a)** Enumerate different types of earthen dam and explain with neat sketches. **04**
b) What is use of jump height curve and tail water rating curves in dissipation of energy below the spillway, explain briefly. **05**

Q.3 **a)** Explain with neat sketch relief wells and chimney drains. **04**
b) The following are the details of straight gravity concrete dam. Foundation level, R.L. = 205.00 m, height of dam = 100 m, maximum u/s water surface elevation, R.L. = 302.00 m, top width 7 m, base width 75m, upstream face is vertical and downstream face is vertical up to R.L. 296.00 m. Assume no tail water and no gallery. Justify whether the dam is safe against sliding or not. Take unit weight of concrete as 24 kN/m^3 and coefficient of friction between dam and foundation as 0.8 **06**

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Q.5 **a)** Discuss briefly the techniques those are employed for computing the storage capacity of reservoir for different water surface elevations. **04**
b) Explain with neat sketches: side channel spillway and shaft spillway. **05**

Section – II

Q.6	**a)**	Explain the parameters those are considered while deciding suitability of K.T Weir.	**04**
	b)	Give the detailed classification of canals and explain losses through the canals.	**05**
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Seat No.	

Set **Q**

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-GF-38

Seat No.		Set	Q

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Hydraulic Structures & Water Power Engineering (197042602)

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Section – II

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Seat No.	

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Section –I

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Section – II

Q.6	**a)**	Explain the parameters those are considered while deciding suitability of K.T Weir.	**04**
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Seat No.		Set	S

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b) decrease the resisting weight of the dam by 10%
c) increase the uplift by 10%
d) none of the above

13) The type of an arch dam, which generally requires 'overhangs at abutments', is of: _____.
a) constant radius type
b) variable radius type
c) constant angle type
d) none of the above

14) The only provision among the following, which can help control the seepage through the body of an earthen dam and, thus, to keep the phreatic line well within the dam width, is:
a) upstream impervious cutoff
b) drain trench along the downstream toe
c) relief wells
d) chimney drain

SLR-GF-38

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Hydraulic Structures & Water Power Engineering (197042602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 9 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and state it clearly.

Section –I

Q.2 **a)** Enumerate different types of earthen dam and explain with neat sketches. **04**
b) What is use of jump height curve and tail water rating curves in dissipation of energy below the spillway, explain briefly. **05**

Q.3 **a)** Explain with neat sketch relief wells and chimney drains. **04**
b) The following are the details of straight gravity concrete dam. Foundation level, R.L. = 205.00 m, height of dam = 100 m, maximum u/s water surface elevation, R.L. = 302.00 m, top width 7 m, base width 75m, upstream face is vertical and downstream face is vertical up to R.L. 296.00 m. Assume no tail water and no gallery. Justify whether the dam is safe against sliding or not. Take unit weight of concrete as 24 kN/m^3 and coefficient of friction between dam and foundation as 0.8 **06**

Q.4 **a)** What is mean by low and high gravity dam? Explain with neat sketches. **04**
b) The amount of water flowing from certain catchment area at the proposed dam site is tabulated as below. Determine **05**
i) Minimum capacity of reservoir if the water is to be used to feed the turbines of hydropower plant at uniform rate and no water is to be spilled over.
ii) The minimum storage capacity of reservoir necessary to satisfy uniform demand calculated as above.

Month	Jan	Feb	Mar	Apr	May	Jun
Inflow $* 10^5 \mathrm{m}^3$	1.4	2.1	2.8	8.4	11.9	11.9
Month	July	Aug	Sept	Oct	Nov	Dec
Inflow $* 10^5 \mathrm{m}^3$	7.7	2.8	2.52	2.24	1.96	1.68

Q.5 **a)** Discuss briefly the techniques those are employed for computing the storage capacity of reservoir for different water surface elevations. **04**
b) Explain with neat sketches: side channel spillway and shaft spillway. **05**

Section – II

Q.6	**a)**	Explain the parameters those are considered while deciding suitability of K.T Weir.	**04**
	b)	Give the detailed classification of canals and explain losses through the canals.	**05**
Q.7	**a)**	Explain the following with neat sketches. 1) canal escape 2) canal outlet	**04**
	b)	What are the different drainage systems employed in irrigation tracts explain with neat sketches.	**05**
Q.8	**a)**	Distinguish clearly between low head Hydropower plants and high head hydropower plants.	**04**
	b)	What is mean by of river meandering? Explain High water, low water and mean water training.	**05**
Q.9	**a)**	What are the principal causes of failure of structures on permeable foundations? Explain the remedies to overcome them.	**04**
	b)	Three turbo generators each of capacity 10000 kW have been installed at a power station. During a certain period of load, the load on the plant varies from 12000 kW to 26000 kW. Determine: 1) Total installed capacity 2) Load factor 3) Plant factor and 4) Utilization factor	**06**

SLR-GF-44

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (197042612)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Flexible pavements transfer load mainly from _____.
a) Grain-to-grain contact of aggregate particles
b) Cohesion alone
c) The binder power of bituminous materials
d) The flexural strength of the surface courses

2) In the three-layer elastic system of pavement design, what are Layer-1, 2, and 3 (From top to Bottom)
a) Layer-1-Subgrade, Layer-2-BC and DBM and Layer-3-WMM and GSB
b) Layer-1-WMM and GSB, Layer-2-BC and DBM and Layer-3-Subgrade
c) Layer-1-Subgrade, Layer-2-WMM and GSB and Layer-3-BC and DBM
d) Layer-1-BC and DBM, Layer-2-WMM and GSB, Layer-3-Subgrade

3) Two-layer theory of pavement design is developed by _____.
a) Foster b) Foster and Ahlvin
c) Burmister d) None of these

4) In ESWL concept, the stresses due to wheel load at any depth greater than 2S, is considered to be equivalent to a single wheel load of magnitude, _____.
a) 4P b) 3P
c) 6P d) 2P

5) The modulus of subgrade reaction (K) is determined from, _____.
a) CBR test b) Plate Bearing Test
c) Shear Test d) Triaxial Test

6) CSA means, _____.
a) Cumulative Standard Axles
b) Compressive Strength of aggregate
c) Compressive strength of Asphalt
d) None of these

7) The maximum spacing of contraction joints in rigid pavements is, _____.
a) 2.5m b) 3.5m
c) 4.5m d) 5.5m

8) Identify the correct order of concrete pavement layers in the correct order from bottom to top _____.
a) GSB, Subgrade, DLC, PQC, and 125-micron Polyethylene sheet
b) 125-micron Polyethylene sheet, GSB, Subgrade, DLC and PQC
c) DLC, PQC, 125-micron Polyethylene sheet, GSB, and Subgrade
d) Subgrade, GSB, DLC, 125-micron Polyethylene sheet and PQC

9) Tie bars are placed along the: _____.
a) Contraction joint b) Construction joint
c) Expansion joint d) Longitudinal joint

10) What is the equivalent radius of the resisting section of a 20cm thick slab, given that the radius of the contact area wheel load is 15cm?
a) 13.07cm b) 14.07cm
c) 15.07cm d) 16.07cm

11) Pavement deflection is measured by _____.
a) Bump Integrator b) Benkelman Beam Equipment
c) Pavement Penetrometer d) CBR test

12) Modulus of subgrade reaction (K) is given by, _____.
a) $\mathrm{K} = \mathrm{p}/\Delta$ b) $\mathrm{K} = \Delta/\mathrm{p}$
c) $\mathrm{K} = \Delta.\,\mathrm{p}$ d) $\mathrm{K} = \mathrm{p}.\,\Delta.0.125$

13) The IRC code used for designing the rigid pavement is _____.
a) IRC - 37 b) IRC - 58
c) IRC - 38 d) IRC - 5

14) Critical loading positions in cement concrete pavements are: _____.
a) Interior, edge and middle b) Interior, edge and diagonal
c) Interior, edge and straight d) Interior, edge and corner

SLR-GF-44

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (197042612)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any two questions **14**

a) Draw a neat sketch of flexible pavement and show component parts of all layers. Briefly explain the function of all layers.

b) Explain ESWL. Briefly explain the graphical method of determination of ESWL.

c) Explain the analysis of stresses in flexible pavement by single-layer system and two-layer system.

d) The traffic studies and axle load distribution studies carried out during project preparation indicated that there are
i) 5600 commercial vehicles per day with rear axle loads in the range of 2500 to 3500 kg and growth rate of 6.5% p.a. and
ii) 1900 heavy commercial vehicles with rear axle loads in the range of 11,000 to 13,000 kg and growth rate of 4.5% p.a. The road pavement is expected to be constructed in a period of 3.0 years after this study and the flexible pavement structure is to be designed for a design life of 15 years. Determine the CSA for design. Assume standard axle load as 8160 kg.

Q.3 Answer any two questions **14**

a) A flexible pavement of thickness 48 cm is laid over a subgrade. A circular load of 16 cm with a uniform contact pressure of 6.5 kg/cm^2 is applied. Assume the elastic modulus of the subgrade as well as the pavement layer to be 900 kg/cm^2. Use the Deflection Factor chart given in Fig-I. Assuming a homogenous elastic single-layer system determine the deflection of the pavement surface under the center of the load.

b) What is VDF? Determine the Equivalent Wheel Load Factor or VDF value of the following two axle loads in terms of the standard axle load of 8.16 tonne.
1) LCV with a rear axle load of 2.0t
2) HCV with a rear axle load of 15.5t

c) Find ESWL at depths of 50 mm, 200 mm, and 400 mm for a dual wheel carrying 2044 kN each. The center-to-center tyre spacing is 200 mm and the distance between the walls of the two tyres is 100 mm. Use (log) equation to calculate ESWL.

d) Draw a neat sketch cross section of rigid pavement and explain the functions of each pavement layer in brief.

Section – II

Q.4 Answer any two questions. **14**

a) Explain the different joints provided in the concrete pavement with a neat sketch.

b) With a diagram explain the Benkelman beam's working principle for measuring pavement deflection.

c) C.C. Pavement is constructed using the following data:
1) Modulus of elasticity 3.3×10^5 kg/cm^2
2) Poisson's ratio = 0.15
3) Thickness of CC pavement = 18 cm
4) Modulus of subgrade reaction – 25 kg/cm^3
5) Wheel load = 4100 kg
6) Radius of loaded area = 12 cm

Calculate stresses at the Interior, Edge and corner by Westergaard's method

d) Write a short note on any two:
1) Factors affecting flexible pavement design
2) Two Layered systems concepts of Pavement Design
3) Factors Affecting Rigid Pavement Design
4) Warping stresses in rigid pavement

Q.5 Answer any two questions **14**

a) Determine the warping stresses at the interior, edge, and corner of a 25 cm thick cement concrete pavement with transverse joints at 5.0 m intervals and longitudinal joints at 3.6 m intervals. The modulus of subgrade reaction K is 6.9 kg/cm^3 and the radius of the loaded area is 15 cm. Assume the temperature differential during the day to be $0.6°C$ per cm slab thickness (for warping stress at interior and edge) and a maximum temperature differential of $0.4°C$ per cm slab thickness during the night (for warping stress at the corner).
Assume e = 10×10^{-6} per °C, E = 3×10^5 kg/cm^2, $\mu = 0.15$ Use the Bradbury chart given in Figure II.

b) The rebound deflection values determined at 15 spots are given below. Determine the values of
1) mean deflection
2) Standard deviation and
3) Characteristic deflection

Rebound deflection values in mm: 1.40, 1.32, 1.25, 1.35, 1.48, 1.60, 1.65, 1.55, 1.45, 1.40, 1.36, 1.46, 1.50, 1.52, 1.45.

c) The plate bearing tests were conducted with a 30 cm plate diameter on the soil subgrade and over a base course of the thickness of 45 cm. The pressures yielded at 0.5 cm deflection on the subgrade and base course were 1.25 kg/cm^2 and 8.0 kg/cm^2 respectively. Design the pavement section for 5100 kg wheel load with tyre pressure of 7 kg/cm^2 for an allowable deflection of 0.5 cm using Burmister's two-layer deflection factor chart (Use Figure-III).

d) Explain how warping stresses are formed in C.C. pavements. Describe the Westergaard's equations to calculate warping stresses at critical locations.

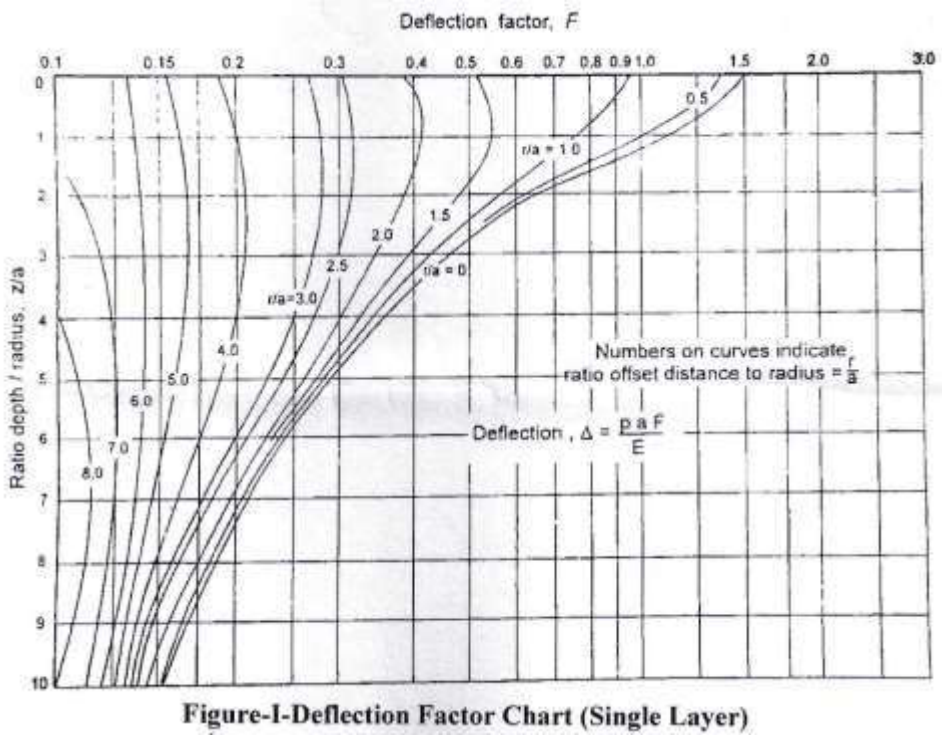

Figure-I-Deflection Factor Chart (Single Layer)

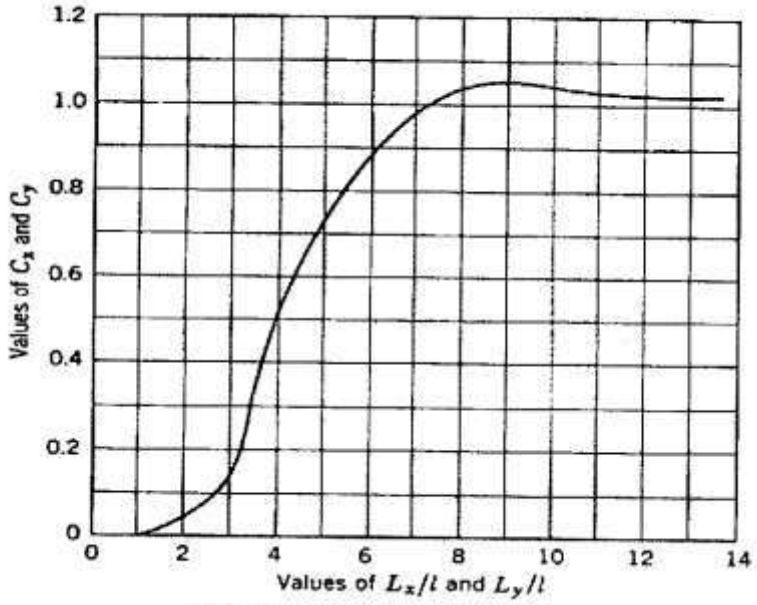

Figure-II-Bradbury Chart

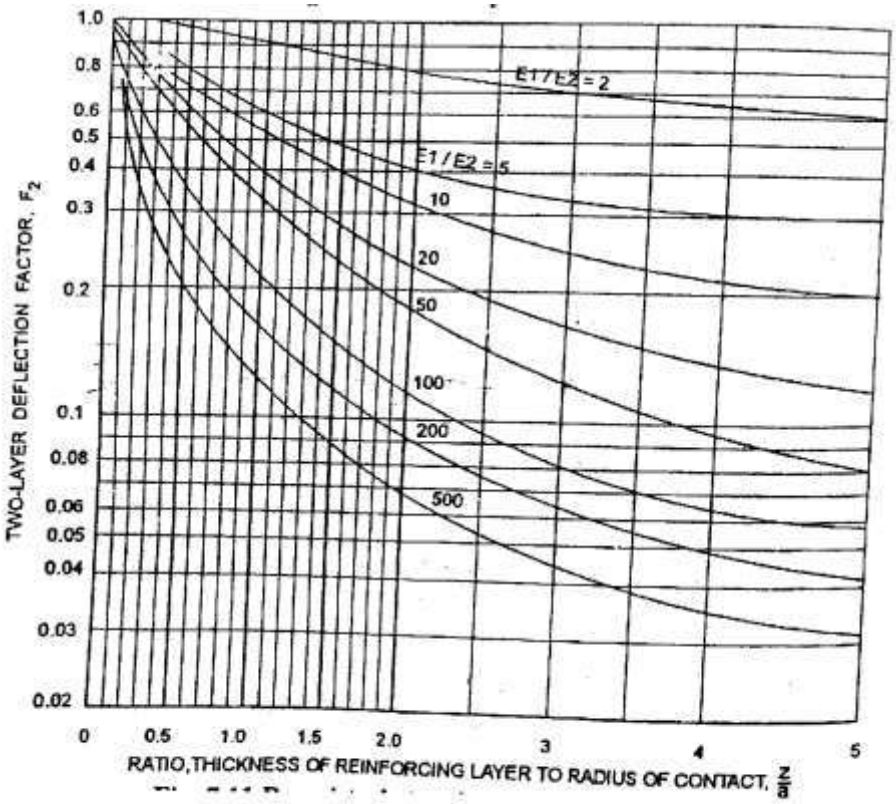

Figure-III-Burmister's Two-Layer deflection factors

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (197042612)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Identify the correct order of concrete pavement layers in the correct order from bottom to top _____.
a) GSB, Subgrade, DLC, PQC, and 125-micron Polyethylene sheet
b) 125-micron Polyethylene sheet, GSB, Subgrade, DLC and PQC
c) DLC, PQC, 125-micron Polyethylene sheet, GSB, and Subgrade
d) Subgrade, GSB, DLC, 125-micron Polyethylene sheet and PQC

2) Tie bars are placed along the: _____.
a) Contraction joint b) Construction joint
c) Expansion joint d) Longitudinal joint

3) What is the equivalent radius of the resisting section of a 20cm thick slab, given that the radius of the contact area wheel load is 15cm?
a) 13.07cm b) 14.07cm
c) 15.07cm d) 16.07cm

4) Pavement deflection is measured by _____.
a) Bump Integrator b) Benkelman Beam Equipment
c) Pavement Penetrometer d) CBR test

5) Modulus of subgrade reaction (K) is given by, _____.
a) $\mathrm{K} = \mathrm{p}/\Delta$ b) $\mathrm{K} = \Delta/\mathrm{p}$
c) $\mathrm{K} = \Delta.\mathrm{p}$ d) $\mathrm{K} = \mathrm{p}.\Delta.0.125$

6) The IRC code used for designing the rigid pavement is _____.
a) IRC - 37 b) IRC - 58
c) IRC - 38 d) IRC - 5

7) Critical loading positions in cement concrete pavements are: _____.
a) Interior, edge and middle b) Interior, edge and diagonal
c) Interior, edge and straight d) Interior, edge and corner

8) Flexible pavements transfer load mainly from _____.
a) Grain-to-grain contact of aggregate particles
b) Cohesion alone
c) The binder power of bituminous materials
d) The flexural strength of the surface courses

9) In the three-layer elastic system of pavement design, what are Layer-1, 2, and 3 (From top to Bottom)
a) Layer-1-Subgrade, Layer-2-BC and DBM and Layer-3-WMM and GSB
b) Layer-1-WMM and GSB, Layer-2-BC and DBM and Layer-3-Subgrade
c) Layer-1-Subgrade, Layer-2-WMM and GSB and Layer-3-BC and DBM
d) Layer-1-BC and DBM, Layer-2-WMM and GSB, Layer-3-Subgrade

10) Two-layer theory of pavement design is developed by _____.
a) Foster
b) Foster and Ahlvin
c) Burmister
d) None of these

11) In ESWL concept, the stresses due to wheel load at any depth greater than 2S, is considered to be equivalent to a single wheel load of magnitude, _____.
a) 4P
b) 3P
c) 6P
d) 2P

12) The modulus of subgrade reaction (K) is determined from, _____.
a) CBR test
b) Plate Bearing Test
c) Shear Test
d) Triaxial Test

13) CSA means, _____.
a) Cumulative Standard Axles
b) Compressive Strength of aggregate
c) Compressive strength of Asphalt
d) None of these

14) The maximum spacing of contraction joints in rigid pavements is, _____.
a) 2.5m
b) 3.5m
c) 4.5m
d) 5.5m

SLR-GF-44

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (197042612)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any two questions **14**

a) Draw a neat sketch of flexible pavement and show component parts of all layers. Briefly explain the function of all layers.

b) Explain ESWL. Briefly explain the graphical method of determination of ESWL.

c) Explain the analysis of stresses in flexible pavement by single-layer system and two-layer system.

d) The traffic studies and axle load distribution studies carried out during project preparation indicated that there are
i) 5600 commercial vehicles per day with rear axle loads in the range of 2500 to 3500 kg and growth rate of 6.5% p.a. and
ii) 1900 heavy commercial vehicles with rear axle loads in the range of 11,000 to 13,000 kg and growth rate of 4.5% p.a. The road pavement is expected to be constructed in a period of 3.0 years after this study and the flexible pavement structure is to be designed for a design life of 15 years. Determine the CSA for design. Assume standard axle load as 8160 kg.

Q.3 Answer any two questions **14**

a) A flexible pavement of thickness 48 cm is laid over a subgrade. A circular load of 16 cm with a uniform contact pressure of 6.5 kg/cm^2 is applied. Assume the elastic modulus of the subgrade as well as the pavement layer to be 900 kg/cm^2. Use the Deflection Factor chart given in Fig-I. Assuming a homogenous elastic single-layer system determine the deflection of the pavement surface under the center of the load.

b) What is VDF? Determine the Equivalent Wheel Load Factor or VDF value of the following two axle loads in terms of the standard axle load of 8.16 tonne.
1) LCV with a rear axle load of 2.0t
2) HCV with a rear axle load of 15.5t

c) Find ESWL at depths of 50 mm, 200 mm, and 400 mm for a dual wheel carrying 2044 kN each. The center-to-center tyre spacing is 200 mm and the distance between the walls of the two tyres is 100 mm. Use (log) equation to calculate ESWL.

d) Draw a neat sketch cross section of rigid pavement and explain the functions of each pavement layer in brief.

Section – II

Q.4 Answer any two questions. **14**

a) Explain the different joints provided in the concrete pavement with a neat sketch.

b) With a diagram explain the Benkelman beam's working principle for measuring pavement deflection.

c) C.C. Pavement is constructed using the following data:
1) Modulus of elasticity 3.3×10^5 kg/cm^2
2) Poisson's ratio = 0.15
3) Thickness of CC pavement = 18 cm
4) Modulus of subgrade reaction – 25 kg/cm^3
5) Wheel load = 4100 kg
6) Radius of loaded area = 12 cm

Calculate stresses at the Interior, Edge and corner by Westergaard's method

d) Write a short note on any two:
1) Factors affecting flexible pavement design
2) Two Layered systems concepts of Pavement Design
3) Factors Affecting Rigid Pavement Design
4) Warping stresses in rigid pavement

Q.5 Answer any two questions **14**

a) Determine the warping stresses at the interior, edge, and corner of a 25 cm thick cement concrete pavement with transverse joints at 5.0 m intervals and longitudinal joints at 3.6 m intervals. The modulus of subgrade reaction K is 6.9 kg/cm^3 and the radius of the loaded area is 15 cm. Assume the temperature differential during the day to be $0.6°C$ per cm slab thickness (for warping stress at interior and edge) and a maximum temperature differential of $0.4°C$ per cm slab thickness during the night (for warping stress at the corner).
Assume e = 10×10^{-6} per °C, E = 3×10^5 kg/cm^2, $\mu = 0.15$ Use the Bradbury chart given in Figure II.

b) The rebound deflection values determined at 15 spots are given below. Determine the values of
1) mean deflection
2) Standard deviation and
3) Characteristic deflection

Rebound deflection values in mm: 1.40, 1.32, 1.25, 1.35, 1.48, 1.60, 1.65, 1.55, 1.45, 1.40, 1.36, 1.46, 1.50, 1.52, 1.45.

c) The plate bearing tests were conducted with a 30 cm plate diameter on the soil subgrade and over a base course of the thickness of 45 cm. The pressures yielded at 0.5 cm deflection on the subgrade and base course were 1.25 kg/cm^2 and 8.0 kg/cm^2 respectively. Design the pavement section for 5100 kg wheel load with tyre pressure of 7 kg/cm^2 for an allowable deflection of 0.5 cm using Burmister's two-layer deflection factor chart (Use Figure-III).

d) Explain how warping stresses are formed in C.C. pavements. Describe the Westergaard's equations to calculate warping stresses at critical locations.

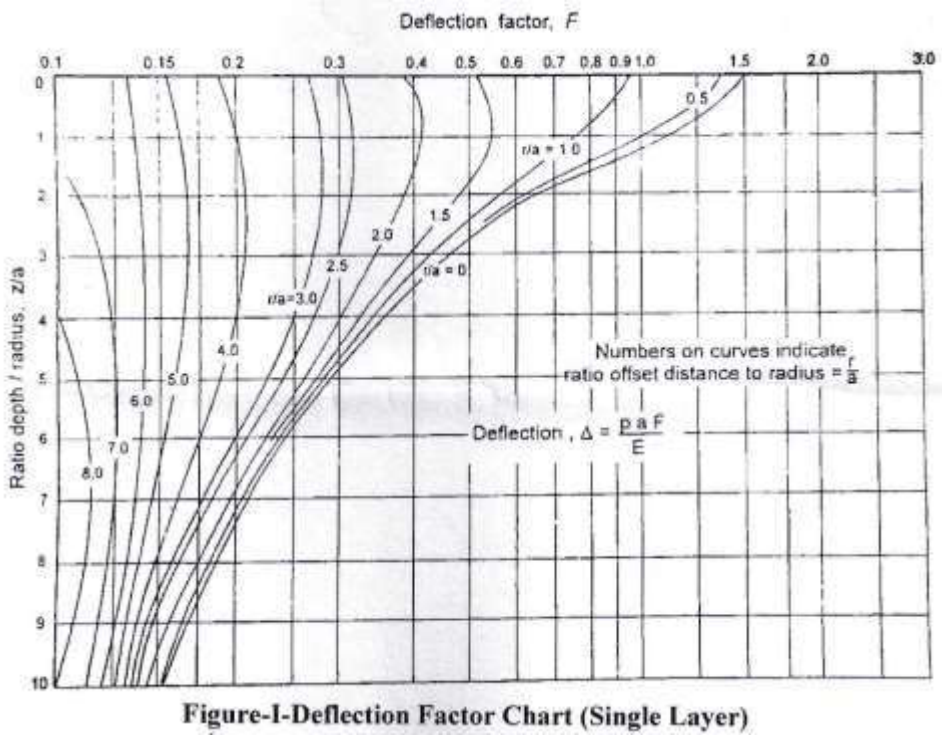

Figure-I-Deflection Factor Chart (Single Layer)

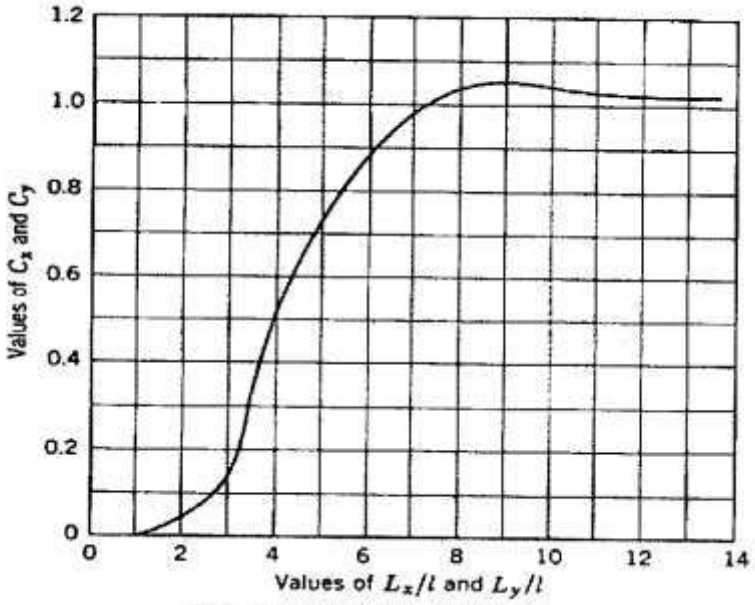

Figure-II-Bradbury Chart

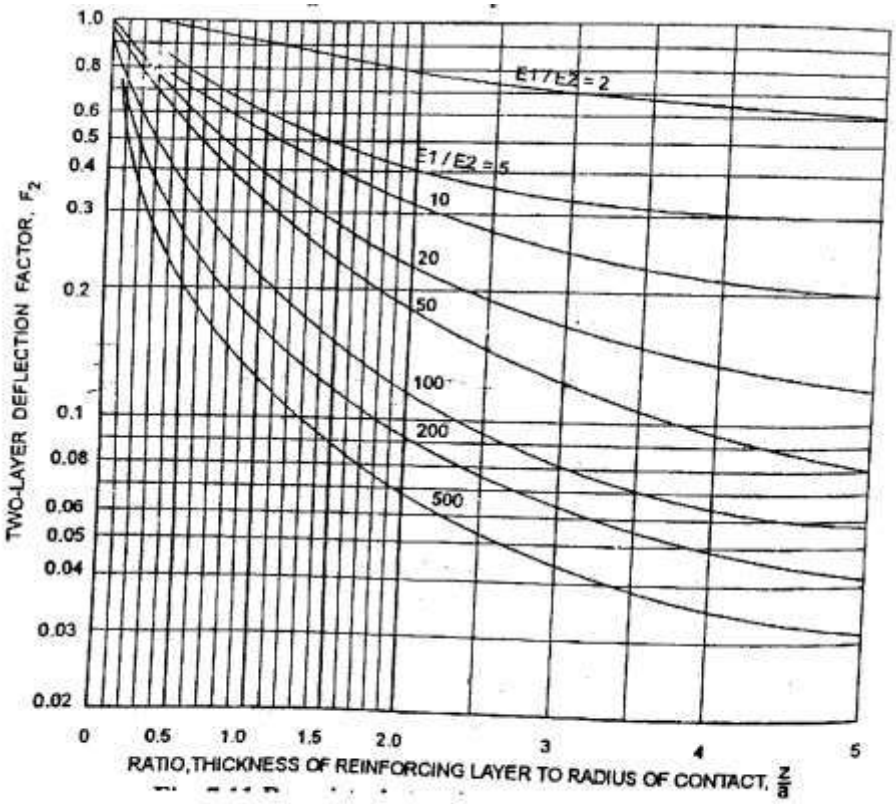

Figure-III-Burmister's Two-Layer deflection factors

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (197042612)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Pavement deflection is measured by _____.
a) Bump Integrator b) Benkelman Beam Equipment
c) Pavement Penetrometer d) CBR test

2) Modulus of subgrade reaction (K) is given by, _____.
a) $K = p/\Delta$ b) $K = \Delta/p$
c) $K = \Delta.p$ d) $K = p.\Delta.0.125$

3) The IRC code used for designing the rigid pavement is _____.
a) IRC - 37 b) IRC - 58
c) IRC - 38 d) IRC - 5

4) Critical loading positions in cement concrete pavements are: _____.
a) Interior, edge and middle b) Interior, edge and diagonal
c) Interior, edge and straight d) Interior, edge and corner

5) Flexible pavements transfer load mainly from _____.
a) Grain-to-grain contact of aggregate particles
b) Cohesion alone
c) The binder power of bituminous materials
d) The flexural strength of the surface courses

6) In the three-layer elastic system of pavement design, what are Layer-1, 2, and 3 (From top to Bottom)
a) Layer-1-Subgrade, Layer-2-BC and DBM and Layer-3-WMM and GSB
b) Layer-1-WMM and GSB, Layer-2-BC and DBM and Layer-3-Subgrade
c) Layer-1-Subgrade, Layer-2-WMM and GSB and Layer-3-BC and DBM
d) Layer-1-BC and DBM, Layer-2-WMM and GSB, Layer-3-Subgrade

7) Two-layer theory of pavement design is developed by _____.
a) Foster b) Foster and Ahlvin
c) Burmister d) None of these

8) In ESWL concept, the stresses due to wheel load at any depth greater than 2S, is considered to be equivalent to a single wheel load of magnitude, _____.

a) 4P b) 3P
c) 6P d) 2P

9) The modulus of subgrade reaction (K) is determined from, _____.

a) CBR test b) Plate Bearing Test
c) Shear Test d) Triaxial Test

10) CSA means, _____.

a) Cumulative Standard Axles
b) Compressive Strength of aggregate
c) Compressive strength of Asphalt
d) None of these

11) The maximum spacing of contraction joints in rigid pavements is, _____.

a) 2.5m b) 3.5m
c) 4.5m d) 5.5m

12) Identify the correct order of concrete pavement layers in the correct order from bottom to top _____.

a) GSB, Subgrade, DLC, PQC, and 125-micron Polyethylene sheet
b) 125-micron Polyethylene sheet, GSB, Subgrade, DLC and PQC
c) DLC, PQC, 125-micron Polyethylene sheet, GSB, and Subgrade
d) Subgrade, GSB, DLC, 125-micron Polyethylene sheet and PQC

13) Tie bars are placed along the: _____.

a) Contraction joint b) Construction joint
c) Expansion joint d) Longitudinal joint

14) What is the equivalent radius of the resisting section of a 20cm thick slab, given that the radius of the contact area wheel load is 15cm?

a) 13.07cm b) 14.07cm
c) 15.07cm d) 16.07cm

SLR-GF-44

Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (197042612)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any two questions **14**

a) Draw a neat sketch of flexible pavement and show component parts of all layers. Briefly explain the function of all layers.

b) Explain ESWL. Briefly explain the graphical method of determination of ESWL.

c) Explain the analysis of stresses in flexible pavement by single-layer system and two-layer system.

d) The traffic studies and axle load distribution studies carried out during project preparation indicated that there are
i) 5600 commercial vehicles per day with rear axle loads in the range of 2500 to 3500 kg and growth rate of 6.5% p.a. and
ii) 1900 heavy commercial vehicles with rear axle loads in the range of 11,000 to 13,000 kg and growth rate of 4.5% p.a. The road pavement is expected to be constructed in a period of 3.0 years after this study and the flexible pavement structure is to be designed for a design life of 15 years. Determine the CSA for design. Assume standard axle load as 8160 kg.

Q.3 Answer any two questions **14**

a) A flexible pavement of thickness 48 cm is laid over a subgrade. A circular load of 16 cm with a uniform contact pressure of 6.5 kg/cm^2 is applied. Assume the elastic modulus of the subgrade as well as the pavement layer to be 900 kg/cm^2. Use the Deflection Factor chart given in Fig-I. Assuming a homogenous elastic single-layer system determine the deflection of the pavement surface under the center of the load.

b) What is VDF? Determine the Equivalent Wheel Load Factor or VDF value of the following two axle loads in terms of the standard axle load of 8.16 tonne.
1) LCV with a rear axle load of 2.0t
2) HCV with a rear axle load of 15.5t

c) Find ESWL at depths of 50 mm, 200 mm, and 400 mm for a dual wheel carrying 2044 kN each. The center-to-center tyre spacing is 200 mm and the distance between the walls of the two tyres is 100 mm. Use (log) equation to calculate ESWL.

d) Draw a neat sketch cross section of rigid pavement and explain the functions of each pavement layer in brief.

Section – II

Q.4 Answer any two questions. **14**

a) Explain the different joints provided in the concrete pavement with a neat sketch.

b) With a diagram explain the Benkelman beam's working principle for measuring pavement deflection.

c) C.C. Pavement is constructed using the following data:
1) Modulus of elasticity 3.3×10^5 kg/cm^2
2) Poisson's ratio = 0.15
3) Thickness of CC pavement = 18 cm
4) Modulus of subgrade reaction – 25 kg/cm^3
5) Wheel load = 4100 kg
6) Radius of loaded area = 12 cm

Calculate stresses at the Interior, Edge and corner by Westergaard's method

d) Write a short note on any two:
1) Factors affecting flexible pavement design
2) Two Layered systems concepts of Pavement Design
3) Factors Affecting Rigid Pavement Design
4) Warping stresses in rigid pavement

Q.5 Answer any two questions **14**

a) Determine the warping stresses at the interior, edge, and corner of a 25 cm thick cement concrete pavement with transverse joints at 5.0 m intervals and longitudinal joints at 3.6 m intervals. The modulus of subgrade reaction K is 6.9 kg/cm^3 and the radius of the loaded area is 15 cm. Assume the temperature differential during the day to be $0.6°C$ per cm slab thickness (for warping stress at interior and edge) and a maximum temperature differential of $0.4°C$ per cm slab thickness during the night (for warping stress at the corner).
Assume e = 10×10^{-6} per °C, E = 3×10^5 kg/cm^2, $\mu = 0.15$ Use the Bradbury chart given in Figure II.

b) The rebound deflection values determined at 15 spots are given below. Determine the values of
1) mean deflection
2) Standard deviation and
3) Characteristic deflection

Rebound deflection values in mm: 1.40, 1.32, 1.25, 1.35, 1.48, 1.60, 1.65, 1.55, 1.45, 1.40, 1.36, 1.46, 1.50, 1.52, 1.45.

c) The plate bearing tests were conducted with a 30 cm plate diameter on the soil subgrade and over a base course of the thickness of 45 cm. The pressures yielded at 0.5 cm deflection on the subgrade and base course were 1.25 kg/cm^2 and 8.0 kg/cm^2 respectively. Design the pavement section for 5100 kg wheel load with tyre pressure of 7 kg/cm^2 for an allowable deflection of 0.5 cm using Burmister's two-layer deflection factor chart (Use Figure-III).

d) Explain how warping stresses are formed in C.C. pavements. Describe the Westergaard's equations to calculate warping stresses at critical locations.

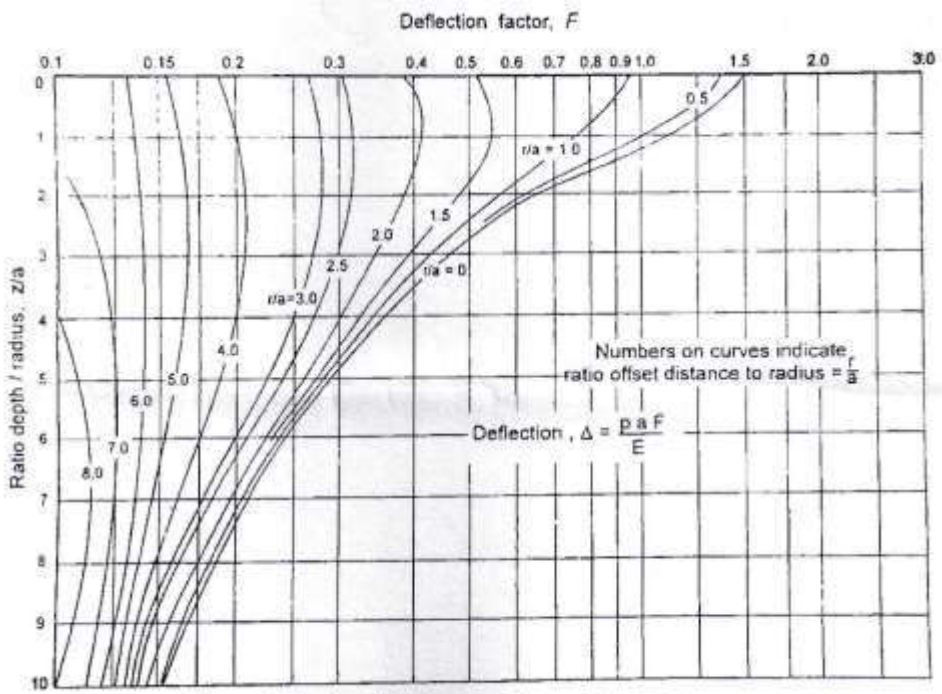

Figure-I-Deflection Factor Chart (Single Layer)

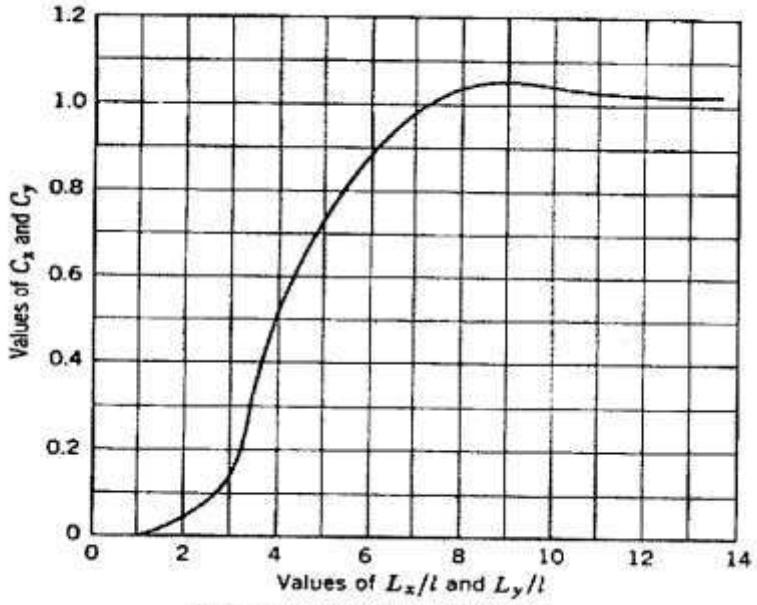

Figure-II-Bradbury Chart

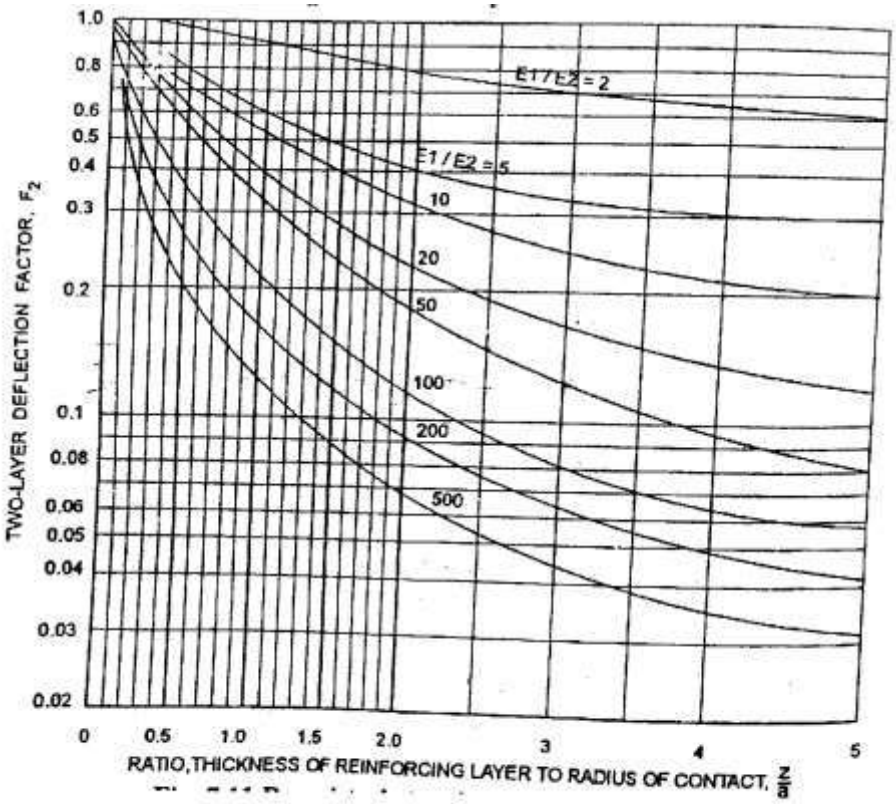

Figure-III-Burmister's Two-Layer deflection factors

SLR-GF-44

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (197042612)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) CSA means, _____.
a) Cumulative Standard Axles
b) Compressive Strength of aggregate
c) Compressive strength of Asphalt
d) None of these

2) The maximum spacing of contraction joints in rigid pavements is, _____.
a) 2.5m b) 3.5m
c) 4.5m d) 5.5m

3) Identify the correct order of concrete pavement layers in the correct order from bottom to top _____.
a) GSB, Subgrade, DLC, PQC, and 125-micron Polyethylene sheet
b) 125-micron Polyethylene sheet, GSB, Subgrade, DLC and PQC
c) DLC, PQC, 125-micron Polyethylene sheet, GSB, and Subgrade
d) Subgrade, GSB, DLC, 125-micron Polyethylene sheet and PQC

4) Tie bars are placed along the: _____.
a) Contraction joint b) Construction joint
c) Expansion joint d) Longitudinal joint

5) What is the equivalent radius of the resisting section of a 20cm thick slab, given that the radius of the contact area wheel load is 15cm?
a) 13.07cm b) 14.07cm
c) 15.07cm d) 16.07cm

6) Pavement deflection is measured by _____.
a) Bump Integrator b) Benkelman Beam Equipment
c) Pavement Penetrometer d) CBR test

7) Modulus of subgrade reaction (K) is given by, _____.
a) $\mathrm{K} = \mathrm{p}/\Delta$ b) $\mathrm{K} = \Delta/\mathrm{p}$
c) $\mathrm{K} = \Delta.\mathrm{p}$ d) $\mathrm{K} = \mathrm{p}.\Delta.0.125$

8) The IRC code used for designing the rigid pavement is _____.
a) IRC - 37 b) IRC - 58
c) IRC - 38 d) IRC - 5

9) Critical loading positions in cement concrete pavements are: _____.
a) Interior, edge and middle b) Interior, edge and diagonal
c) Interior, edge and straight d) Interior, edge and corner

10) Flexible pavements transfer load mainly from _____.
a) Grain-to-grain contact of aggregate particles
b) Cohesion alone
c) The binder power of bituminous materials
d) The flexural strength of the surface courses

11) In the three-layer elastic system of pavement design, what are Layer-1, 2, and 3 (From top to Bottom)
a) Layer-1-Subgrade, Layer-2-BC and DBM and Layer-3-WMM and GSB
b) Layer-1-WMM and GSB, Layer-2-BC and DBM and Layer-3-Subgrade
c) Layer-1-Subgrade, Layer-2-WMM and GSB and Layer-3-BC and DBM
d) Layer-1-BC and DBM, Layer-2-WMM and GSB, Layer-3-Subgrade

12) Two-layer theory of pavement design is developed by _____.
a) Foster b) Foster and Ahlvin
c) Burmister d) None of these

13) In ESWL concept, the stresses due to wheel load at any depth greater than 2S, is considered to be equivalent to a single wheel load of magnitude, _____.
a) 4P b) 3P
c) 6P d) 2P

14) The modulus of subgrade reaction (K) is determined from, _____.
a) CBR test b) Plate Bearing Test
c) Shear Test d) Triaxial Test

SLR-GF-44

Seat No.	

Set S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Pavement Design (197042612)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any two questions **14**

a) Draw a neat sketch of flexible pavement and show component parts of all layers. Briefly explain the function of all layers.

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b) What is VDF? Determine the Equivalent Wheel Load Factor or VDF value of the following two axle loads in terms of the standard axle load of 8.16 tonne.
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c) Find ESWL at depths of 50 mm, 200 mm, and 400 mm for a dual wheel carrying 2044 kN each. The center-to-center tyre spacing is 200 mm and the distance between the walls of the two tyres is 100 mm. Use (log) equation to calculate ESWL.

d) Draw a neat sketch cross section of rigid pavement and explain the functions of each pavement layer in brief.

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a) Explain the different joints provided in the concrete pavement with a neat sketch.

b) With a diagram explain the Benkelman beam's working principle for measuring pavement deflection.

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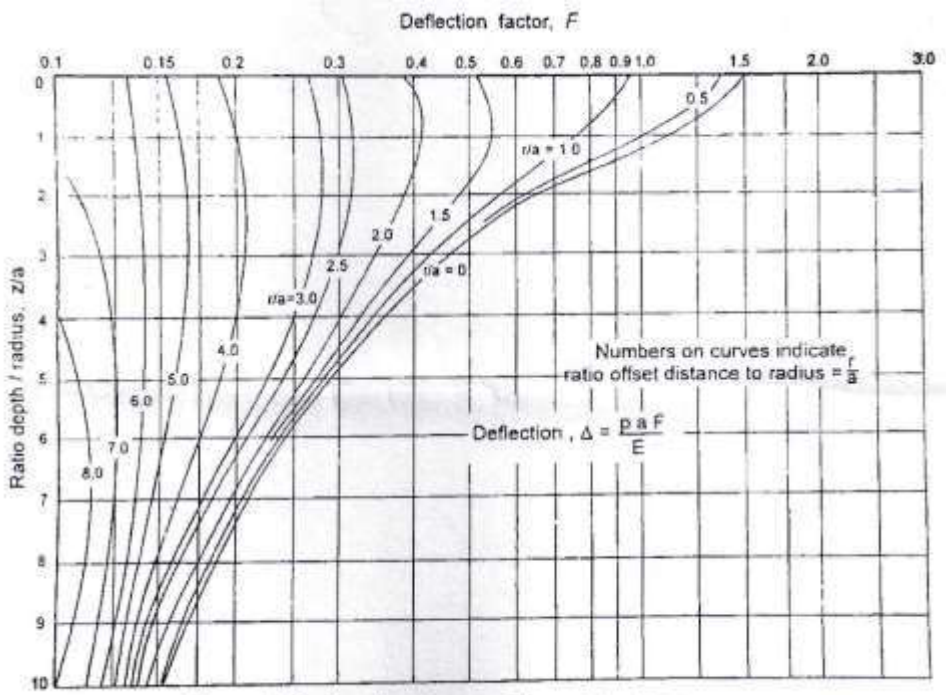

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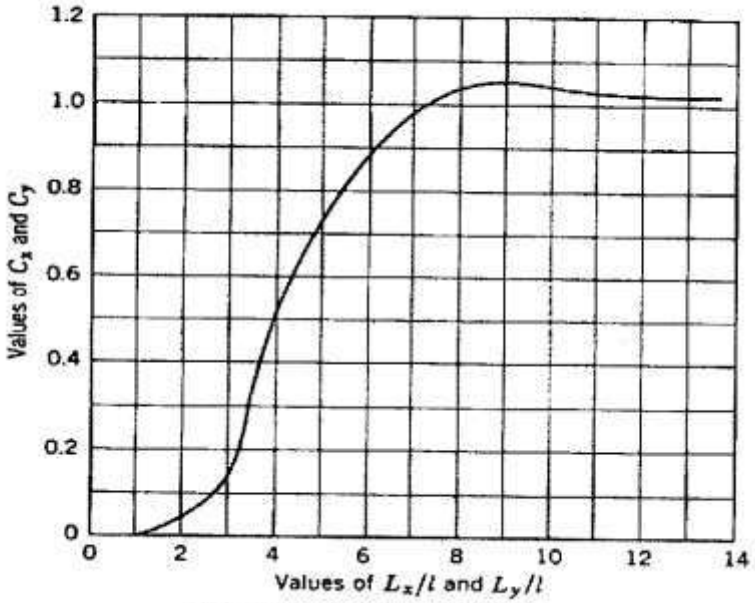

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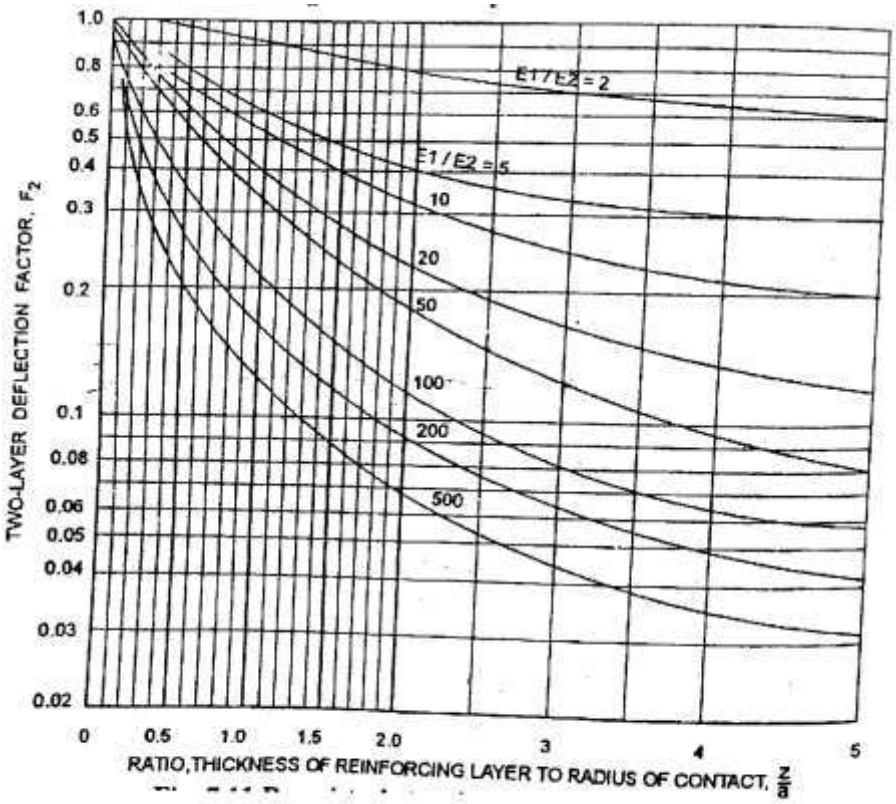

Figure-III-Burmister's Two-Layer deflection factors

SLR-GF-50

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (197042618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The anaerobic method of mechanical composting is _____.
a) Indore method b) Manglore method
c) Banglore method d) None of the above

2) The final functional element in solid waste management system is _____.
a) Transfer & transportation b) Collection
c) Processing a recovery d) Disposal

3) Mechanical size reduction operation includes _____.
a) Shredding b) Grinding
c) Milling d) All of the above

4) Substances that emit ionizing radiation are defined as _____.
a) Hazardous waste b) Radioactive waste
c) Flammable waste d) Biological waste

5) The pyrolysis process of SWM is _____ in nature.
a) Endothermic b) Exothermic
c) Herothermic d) None of the above

6) Incineration of waste treatment involves _____ of solid wastes.
a) Combustion b) Steam
c) Hydrolysis d) Biodegradation

7) M R F's term in SWM is used for _____.
a) Major relief funds b) Material recovery facilities
c) Minimum raw food d) None of the above

8) _____ of hazardous waste plays a major role in designing combustion unit.
a) Calorific value b) Chemical value
c) Energy value d) Fuel value

9) Thermal treatment technologies are differentiated by _____.
a) Type of grate b) Chemicals
c) Energy d) Temperature

10) The _____ process determines whether exposure to a chemical can increase the incidence of adverse health effect.

a) Hazard identification
b) Exposure assessment
c) Toxicity assessment
d) Risk characterization

11) What is the main objective of risk assessment?

a) To evaluate hazard and minimize the risks
b) Remediation of contaminated sites
c) Hazard management
d) To know source of pollutants

12) In a multiple HW management facility, ceasing only one unit operation which others remain intact is known as _____ closure.

a) Complete
b) Partial
c) Half
d) Final

13) Removing all wastes from the waste management unit and decontaminate or remove all equipment is known as _____ closure.

a) Partial
b) Full
c) Clean
d) Decontaminate

14) What is the first stage of risk assessment?

a) Exposure assessment
b) Hazard identification
c) Toxicity study
d) Risk characterization

SLR-GF-50

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (197042618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 from section I and Q. No. 6 from section II is compulsory. Solve any two from remaining questions each from Section I and Section II.
2) Figures to right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 a) Estimate the moisture content of solid waste sample of 120 kg using the following data. **05**

Sr. no.	Component	% by mass	Moisture content (%)
1	Food waste	20	60
2	Paper	40	12
3	Cardboards	03	08
4	Plastic	09	02
5	Grass	08	48
6	Wood	07	03
7	Metals	17	04

b) Explain factors affecting composting process of solid waste. **05**

Q.3 a) Write a shot note on pyrolysis and its products. **05**
b) 2 Tonnes of weight solid waste having moisture content of 18% is subjected for incineration process. 13% of dry waste solid waste is burned tilled 600°C. 20% of remaining dry solid waste is burned between 600°C to 900°C. Calculate heat energy generated in the incineration process. **04**

Q.4 a) Explain proximate analysis and ultimate analysis of Solid waste. **05**
b) Explain methodology of incineration with the help of flow sheet diagram. **04**

Q.5 Write short notes on following (any three): **09**
a) Societal factor in SWM
b) Windrow composting
c) Chemical characteristics of solid waste
d) ISWM

Section – II

Q.6 a) With the help of examples, discuss the various types of hazards. **06**
b) Explain the geomorphological hazards. **04**

Q.7 a) Discuss the objectives and need of risk assessment. **05**
b) Discuss the tools of qualitative estimation of damages. **04**

Q.8	**a)**	List strategies for waste minimization and elaborate any two.	**05**
	b)	Illustrate the types of hazardous waste.	**04**
Q.9	**a)**	With the help of neat diagram, explain the working of landfill.	**05**
	b)	Discuss the procedure of leachate control.	**04**

SLR-GF-50

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (197042618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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1) _____ of hazardous waste plays a major role in designing combustion unit.
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4) What is the main objective of risk assessment?
a) To evaluate hazard and minimize the risks
b) Remediation of contaminated sites
c) Hazard management
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5) In a multiple HW management facility, ceasing only one unit operation which others remain intact is known as _____ closure.
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c) Half d) Final

6) Removing all wastes from the waste management unit and decontaminate or remove all equipment is known as _____ closure.
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7) What is the first stage of risk assessment?
a) Exposure assessment b) Hazard identification
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8) The anaerobic method of mechanical composting is _____.
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c) Processing a recovery d) Disposal

10) Mechanical size reduction operation includes _____.
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c) Milling d) All of the above

11) Substances that emit ionizing radiation are defined as _____.
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12) The pyrolysis process of SWM is _____ in nature.
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13) Incineration of waste treatment involves _____ of solid wastes.
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Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (197042618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 from section I and Q. No. 6 from section II is compulsory. Solve any two from remaining questions each from Section I and Section II.
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b) Explain factors affecting composting process of solid waste. **05**

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Section – II

Q.6 **a)** With the help of examples, discuss the various types of hazards. **06**
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Q.8	**a)**	List strategies for waste minimization and elaborate any two.	**05**
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SLR-GF-50

Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (197042618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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11) M R F's term in SWM is used for _____.
a) Major relief funds b) Material recovery facilities
c) Minimum raw food d) None of the above

12) _____ of hazardous waste plays a major role in designing combustion unit.
a) Calorific value b) Chemical value
c) Energy value d) Fuel value

13) Thermal treatment technologies are differentiated by _____.
a) Type of grate b) Chemicals
c) Energy d) Temperature

14) The _____ process determines whether exposure to a chemical can increase the incidence of adverse health effect.
a) Hazard identification b) Exposure assessment
c) Toxicity assessment d) Risk characterization

Seat No.	

Set | R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (197042618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 from section I and Q. No. 6 from section II is compulsory. Solve any two from remaining questions each from Section I and Section II.
2) Figures to right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Estimate the moisture content of solid waste sample of 120 kg using the following data. **05**

Sr. no.	Component	% by mass	Moisture content (%)
1	Food waste	20	60
2	Paper	40	12
3	Cardboards	03	08
4	Plastic	09	02
5	Grass	08	48
6	Wood	07	03
7	Metals	17	04

b) Explain factors affecting composting process of solid waste. **05**

Q.3 **a)** Write a shot note on pyrolysis and its products. **05**
b) 2 Tonnes of weight solid waste having moisture content of 18% is subjected for incineration process. 13% of dry waste solid waste is burned tilled 600°C. 20% of remaining dry solid waste is burned between 600°C to 900°C. Calculate heat energy generated in the incineration process. **04**

Q.4 **a)** Explain proximate analysis and ultimate analysis of Solid waste. **05**
b) Explain methodology of incineration with the help of flow sheet diagram. **04**

Q.5 **Write short notes on following (any three):** **09**
a) Societal factor in SWM
b) Windrow composting
c) Chemical characteristics of solid waste
d) ISWM

Section – II

Q.6 **a)** With the help of examples, discuss the various types of hazards. **06**
b) Explain the geomorphological hazards. **04**

Q.7 **a)** Discuss the objectives and need of risk assessment. **05**
b) Discuss the tools of qualitative estimation of damages. **04**

Q.8	**a)**	List strategies for waste minimization and elaborate any two.	**05**
	b)	Illustrate the types of hazardous waste.	**04**
Q.9	**a)**	With the help of neat diagram, explain the working of landfill.	**05**
	b)	Discuss the procedure of leachate control.	**04**

Seat No.	

Set | S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (197042618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Incineration of waste treatment involves _____ of solid wastes.
a) Combustion b) Steam
c) Hydrolysis d) Biodegradation

2) M R F's term in SWM is used for _____.
a) Major relief funds b) Material recovery facilities
c) Minimum raw food d) None of the above

3) _____ of hazardous waste plays a major role in designing combustion unit.
a) Calorific value b) Chemical value
c) Energy value d) Fuel value

4) Thermal treatment technologies are differentiated by _____.
a) Type of grate b) Chemicals
c) Energy d) Temperature

5) The _____ process determines whether exposure to a chemical can increase the incidence of adverse health effect.
a) Hazard identification b) Exposure assessment
c) Toxicity assessment d) Risk characterization

6) What is the main objective of risk assessment?
a) To evaluate hazard and minimize the risks
b) Remediation of contaminated sites
c) Hazard management
d) To know source of pollutants

7) In a multiple HW management facility, ceasing only one unit operation which others remain intact is known as _____ closure.
a) Complete b) Partial
c) Half d) Final

8) Removing all wastes from the waste management unit and decontaminate or remove all equipment is known as _____ closure.
a) Partial b) Full
c) Clean d) Decontaminate

9) What is the first stage of risk assessment?
a) Exposure assessment b) Hazard identification
c) Toxicity study d) Risk characterization

10) The anaerobic method of mechanical composting is _____.
a) Indore method b) Manglore method
c) Banglore method d) None of the above

11) The final functional element in solid waste management system is _____.
a) Transfer & transportation b) Collection
c) Processing a recovery d) Disposal

12) Mechanical size reduction operation includes _____.
a) Shredding b) Grinding
c) Milling d) All of the above

13) Substances that emit ionizing radiation are defined as _____.
a) Hazardous waste b) Radioactive waste
c) Flammable waste d) Biological waste

14) The pyrolysis process of SWM is _____ in nature.
a) Endothermic b) Exothermic
c) Herothermic d) None of the above

SLR-GF-50

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Solid and Hazardous Waste Management (197042618)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 from section I and Q. No. 6 from section II is compulsory. Solve any two from remaining questions each from Section I and Section II.
2) Figures to right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Estimate the moisture content of solid waste sample of 120 kg using the following data. **05**

Sr. no.	Component	% by mass	Moisture content (%)
1	Food waste	20	60
2	Paper	40	12
3	Cardboards	03	08
4	Plastic	09	02
5	Grass	08	48
6	Wood	07	03
7	Metals	17	04

b) Explain factors affecting composting process of solid waste. **05**

Q.3 **a)** Write a shot note on pyrolysis and its products. **05**
b) 2 Tonnes of weight solid waste having moisture content of 18% is subjected for incineration process. 13% of dry waste solid waste is burned tilled 600°C. 20% of remaining dry solid waste is burned between 600°C to 900°C. Calculate heat energy generated in the incineration process. **04**

Q.4 **a)** Explain proximate analysis and ultimate analysis of Solid waste. **05**
b) Explain methodology of incineration with the help of flow sheet diagram. **04**

Q.5 **Write short notes on following (any three):** **09**
a) Societal factor in SWM
b) Windrow composting
c) Chemical characteristics of solid waste
d) ISWM

Section – II

Q.6 **a)** With the help of examples, discuss the various types of hazards. **06**
b) Explain the geomorphological hazards. **04**

Q.7 **a)** Discuss the objectives and need of risk assessment. **05**
b) Discuss the tools of qualitative estimation of damages. **04**

Q.8	**a)**	List strategies for waste minimization and elaborate any two.	**05**
	b)	Illustrate the types of hazardous waste.	**04**
Q.9	**a)**	With the help of neat diagram, explain the working of landfill.	**05**
	b)	Discuss the procedure of leachate control.	**04**

SLR-GF-55

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (197042623)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat sketches wherever necessary.
5) Use of non-programmable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If the Froude's number is 2.4 then the jump is known as _____.
a) Steady b) Oscillating
c) Undular d) Weak

2) Specific force represents the sum of pressure force and _____.
a) Datum head
b) Momentum flux per unit weight
c) Momentum flux and datum head
d) None

3) The flow in open channel may be characterized as laminar when _____.
a) Re < 500 b) Re > 2000
c) Re > 4000 d) 500 < Re > 2000

4) In Gradually varied flow, if dy/dx is positive then dE/dx will be _____.
a) Zero b) Negative if y > yc
c) Positive if y > yc d) Always negative

5) River plains are made up of _____.
a) Black soil b) Red soil
c) Alluvium d) None

6) For the trapezoidal section _____.
a) Shape is of half hexagon
b) Depth of flow equal to half bed width
c) Side slope equal to 45°
d) None

7) The mean velocity in Lacey's regime channel is proportional to _____.
a) $11\ R^{1/2}S_0^{1/2}$ b) $10.8\ D^{2/3}S_0^{1/3}$
c) $11\ DS_0$ d) None

8) The momentum correction factor, β is given as _____.

a) $1/V^2A\int . V^3 . dA$ b) $1/VA\int . V . dA$

c) $1/V^3A\int . V^2 . dA$ d) $1/V^2A\int . V^2 . dA$

9) What type of force is completely responsible for the bed load movement?

a) Forces of Turbulence b) Drag Force

c) Capillary Force d) Gravity Force

10) Extreme condition of meanders is called as _____.

a) Leavee b) Spurs

c) Cut-off d) Island

11) River training work serves the following purposes _____.

a) Protect the river bed and banks

b) Direct the river flow in desired condition

c) Increase or decrease of the river discharge

d) Protect the surrounding land from flooding

12) The Lacey's equation for a regime channel consists of a set of 'x' independent equation relating to flow, where 'x' is equal to _____.

a) 1 b) 3

c) 5 d) 8

13) Mach number is the ratio between inertia force and _____.

a) Elastic force b) Surface tension force

c) Viscous force d) Pressure force

14) Hydraulic model and corresponding prototype should have _____.

a) Geometric similitude b) Kinematic similitude

c) Dynamic similitude d) All the above

Seat No.		Set	P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (197042623)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Use of non-programmable calculator is permitted.

Section – I

Q.2 Attempt any four. **16**

a) Derive the modified Gradually Varied Flow equation. Draw a neat sketch and show all details.

b) The velocity distribution in rectangular channel of width 'B' and depth 'Yo' was approximated as $V = k_1\sqrt{y}$ where $k_1 =$ constant; calculate the average velocity for the cross-section and correction coefficient $'\alpha'$ & $'\beta'$.

c) A 3.0 m wide rectangular channel conveys 12 m^3/s of water with velocity 5.5 m/s. state is there formation of hydraulic jump if yes calculate height, length and strength of Jump and what is loss of energy per kg of water.

d) A flow of 6.50 m^3/s is passing at a depth of 1.6 m. through a rectangular channel of width 2.8 m. If $'\alpha'$ is 1.1 Determine specific energy of flow also determine the value of the depth alternative to the existing depth. If $'\alpha' = 1.0$ (assumed for alternate depth flow).

e) What do you understand by most economical channel section? Derive most economical rectangular channel section.

Q.3 Attempt any TWO **12**

a) Define kinetic energy correction factor (α) and momentum correction factor (β) and derive their expressions.

b) A discharge of 800 m^3/s flows down a spillway and then passes on a 60 m. Wide concrete apron (n = 0.014) the velocity of water at the toe of spillway is 8.0 m/s. A tail water depth of 4.00 m the channel below causes a hydraulic jump on the horizontal apron. Determine
1) Depth before the jump
2) Length of jump
3) Energy loss in jump
4) Specific force at the toe

c) Derive the most economical channel section for trapezoidal section and show that Half of top width = Length of one of sloping side and hydraulic mean depth.

Section – II

Q.4 Attempt any four. **16**

a) Write the objectives of river training work in detail.

b) Explain with neat sketch.
1) Levee
2) Guide banks

c) Derive 'Froude's model law' for model and state giving examples where it can be used.

d) Explain 'Similitude' and what are its types? and derive the equation for Froude's number.

e) A model of water meter is tested in 90 mm diameter pipe. The discharge was 50 lit/sec and pressure difference is 0.10 n/mm^2. What will be the discharge in pipe of 500 mm diameter pipe and what will be the pressure.

Q.5 Attempt any two. **12**

a) Draw a neat sketch of current meter and explain its working in details.

b) Write short notes on.
1) Reynolds's model law
2) Cut-off and spurs. (Draw neat sketch)

c) A spillway 7.2 m high and 150 m long discharges 2150 m^3/sec, under a head of 4.0 m. If 1:16 model of spill way is to be constructed, find the dimensions of model, head over the model and discharge through the model.

SLR-GF-55

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (197042623)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Draw neat sketches wherever necessary.
5) Use of non-programmable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The momentum correction factor, β is given as _____.
a) $1/V^2A\int . V^3 . dA$ b) $1/VA\int . V . dA$
c) $1/V^3A\int . V^2 . dA$ d) $1/V^2A\int . V^2 . dA$

2) What type of force is completely responsible for the bed load movement?
a) Forces of Turbulence b) Drag Force
c) Capillary Force d) Gravity Force

3) Extreme condition of meanders is called as _____.
a) Leavee b) Spurs
c) Cut-off d) Island

4) River training work serves the following purposes _____.
a) Protect the river bed and banks
b) Direct the river flow in desired condition
c) Increase or decrease of the river discharge
d) Protect the surrounding land from flooding

5) The Lacey's equation for a regime channel consists of a set of 'x' independent equation relating to flow, where 'x' is equal to _____.
a) 1 b) 3
c) 5 d) 8

6) Mach number is the ratio between inertia force and _____.
a) Elastic force b) Surface tension force
c) Viscous force d) Pressure force

7) Hydraulic model and corresponding prototype should have _____.
a) Geometric similitude b) Kinematic similitude
c) Dynamic similitude d) All the above

8) If the Froude's number is 2.4 then the jump is known as _____.
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c) Undular d) Weak

9) Specific force represents the sum of pressure force and _____.
a) Datum head
b) Momentum flux per unit weight
c) Momentum flux and datum head
d) None

10) The flow in open channel may be characterized as laminar when _____.
a) Re < 500
b) Re > 2000
c) Re > 4000
d) 500 < Re > 2000

11) In Gradually varied flow, if dy/dx is positive then dE/dx will be _____.
a) Zero
b) Negative if y > yc
c) Positive if y > yc
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12) River plains are made up of _____.
a) Black soil
b) Red soil
c) Alluvium
d) None

13) For the trapezoidal section _____.
a) Shape is of half hexagon
b) Depth of flow equal to half bed width
c) Side slope equal to 45°
d) None

14) The mean velocity in Lacey's regime channel is proportional to _____.
a) $11\ \mathrm{R}^{1/2}\mathrm{S}_0^{1/2}$
b) $10.8\ \mathrm{D}^{2/3}\mathrm{S}_0^{1/3}$
c) $11\ \mathrm{DS}_0$
d) None

Seat No.		Set	Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (197042623)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Use of non-programmable calculator is permitted.

Section – I

Q.2 Attempt any four. **16**

a) Derive the modified Gradually Varied Flow equation. Draw a neat sketch and show all details.

b) The velocity distribution in rectangular channel of width 'B' and depth 'Yo' was approximated as $V = k_1\sqrt{y}$ where $k_1 =$ constant; calculate the average velocity for the cross-section and correction coefficient $'\alpha'$ & $'\beta'$.

c) A 3.0 m wide rectangular channel conveys 12 m^3/s of water with velocity 5.5 m/s. state is there formation of hydraulic jump if yes calculate height, length and strength of Jump and what is loss of energy per kg of water.

d) A flow of 6.50 m^3/s is passing at a depth of 1.6 m. through a rectangular channel of width 2.8 m. If $'\alpha'$ is 1.1 Determine specific energy of flow also determine the value of the depth alternative to the existing depth. If $'\alpha' = 1.0$ (assumed for alternate depth flow).

e) What do you understand by most economical channel section? Derive most economical rectangular channel section.

Q.3 Attempt any TWO **12**

a) Define kinetic energy correction factor (α) and momentum correction factor (β) and derive their expressions.

b) A discharge of 800 m^3/s flows down a spillway and then passes on a 60 m. Wide concrete apron (n = 0.014) the velocity of water at the toe of spillway is 8.0 m/s. A tail water depth of 4.00 m the channel below causes a hydraulic jump on the horizontal apron. Determine
1) Depth before the jump
2) Length of jump
3) Energy loss in jump
4) Specific force at the toe

c) Derive the most economical channel section for trapezoidal section and show that Half of top width = Length of one of sloping side and hydraulic mean depth.

Section – II

Q.4 Attempt any four. **16**

a) Write the objectives of river training work in detail.

b) Explain with neat sketch.
1) Levee
2) Guide banks

c) Derive 'Froude's model law' for model and state giving examples where it can be used.

d) Explain 'Similitude' and what are its types? and derive the equation for Froude's number.

e) A model of water meter is tested in 90 mm diameter pipe. The discharge was 50 lit/sec and pressure difference is 0.10 n/mm^2. What will be the discharge in pipe of 500 mm diameter pipe and what will be the pressure.

Q.5 Attempt any two. **12**

a) Draw a neat sketch of current meter and explain its working in details.

b) Write short notes on.
1) Reynolds's model law
2) Cut-off and spurs. (Draw neat sketch)

c) A spillway 7.2 m high and 150 m long discharges 2150 m^3/sec, under a head of 4.0 m. If 1:16 model of spill way is to be constructed, find the dimensions of model, head over the model and discharge through the model.

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (197042623)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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4) Draw neat sketches wherever necessary.
5) Use of non-programmable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) River training work serves the following purposes _____.
a) Protect the river bed and banks
b) Direct the river flow in desired condition
c) Increase or decrease of the river discharge
d) Protect the surrounding land from flooding

2) The Lacey's equation for a regime channel consists of a set of 'x' independent equation relating to flow, where 'x' is equal to _____.
a) 1 b) 3
c) 5 d) 8

3) Mach number is the ratio between inertia force and _____.
a) Elastic force b) Surface tension force
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4) Hydraulic model and corresponding prototype should have _____.
a) Geometric similitude b) Kinematic similitude
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a) Shape is of half hexagon
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a) $1/\mathrm{V}^2\mathrm{A}\int .\mathrm{V}^3.\mathrm{dA}$ b) $1/\mathrm{VA}\int .\mathrm{V}.\mathrm{dA}$
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13) What type of force is completely responsible for the bed load movement?
a) Forces of Turbulence b) Drag Force
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14) Extreme condition of meanders is called as _____.
a) Leavee b) Spurs
c) Cut-off d) Island

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (197042623)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four. **16**

a) Derive the modified Gradually Varied Flow equation. Draw a neat sketch and show all details.

b) The velocity distribution in rectangular channel of width 'B' and depth 'Yo' was approximated as $V = k_1\sqrt{y}$ where $k_1 =$ constant; calculate the average velocity for the cross-section and correction coefficient $'\alpha'$ & $'\beta'$.

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d) A flow of 6.50 m^3/s is passing at a depth of 1.6 m. through a rectangular channel of width 2.8 m. If $'\alpha'$ is 1.1 Determine specific energy of flow also determine the value of the depth alternative to the existing depth. If $'\alpha' = 1.0$ (assumed for alternate depth flow).

e) What do you understand by most economical channel section? Derive most economical rectangular channel section.

Q.3 Attempt any TWO **12**

a) Define kinetic energy correction factor (α) and momentum correction factor (β) and derive their expressions.

b) A discharge of 800 m^3/s flows down a spillway and then passes on a 60 m. Wide concrete apron (n = 0.014) the velocity of water at the toe of spillway is 8.0 m/s. A tail water depth of 4.00 m the channel below causes a hydraulic jump on the horizontal apron. Determine
1) Depth before the jump
2) Length of jump
3) Energy loss in jump
4) Specific force at the toe

c) Derive the most economical channel section for trapezoidal section and show that Half of top width = Length of one of sloping side and hydraulic mean depth.

Section – II

Q.4 Attempt any four. **16**

a) Write the objectives of river training work in detail.

b) Explain with neat sketch.
1) Levee
2) Guide banks

c) Derive 'Froude's model law' for model and state giving examples where it can be used.

d) Explain 'Similitude' and what are its types? and derive the equation for Froude's number.

e) A model of water meter is tested in 90 mm diameter pipe. The discharge was 50 lit/sec and pressure difference is 0.10 n/mm^2. What will be the discharge in pipe of 500 mm diameter pipe and what will be the pressure.

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a) Draw a neat sketch of current meter and explain its working in details.

b) Write short notes on.
1) Reynolds's model law
2) Cut-off and spurs. (Draw neat sketch)

c) A spillway 7.2 m high and 150 m long discharges 2150 m^3/sec, under a head of 4.0 m. If 1:16 model of spill way is to be constructed, find the dimensions of model, head over the model and discharge through the model.

SLR-GF-55

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (197042623)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Draw neat sketches wherever necessary.
5) Use of non-programmable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) For the trapezoidal section _____.
a) Shape is of half hexagon
b) Depth of flow equal to half bed width
c) Side slope equal to 45°
d) None

2) The mean velocity in Lacey's regime channel is proportional to _____.
a) $11\ \mathrm{R}^{1/2}\mathrm{S}_0^{1/2}$ b) $10.8\ \mathrm{D}^{2/3}\mathrm{S}_0^{1/3}$
c) $11\ \mathrm{DS}_0$ d) None

3) The momentum correction factor, β is given as _____.
a) $1/\mathrm{V}^2\mathrm{A}\int .\mathrm{V}^3.\mathrm{dA}$ b) $1/\mathrm{VA}\int .\mathrm{V}.\mathrm{dA}$
c) $1/\mathrm{V}^3\mathrm{A}\int .\mathrm{V}^2.\mathrm{dA}$ d) $1/\mathrm{V}^2\mathrm{A}\int .\mathrm{V}^2.\mathrm{dA}$

4) What type of force is completely responsible for the bed load movement?
a) Forces of Turbulence b) Drag Force
c) Capillary Force d) Gravity Force

5) Extreme condition of meanders is called as _____.
a) Leavee b) Spurs
c) Cut-off d) Island

6) River training work serves the following purposes _____.
a) Protect the river bed and banks
b) Direct the river flow in desired condition
c) Increase or decrease of the river discharge
d) Protect the surrounding land from flooding

7) The Lacey's equation for a regime channel consists of a set of 'x' independent equation relating to flow, where 'x' is equal to _____.
a) 1 b) 3
c) 5 d) 8

8) Mach number is the ratio between inertia force and _____.
a) Elastic force b) Surface tension force
c) Viscous force d) Pressure force

9) Hydraulic model and corresponding prototype should have _____.
a) Geometric similitude b) Kinematic similitude
c) Dynamic similitude d) All the above

10) If the Froude's number is 2.4 then the jump is known as _____.
a) Steady b) Oscillating
c) Undular d) Weak

11) Specific force represents the sum of pressure force and _____.
a) Datum head
b) Momentum flux per unit weight
c) Momentum flux and datum head
d) None

12) The flow in open channel may be characterized as laminar when _____.
a) Re < 500 b) Re > 2000
c) Re > 4000 d) 500 < Re > 2000

13) In Gradually varied flow, if dy/dx is positive then dE/dx will be _____.
a) Zero b) Negative if y > yc
c) Positive if y > yc d) Always negative

14) River plains are made up of _____.
a) Black soil b) Red soil
c) Alluvium d) None

SLR-GF-55

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Channel Flow & River Hydraulics (197042623)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Use of non-programmable calculator is permitted.

Section – I

Q.2 Attempt any four. **16**

a) Derive the modified Gradually Varied Flow equation. Draw a neat sketch and show all details.

b) The velocity distribution in rectangular channel of width 'B' and depth 'Yo' was approximated as $V = k_1\sqrt{y}$ where $k_1 =$ constant; calculate the average velocity for the cross-section and correction coefficient $'\alpha'$ & $'\beta'$.

c) A 3.0 m wide rectangular channel conveys 12 m^3/s of water with velocity 5.5 m/s. state is there formation of hydraulic jump if yes calculate height, length and strength of Jump and what is loss of energy per kg of water.

d) A flow of 6.50 m^3/s is passing at a depth of 1.6 m. through a rectangular channel of width 2.8 m. If $'\alpha'$ is 1.1 Determine specific energy of flow also determine the value of the depth alternative to the existing depth. If $'\alpha' = 1.0$ (assumed for alternate depth flow).

e) What do you understand by most economical channel section? Derive most economical rectangular channel section.

Q.3 Attempt any TWO **12**

a) Define kinetic energy correction factor (α) and momentum correction factor (β) and derive their expressions.

b) A discharge of 800 m^3/s flows down a spillway and then passes on a 60 m. Wide concrete apron (n = 0.014) the velocity of water at the toe of spillway is 8.0 m/s. A tail water depth of 4.00 m the channel below causes a hydraulic jump on the horizontal apron. Determine
1) Depth before the jump
2) Length of jump
3) Energy loss in jump
4) Specific force at the toe

c) Derive the most economical channel section for trapezoidal section and show that Half of top width = Length of one of sloping side and hydraulic mean depth.

Section – II

Q.4 Attempt any four. **16**

a) Write the objectives of river training work in detail.

b) Explain with neat sketch.
1) Levee
2) Guide banks

c) Derive 'Froude's model law' for model and state giving examples where it can be used.

d) Explain 'Similitude' and what are its types? and derive the equation for Froude's number.

e) A model of water meter is tested in 90 mm diameter pipe. The discharge was 50 lit/sec and pressure difference is 0.10 n/mm^2. What will be the discharge in pipe of 500 mm diameter pipe and what will be the pressure.

Q.5 Attempt any two. **12**

a) Draw a neat sketch of current meter and explain its working in details.

b) Write short notes on.
1) Reynolds's model law
2) Cut-off and spurs. (Draw neat sketch)

c) A spillway 7.2 m high and 150 m long discharges 2150 m^3/sec, under a head of 4.0 m. If 1:16 model of spill way is to be constructed, find the dimensions of model, head over the model and discharge through the model.

SLR-GF-56

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures - I (197042603)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book).
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) *Use of original IS 456-2000 and non-programmable calculator is allowed.*
4) Draw neat sketches of reinforcement details & assume suitable data if required and state it clearly.
5) Figures to the right indicates full marks.
6) IS 456:2000 is not allowed while solving MCQ in First 30 Minutes.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 MCQ (Choose the correct answer). 14

1) The maximum compressive strain in concrete in axial compression is taken as _____. 1
a) 0.001 b) 0.002
c) 0.003 d) 0.040

2) The effective span of member that is not built integrally with its supports shall be taken as _____. 1
a) Clear span plus effective depth of slab or beam
b) Center to center supports whichever is
c) a or b whichever is less
d) a or b whichever is more

3) The diameter of reinforcing bar shall not exceed _____ of the total thickness of the slab. 1
a) 1/6 b) 1/8
c) 1/3 d) 1/4

4) In two way restrained slab the middle strip being _____ times width. 1
a) $1/8$ b) ¾
c) ¼ d) ½

5) Where depth of beam exceeds 750 mm the side face reinforcement shall be provided along the two faces. The total area of such reinforcement shall not be less than _____ % of web area. 1
a) 0.1 b) 0.15
c) 0.2 d) 0.25

6) Minimum tension steel in RC beam needs to be provided to _____. 1
a) prevent sudden failure b) arrest crack width
c) control excessive deflection d) prevent surface hair cracks

7) For two-way slab for max. B.M. per unit width in a slab in shorter direction is _____. 1

a) $a_y w {l_x}^2$ b) $a_x w {l_y}^2$

c) $a_x w {l_x}^2$ d) $a_y w {l_y}^2$

8) The cross-sectional area of longitudinal reinforcement, shall not be less than _____ percent of the gross cross-sectional area of the column. 1

a) 0.8 b) 6

c) 0.4 d) 1

9) The ratio of recommended effective length to unsupported length of a column when effectively held in position in both ends, and restrained against rotation at both end is _____. 1

a) 0.65 b) 0.8

c) 1.0 d) 0.85

10) Effective width of flange for T beam is _____. 1

a) $(l_0/6) + b_w + 6\ D_f$ b) $(l_0/3) + b_w + 3\ D_f$

c) $(l_0/12) + b_w + 6\ D_f$ d) $(l_0/12) + 6b_w + D_f$

11) In a slab 12 mm diameter bars are to be provided at 150 mm center to center, due to non-availability the diameter of bars is to be changed to 16 mm the new spacing would be _____. 2

a) 266.66 mm b) 84.37 mm

c) 300 mm d) 450 mm

12) The factored load carrying capacity of a column of 300 mm × 600 mm size with minimum percentage of steel is (M20, Fe415). 2

a) 1840 kN b) 180 kN

c) 1829 kN d) 1505 kN

SLR-GF-56

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures - I (197042603)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 and 6 are compulsory.
2) Solve Any Two from Q. No. 3 to Q. No. 5 in section I and Q. No. 7 to Q. No. 9 in section II.
3) Use of IS 456:2000 Original and non-programmable Calculator is allowed.
4) Draw neat sketch of reinforcement details & assume suitable data if required and state it clearly.

Section – I

Q.2 Design the simply supported rectangular beam 230 mm wide to carry a live load of 25 kN/m. The clear span of the beam is 4.25 m. Use M20 Concrete & Fe-500 steel. **08**

Q.3 A doubly reinforced beam section is 250 mm wide and 500 mm deep to the tensile reinforcement. It is reinforced with 2#18 mm Φ in compression zone and 4#25 mm Φ as tensile steel. An effective cover of 40 mm. Calculate the moment of resistance of the beam. Use M25 concrete and Fe-500 steel. **10**

Q.4 Design a RC slab for a room having inside dimensions 3 m $\times$ 7 m. The thickness of supporting wall is 300 mm. The live load on slab may be taken as 2.5 kN/m^2. Assume slab to be simply supported at ends. Use M20 concrete and Fe-415 steel. **10**

Q.5 A floor of 150 mm thick slab forming part of T-beam which are of 8 m span. The end bearing is 450 mm thick. Spacing of T beam is 3.5 m. the live load on the floor is 4 kN/m^2. Design an intermediate beam for flexure. Use M20 concrete and Fe-500 steel. **10**

Section – II

Q.6 Calculate area of steel required for a short RC column 400 mm $\times$ 400 mm in c/s to carry an axial load of 1550 kN. Use M25 Concrete & Fe-500 steel. **08**

Q.7 Design a rectangular beam of spans 7m each to carry a dead load of 14 kN/m and live load of 16 kN/m. The beam is continuous over more than 3 spans and is supported by columns. Use M20 concrete and Fe-500 steel. **10**

Q.8 Determine the reinforcement required for a beam of size 300 mm × 600 mm subjected to a factored bending moment 120 kN-m, a factored shear force 100 kN and a factored torsion moment of 60 kN-m. Use M25 concrete and Fe-415 steel. **10**

Q.9 Design a circular column to carry an axial load of 1500 kN. The column is 3.2 m long and in effectively held in at both ends, but not restrained against rotation. Use M25 concrete and Fe-500 steel. **10**

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures - I (197042603)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book).
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) *Use of original IS 456-2000 and non-programmable calculator is allowed.*
4) Draw neat sketches of reinforcement details & assume suitable data if required and state it clearly.
5) Figures to the right indicates full marks.
6) IS 456:2000 is not allowed while solving MCQ in First 30 Minutes.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 MCQ (Choose the correct answer). **14**

1) Minimum tension steel in RC beam needs to be provided to _____. 1
a) prevent sudden failure b) arrest crack width
c) control excessive deflection d) prevent surface hair cracks

2) For two-way slab for max. B.M. per unit width in a slab in shorter direction is _____. 1
a) $a_y w l_x{}^2$ b) $a_x w l_y{}^2$
c) $a_x w l_x{}^2$ d) $a_y w l_y{}^2$

3) The cross-sectional area of longitudinal reinforcement, shall not be less than _____ percent of the gross cross-sectional area of the column. 1
a) 0.8 b) 6
c) 0.4 d) 1

4) The ratio of recommended effective length to unsupported length of a column when effectively held in position in both ends, and restrained against rotation at both end is _____. 1
a) 0.65 b) 0.8
c) 1.0 d) 0.85

5) Effective width of flange for T beam is _____. 1
a) $(l_0/6) + b_w + 6\,D_f$ b) $(l_0/3) + b_w + 3\,D_f$
c) $(l_0/12) + b_w + 6\,D_f$ d) $(l_0/12) + 6b_w + D_f$

6) The maximum compressive strain in concrete in axial compression is taken as _____. 1
a) 0.001 b) 0.002
c) 0.003 d) 0.040

7) The effective span of member that is not built integrally with its supports shall be taken as _____. 1

a) Clear span plus effective depth of slab or beam
b) Center to center supports whichever is
c) a or b whichever is less
d) a or b whichever is more

8) The diameter of reinforcing bar shall not exceed _____ of the total thickness of the slab. 1

a) 1/6 b) 1/8
c) 1/3 d) 1/4

9) In two way restrained slab the middle strip being _____ times width. 1

a) $1/8$ b) ¾
c) ¼ d) ½

10) Where depth of beam exceeds 750 mm the side face reinforcement shall be provided along the two faces. The total area of such reinforcement shall not be less than _____ % of web area. 1

a) 0.1 b) 0.15
c) 0.2 d) 0.25

11) In a slab 12 mm diameter bars are to be provided at 150 mm center to center, due to non-availability the diameter of bars is to be changed to 16 mm the new spacing would be _____. 2

a) 266.66 mm b) 84.37 mm
c) 300 mm d) 450 mm

12) The factored load carrying capacity of a column of 300 mm × 600 mm size with minimum percentage of steel is (M20, Fe415). 2

a) 1840 kN b) 180 kN
c) 1829 kN d) 1505 kN

SLR-GF-56

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures - I (197042603)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 and 6 are compulsory.
2) Solve Any Two from Q. No. 3 to Q. No. 5 in section I and Q. No. 7 to Q. No. 9 in section II.
3) Use of IS 456:2000 Original and non-programmable Calculator is allowed.
4) Draw neat sketch of reinforcement details & assume suitable data if required and state it clearly.

Section – I

Q.2 Design the simply supported rectangular beam 230 mm wide to carry a live load of 25 kN/m. The clear span of the beam is 4.25 m. Use M20 Concrete & Fe-500 steel. **08**

Q.3 A doubly reinforced beam section is 250 mm wide and 500 mm deep to the tensile reinforcement. It is reinforced with 2#18 mm Φ in compression zone and 4#25 mm Φ as tensile steel. An effective cover of 40 mm. Calculate the moment of resistance of the beam. Use M25 concrete and Fe-500 steel. **10**

Q.4 Design a RC slab for a room having inside dimensions 3 m $\times$ 7 m. The thickness of supporting wall is 300 mm. The live load on slab may be taken as 2.5 kN/m^2. Assume slab to be simply supported at ends. Use M20 concrete and Fe-415 steel. **10**

Q.5 A floor of 150 mm thick slab forming part of T-beam which are of 8 m span. The end bearing is 450 mm thick. Spacing of T beam is 3.5 m. the live load on the floor is 4 kN/m^2. Design an intermediate beam for flexure. Use M20 concrete and Fe-500 steel. **10**

Section – II

Q.6 Calculate area of steel required for a short RC column 400 mm $\times$ 400 mm in c/s to carry an axial load of 1550 kN. Use M25 Concrete & Fe-500 steel. **08**

Q.7 Design a rectangular beam of spans 7m each to carry a dead load of 14 kN/m and live load of 16 kN/m. The beam is continuous over more than 3 spans and is supported by columns. Use M20 concrete and Fe-500 steel. **10**

Q.8 Determine the reinforcement required for a beam of size 300 mm × 600 mm subjected to a factored bending moment 120 kN-m, a factored shear force 100 kN and a factored torsion moment of 60 kN-m. Use M25 concrete and Fe-415 steel. **10**

Q.9 Design a circular column to carry an axial load of 1500 kN. The column is 3.2 m long and in effectively held in at both ends, but not restrained against rotation. Use M25 concrete and Fe-500 steel. **10**

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures - I (197042603)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book).
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) *Use of original IS 456-2000 and non-programmable calculator is allowed.*
4) Draw neat sketches of reinforcement details & assume suitable data if required and state it clearly.
5) Figures to the right indicates full marks.
6) IS 456:2000 is not allowed while solving MCQ in First 30 Minutes.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 MCQ (Choose the correct answer). **14**

1) The ratio of recommended effective length to unsupported length of a column when effectively held in position in both ends, and restrained against rotation at both end is _____. 1
a) 0.65 b) 0.8
c) 1.0 d) 0.85

2) Effective width of flange for T beam is _____. 1
a) $(l_0/6) + b_w + 6\,D_f$ b) $(l_0/3) + b_w + 3\,D_f$
c) $(l_0/12) + b_w + 6\,D_f$ d) $(l_0/12) + 6b_w + D_f$

3) The maximum compressive strain in concrete in axial compression is taken as _____. 1
a) 0.001 b) 0.002
c) 0.003 d) 0.040

4) The effective span of member that is not built integrally with its supports shall be taken as _____. 1
a) Clear span plus effective depth of slab or beam
b) Center to center supports whichever is
c) a or b whichever is less
d) a or b whichever is more

5) The diameter of reinforcing bar shall not exceed _____ of the total thickness of the slab. 1
a) 1/6 b) 1/8
c) 1/3 d) 1/4

6) In two way restrained slab the middle strip being _____ times width. 1
a) $1/8$ b) ¾
c) ¼ d) ½

7) Where depth of beam exceeds 750 mm the side face reinforcement shall be provided along the two faces. The total area of such reinforcement shall not be less than _____ % of web area. 1

a) 0.1 b) 0.15
c) 0.2 d) 0.25

8) Minimum tension steel in RC beam needs to be provided to _____. 1

a) prevent sudden failure b) arrest crack width
c) control excessive deflection d) prevent surface hair cracks

9) For two-way slab for max. B.M. per unit width in a slab in shorter direction is _____. 1

a) $a_y w {l_x}^2$ b) $a_x w {l_y}^2$
c) $a_x w {l_x}^2$ d) $a_y w {l_y}^2$

10) The cross-sectional area of longitudinal reinforcement, shall not be less than _____ percent of the gross cross-sectional area of the column. 1

a) 0.8 b) 6
c) 0.4 d) 1

11) In a slab 12 mm diameter bars are to be provided at 150 mm center to center, due to non-availability the diameter of bars is to be changed to 16 mm the new spacing would be _____. 2

a) 266.66 mm b) 84.37 mm
c) 300 mm d) 450 mm

12) The factored load carrying capacity of a column of 300 mm × 600 mm size with minimum percentage of steel is (M20, Fe415). 2

a) 1840 kN b) 180 kN
c) 1829 kN d) 1505 kN

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures - I (197042603)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 and 6 are compulsory.
2) Solve Any Two from Q. No. 3 to Q. No. 5 in section I and Q. No. 7 to Q. No. 9 in section II.
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4) Draw neat sketch of reinforcement details & assume suitable data if required and state it clearly.

Section – I

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Q.5 A floor of 150 mm thick slab forming part of T-beam which are of 8 m span. The end bearing is 450 mm thick. Spacing of T beam is 3.5 m. the live load on the floor is 4 kN/m^2. Design an intermediate beam for flexure. Use M20 concrete and Fe-500 steel. **10**

Section – II

Q.6 Calculate area of steel required for a short RC column 400 mm $\times$ 400 mm in c/s to carry an axial load of 1550 kN. Use M25 Concrete & Fe-500 steel. **08**

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Q.8 Determine the reinforcement required for a beam of size 300 mm × 600 mm subjected to a factored bending moment 120 kN-m, a factored shear force 100 kN and a factored torsion moment of 60 kN-m. Use M25 concrete and Fe-415 steel. **10**

Q.9 Design a circular column to carry an axial load of 1500 kN. The column is 3.2 m long and in effectively held in at both ends, but not restrained against rotation. Use M25 concrete and Fe-500 steel. **10**

SLR-GF-56

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures - I (197042603)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book).
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 MCQ (Choose the correct answer). 14

1) The diameter of reinforcing bar shall not exceed _____ of the total thickness of the slab. 1
a) 1/6 b) 1/8
c) 1/3 d) 1/4

2) In two way restrained slab the middle strip being _____ times width. 1
a) $1/8$ b) ¾
c) ¼ d) ½

3) Where depth of beam exceeds 750 mm the side face reinforcement shall be provided along the two faces. The total area of such reinforcement shall not be less than _____ % of web area. 1
a) 0.1 b) 0.15
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4) Minimum tension steel in RC beam needs to be provided to _____. 1
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a) $a_y w {l_x}^2$ b) $a_x w {l_y}^2$
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c) 0.4 d) 1

7) The ratio of recommended effective length to unsupported length of a column when effectively held in position in both ends, and restrained against rotation at both end is _____. 1

a) 0.65 b) 0.8
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8) Effective width of flange for T beam is _____. 1

a) $(l_0/6) + b_w + 6\ D_f$ b) $(l_0/3) + b_w + 3\ D_f$
c) $(l_0/12) + b_w + 6\ D_f$ d) $(l_0/12) + 6b_w +\ D_f$

9) The maximum compressive strain in concrete in axial compression is taken as _____. 1

a) 0.001 b) 0.002
c) 0.003 d) 0.040

10) The effective span of member that is not built integrally with its supports shall be taken as _____. 1

a) Clear span plus effective depth of slab or beam
b) Center to center supports whichever is
c) a or b whichever is less
d) a or b whichever is more

11) In a slab 12 mm diameter bars are to be provided at 150 mm center to center, due to non-availability the diameter of bars is to be changed to 16 mm the new spacing would be _____. 2

a) 266.66 mm b) 84.37 mm
c) 300 mm d) 450 mm

12) The factored load carrying capacity of a column of 300 mm × 600 mm size with minimum percentage of steel is (M20, Fe415). 2

a) 1840 kN b) 180 kN
c) 1829 kN d) 1505 kN

SLR-GF-56

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures - I (197042603)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 and 6 are compulsory.
2) Solve Any Two from Q. No. 3 to Q. No. 5 in section I and Q. No. 7 to Q. No. 9 in section II.
3) Use of IS 456:2000 Original and non-programmable Calculator is allowed.
4) Draw neat sketch of reinforcement details & assume suitable data if required and state it clearly.

Section – I

Q.2 Design the simply supported rectangular beam 230 mm wide to carry a live load of 25 kN/m. The clear span of the beam is 4.25 m. Use M20 Concrete & Fe-500 steel. **08**

Q.3 A doubly reinforced beam section is 250 mm wide and 500 mm deep to the tensile reinforcement. It is reinforced with 2#18 mm Φ in compression zone and 4#25 mm Φ as tensile steel. An effective cover of 40 mm. Calculate the moment of resistance of the beam. Use M25 concrete and Fe-500 steel. **10**

Q.4 Design a RC slab for a room having inside dimensions 3 m $\times$ 7 m. The thickness of supporting wall is 300 mm. The live load on slab may be taken as 2.5 kN/m^2. Assume slab to be simply supported at ends. Use M20 concrete and Fe-415 steel. **10**

Q.5 A floor of 150 mm thick slab forming part of T-beam which are of 8 m span. The end bearing is 450 mm thick. Spacing of T beam is 3.5 m. the live load on the floor is 4 kN/m^2. Design an intermediate beam for flexure. Use M20 concrete and Fe-500 steel. **10**

Section – II

Q.6 Calculate area of steel required for a short RC column 400 mm $\times$ 400 mm in c/s to carry an axial load of 1550 kN. Use M25 Concrete & Fe-500 steel. **08**

Q.7 Design a rectangular beam of spans 7m each to carry a dead load of 14 kN/m and live load of 16 kN/m. The beam is continuous over more than 3 spans and is supported by columns. Use M20 concrete and Fe-500 steel. **10**

Q.8 Determine the reinforcement required for a beam of size 300 mm × 600 mm subjected to a factored bending moment 120 kN-m, a factored shear force 100 kN and a factored torsion moment of 60 kN-m. Use M25 concrete and Fe-415 steel. **10**

Q.9 Design a circular column to carry an axial load of 1500 kN. The column is 3.2 m long and in effectively held in at both ends, but not restrained against rotation. Use M25 concrete and Fe-500 steel. **10**

SLR-GF-57

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (197042604)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) The cost of keeping items in inventory is called _____.
a) Set up cost b) Holding cost
c) Shortage cost d) None of these

2) Lead time is the time between _____.
a) Order and actual delivery
b) Receipt of material and its consumption
c) Order and consumption
d) Dispatch and receipt

3) Hungarian trial and Error method is suitable for solving _____.
a) Transportation problem b) Decision tree
c) Two-person zero sum game d) Assignment problem

4) If λ is the arrival rate and μ is the rate of service then the average number of customers in the system will be _____.
a) $\lambda/(\mu-\lambda)$ b) $\lambda/(\mu\times(\mu-\lambda))$
c) $1/(\mu-\lambda)$ d) $1-(\mu/\lambda)$

5) If λ is the arrival rate and μ is the rate of service then the probability that queue system is idle _____.
a) $\lambda/(\mu-\lambda)$ b) $\lambda/(\mu\times(\mu-\lambda))$
c) $1/(\mu-\lambda)$ d) $1-(\lambda/\mu)$

6) Row wise and column wise difference between second lowest cell and lowest cell in VAM method is _____.
a) Set up cost b) Capital cost
c) Penalty d) Derived

7) Planning is _____.
a) Setting goals b) SWOT analysis
c) Selection of best alternative d) All of these

8) In decision tree problem Decision node is shown by _____.
a) Square b) Circle
c) Triangle d) Pentagon

9) _____ organization is also called as military organization.
a) Line and staff
b) Matrix
c) Line
d) Functional

10) Queuing theory is used to balance _____.
a) Cost of offering service
b) Cost due to delay in offering service
c) Both a & b
d) None of these

11) Graphical method to solve linear programming problem is commonly used when number of decision variables are _____.
a) Two
b) Three
c) Four
d) Five

12) Pure strategy games are those in which both players _____.
a) Play more than one strategy
b) Play with one strategy throughout
c) Play 3 strategies
d) Employ free strategies every time

13) Economic Order Quantity model helps to find _____.
a) Optimum lot size of order
b) Shortage value
c) High-cost lot size of order
d) Penalty rate

14) Identification of sources of defects in materials, components, machining processes, or men to fix responsibility of defectives thereby avoiding or minimising occurrence of defectives. This is the preventive function of quality and is commonly known as _____.
a) Assignment concept
b) Simplex techniques
c) Inventory control
d) Quality control

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (197042604)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to right indicates full marks.

Section – I

Q.2 Answer any three. (24 marks) **24**

a) Using Simplex method, Solve
Max $Z = 2X_1 + 4X_2 + X_3 + X_4$
Subject to, $X_1 + 3X_2 + X_4 \leq 4$
$2X_1 + X_2 \leq 3$
$-X_2 - 4X_3 - X_4 \geq -3$
$X_1, X_2, X_3, X_4 \geq 0$

b) Four different jobs can be done on 4 different machines. The set-up and takedown time cost are assumed to be prohibitively high for changeovers. The matrix below gives the cost in rupees for producing job i on machine j.

		Machines			
		M1	M2	M3	M4
Jobs	J1	51	77	49	55
	J2	32	34	59	68
	J3	37	44	70	54
	J4	55	55	58	55

c) Determine the decision under Maximin and Laplace criteria for the following process.

Alternatives	States of nature (product demand)			
	High (₹)	Moderate (₹)	Low (₹)	Nil (₹)
Expand	50,000	25,000	-25,000	-45,000
Construct	70,000	30,000	-40,000	-80,000
Subcontract	30,000	15,000	-1,000	-10,000

d) Discuss 14 Principles of modern Management.

e) Write a note on:
1) Waiting line theory
2) Transportation Model

Q.3 Write a note on any one. (04 marks) **04**

a) Monte Carlo simulation
b) Decision Tree

Section – II

Q.4 Answer any three. (24 marks) **24**

a) Write a detailed note on ABC analysis. Explain with a graph.

b) What is Break-Even Analysis? Explain with an example. How it is important for material management?

c) A cycle brand 'X' has demanded 9000 units per year. The cost of one procurement is Rs.100 and the holding cost per unit is Rs. 2.4 per year. The replacement is instantaneous and no shortage are allowed. Determine

1) Economic lot size
2) Number of orders per year
3) Time between orders
4) Total cost per year if the cost of one cycle is Rs. 300

d) What are quality control charts? What are the different pattern indications in quality control charts?

e) Write a short note on ERP System.

Q.5 Write a note on any one. **04**

a) Five major functional modules of ERP

b) Various types of inventory costs

SLR-GF-57

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (197042604)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) In decision tree problem Decision node is shown by _____.
a) Square b) Circle
c) Triangle d) Pentagon

2) _____ organization is also called as military organization.
a) Line and staff b) Matrix
c) Line d) Functional

3) Queuing theory is used to balance _____.
a) Cost of offering service
b) Cost due to delay in offering service
c) Both a & b
d) None of these

4) Graphical method to solve linear programming problem is commonly used when number of decision variables are _____.
a) Two b) Three
c) Four d) Five

5) Pure strategy games are those in which both players _____.
a) Play more than one strategy
b) Play with one strategy throughout
c) Play 3 strategies
d) Employ free strategies every time

6) Economic Order Quantity model helps to find _____.
a) Optimum lot size of order b) Shortage value
c) High-cost lot size of order d) Penalty rate

7) Identification of sources of defects in materials, components, machining processes, or men to fix responsibility of defectives thereby avoiding or minimising occurrence of defectives. This is the preventive function of quality and is commonly known as _____.
a) Assignment concept b) Simplex techniques
c) Inventory control d) Quality control

8) The cost of keeping items in inventory is called _____.
a) Set up cost
b) Holding cost
c) Shortage cost
d) None of these

9) Lead time is the time between _____.
a) Order and actual delivery
b) Receipt of material and its consumption
c) Order and consumption
d) Dispatch and receipt

10) Hungarian trial and Error method is suitable for solving _____.
a) Transportation problem
b) Decision tree
c) Two-person zero sum game
d) Assignment problem

11) If λ is the arrival rate and μ is the rate of service then the average number of customers in the system will be _____.
a) $\lambda/(\mu-\lambda)$
b) $\lambda/(\mu\times(\mu-\lambda))$
c) $1/(\mu-\lambda)$
d) $1-(\mu/\lambda)$

12) If λ is the arrival rate and μ is the rate of service then the probability that queue system is idle _____.
a) $\lambda/(\mu-\lambda)$
b) $\lambda/(\mu\times(\mu-\lambda))$
c) $1/(\mu-\lambda)$
d) $1-(\lambda/\mu)$

13) Row wise and column wise difference between second lowest cell and lowest cell in VAM method is _____.
a) Set up cost
b) Capital cost
c) Penalty
d) Derived

14) Planning is _____.
a) Setting goals
b) SWOT analysis
c) Selection of best alternative
d) All of these

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (197042604)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to right indicates full marks.

Section – I

Q.2 Answer any three. (24 marks) **24**

a) Using Simplex method, Solve
Max $Z = 2X_1 + 4X_2 + X_3 + X_4$
Subject to, $X_1 + 3X_2 + X_4 \leq 4$
$2X_1 + X_2 \leq 3$
$-X_2 - 4X_3 - X_4 \geq -3$
$X_1, X_2, X_3, X_4 \geq 0$

b) Four different jobs can be done on 4 different machines. The set-up and takedown time cost are assumed to be prohibitively high for changeovers. The matrix below gives the cost in rupees for producing job i on machine j.

		Machines			
		M1	M2	M3	M4
Jobs	J1	51	77	49	55
	J2	32	34	59	68
	J3	37	44	70	54
	J4	55	55	58	55

c) Determine the decision under Maximin and Laplace criteria for the following process.

Alternatives	States of nature (product demand)			
	High (₹)	Moderate (₹)	Low (₹)	Nil (₹)
Expand	50,000	25,000	-25,000	-45,000
Construct	70,000	30,000	-40,000	-80,000
Subcontract	30,000	15,000	-1,000	-10,000

d) Discuss 14 Principles of modern Management.

e) Write a note on:
1) Waiting line theory
2) Transportation Model

Q.3 Write a note on any one. (04 marks) **04**

a) Monte Carlo simulation
b) Decision Tree

Section – II

Q.4 Answer any three. (24 marks) **24**

a) Write a detailed note on ABC analysis. Explain with a graph.

b) What is Break-Even Analysis? Explain with an example. How it is important for material management?

c) A cycle brand 'X' has demanded 9000 units per year. The cost of one procurement is Rs.100 and the holding cost per unit is Rs. 2.4 per year. The replacement is instantaneous and no shortage are allowed. Determine

1) Economic lot size
2) Number of orders per year
3) Time between orders
4) Total cost per year if the cost of one cycle is Rs. 300

d) What are quality control charts? What are the different pattern indications in quality control charts?

e) Write a short note on ERP System.

Q.5 Write a note on any one. **04**

a) Five major functional modules of ERP

b) Various types of inventory costs

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (197042604)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) Graphical method to solve linear programming problem is commonly used when number of decision variables are _____.
a) Two b) Three
c) Four d) Five

2) Pure strategy games are those in which both players _____.
a) Play more than one strategy
b) Play with one strategy throughout
c) Play 3 strategies
d) Employ free strategies every time

3) Economic Order Quantity model helps to find _____.
a) Optimum lot size of order b) Shortage value
c) High-cost lot size of order d) Penalty rate

4) Identification of sources of defects in materials, components, machining processes, or men to fix responsibility of defectives thereby avoiding or minimising occurrence of defectives. This is the preventive function of quality and is commonly known as _____.
a) Assignment concept b) Simplex techniques
c) Inventory control d) Quality control

5) The cost of keeping items in inventory is called _____.
a) Set up cost b) Holding cost
c) Shortage cost d) None of these

6) Lead time is the time between _____.
a) Order and actual delivery
b) Receipt of material and its consumption
c) Order and consumption
d) Dispatch and receipt

7) Hungarian trial and Error method is suitable for solving _____.
a) Transportation problem b) Decision tree
c) Two-person zero sum game d) Assignment problem

8) If λ is the arrival rate and μ is the rate of service then the average number of customers in the system will be _____.

a) $\lambda/(\mu-\lambda)$ b) $\lambda/(\mu\times(\mu-\lambda))$

c) $1/(\mu-\lambda)$ d) $1-(\mu/\lambda)$

9) If λ is the arrival rate and μ is the rate of service then the probability that queue system is idle _____.

a) $\lambda/(\mu-\lambda)$ b) $\lambda/(\mu\times(\mu-\lambda))$

c) $1/(\mu-\lambda)$ d) $1-(\lambda/\mu)$

10) Row wise and column wise difference between second lowest cell and lowest cell in VAM method is _____.

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c) Penalty d) Derived

11) Planning is _____.

a) Setting goals b) SWOT analysis

c) Selection of best alternative d) All of these

12) In decision tree problem Decision node is shown by _____.

a) Square b) Circle

c) Triangle d) Pentagon

13) _____ organization is also called as military organization.

a) Line and staff b) Matrix

c) Line d) Functional

14) Queuing theory is used to balance _____.

a) Cost of offering service

b) Cost due to delay in offering service

c) Both a & b

d) None of these

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (197042604)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to right indicates full marks.

Section – I

Q.2 Answer any three. (24 marks) **24**

a) Using Simplex method, Solve
Max $Z = 2X_1 + 4X_2 + X_3 + X_4$
Subject to, $X_1 + 3X_2 + X_4 \leq 4$
$2X_1 + X_2 \leq 3$
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$X_1, X_2, X_3, X_4 \geq 0$

b) Four different jobs can be done on 4 different machines. The set-up and takedown time cost are assumed to be prohibitively high for changeovers. The matrix below gives the cost in rupees for producing job i on machine j.

		Machines			
		M1	M2	M3	M4
Jobs	J1	51	77	49	55
	J2	32	34	59	68
	J3	37	44	70	54
	J4	55	55	58	55

c) Determine the decision under Maximin and Laplace criteria for the following process.

Alternatives	States of nature (product demand)			
	High (₹)	Moderate (₹)	Low (₹)	Nil (₹)
Expand	50,000	25,000	-25,000	-45,000
Construct	70,000	30,000	-40,000	-80,000
Subcontract	30,000	15,000	-1,000	-10,000

d) Discuss 14 Principles of modern Management.

e) Write a note on:
1) Waiting line theory
2) Transportation Model

Q.3 Write a note on any one. (04 marks) **04**

a) Monte Carlo simulation
b) Decision Tree

Section – II

Q.4 Answer any three. (24 marks) **24**

a) Write a detailed note on ABC analysis. Explain with a graph.

b) What is Break-Even Analysis? Explain with an example. How it is important for material management?

c) A cycle brand 'X' has demanded 9000 units per year. The cost of one procurement is Rs.100 and the holding cost per unit is Rs. 2.4 per year. The replacement is instantaneous and no shortage are allowed. Determine

1) Economic lot size
2) Number of orders per year
3) Time between orders
4) Total cost per year if the cost of one cycle is Rs. 300

d) What are quality control charts? What are the different pattern indications in quality control charts?

e) Write a short note on ERP System.

Q.5 Write a note on any one. **04**

a) Five major functional modules of ERP

b) Various types of inventory costs

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (197042604)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) Row wise and column wise difference between second lowest cell and lowest cell in VAM method is _____.
a) Set up cost b) Capital cost
c) Penalty d) Derived

2) Planning is _____.
a) Setting goals b) SWOT analysis
c) Selection of best alternative d) All of these

3) In decision tree problem Decision node is shown by _____.
a) Square b) Circle
c) Triangle d) Pentagon

4) _____ organization is also called as military organization.
a) Line and staff b) Matrix
c) Line d) Functional

5) Queuing theory is used to balance _____.
a) Cost of offering service
b) Cost due to delay in offering service
c) Both a & b
d) None of these

6) Graphical method to solve linear programming problem is commonly used when number of decision variables are _____.
a) Two b) Three
c) Four d) Five

7) Pure strategy games are those in which both players _____.
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b) Play with one strategy throughout
c) Play 3 strategies
d) Employ free strategies every time

8) Economic Order Quantity model helps to find _____.
a) Optimum lot size of order b) Shortage value
c) High-cost lot size of order d) Penalty rate

9) Identification of sources of defects in materials, components, machining processes, or men to fix responsibility of defectives thereby avoiding or minimising occurrence of defectives. This is the preventive function of quality and is commonly known as _____.

a) Assignment concept
b) Simplex techniques
c) Inventory control
d) Quality control

10) The cost of keeping items in inventory is called _____.

a) Set up cost
b) Holding cost
c) Shortage cost
d) None of these

11) Lead time is the time between _____.

a) Order and actual delivery
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12) Hungarian trial and Error method is suitable for solving _____.

a) Transportation problem
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c) Two-person zero sum game
d) Assignment problem

13) If λ is the arrival rate and μ is the rate of service then the average number of customers in the system will be _____.

a) $\lambda/(\mu-\lambda)$
b) $\lambda/(\mu\times(\mu-\lambda))$
c) $1/(\mu-\lambda)$
d) $1-(\mu/\lambda)$

14) If λ is the arrival rate and μ is the rate of service then the probability that queue system is idle _____.

a) $\lambda/(\mu-\lambda)$
b) $\lambda/(\mu\times(\mu-\lambda))$
c) $1/(\mu-\lambda)$
d) $1-(\lambda/\mu)$

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Principles of Management and Quantitative Techniques (197042604)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to right indicates full marks.

Section – I

Q.2 Answer any three. (24 marks) **24**

a) Using Simplex method, Solve
Max $Z = 2X_1 + 4X_2 + X_3 + X_4$
Subject to, $X_1 + 3X_2 + X_4 \leq 4$
$2X_1 + X_2 \leq 3$
$-X_2 - 4X_3 - X_4 \geq -3$
$X_1, X_2, X_3, X_4 \geq 0$

b) Four different jobs can be done on 4 different machines. The set-up and takedown time cost are assumed to be prohibitively high for changeovers. The matrix below gives the cost in rupees for producing job i on machine j.

		Machines			
		M1	M2	M3	M4
Jobs	J1	51	77	49	55
	J2	32	34	59	68
	J3	37	44	70	54
	J4	55	55	58	55

c) Determine the decision under Maximin and Laplace criteria for the following process.

Alternatives	States of nature (product demand)			
	High (₹)	Moderate (₹)	Low (₹)	Nil (₹)
Expand	50,000	25,000	-25,000	-45,000
Construct	70,000	30,000	-40,000	-80,000
Subcontract	30,000	15,000	-1,000	-10,000

d) Discuss 14 Principles of modern Management.

e) Write a note on:
1) Waiting line theory
2) Transportation Model

Q.3 Write a note on any one. (04 marks) **04**

a) Monte Carlo simulation
b) Decision Tree

Section – II

Q.4 Answer any three. (24 marks) **24**

a) Write a detailed note on ABC analysis. Explain with a graph.

b) What is Break-Even Analysis? Explain with an example. How it is important for material management?

c) A cycle brand 'X' has demanded 9000 units per year. The cost of one procurement is Rs.100 and the holding cost per unit is Rs. 2.4 per year. The replacement is instantaneous and no shortage are allowed. Determine

1) Economic lot size
2) Number of orders per year
3) Time between orders
4) Total cost per year if the cost of one cycle is Rs. 300

d) What are quality control charts? What are the different pattern indications in quality control charts?

e) Write a short note on ERP System.

Q.5 Write a note on any one. **04**

a) Five major functional modules of ERP

b) Various types of inventory costs

SLR-GF-58

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geosynthetics and Reinforced Soil Structures (197042624)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume additional data, if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the sentences. **10**

1) What is the function of geosynthetics clay liner?
a) Containment b) Separation
c) Filtration d) Drainage

2) What should be the normal stress to measure thickness of Geotextiles?
a) 5 kPa b) 2 kPa
c) 20 kPa d) 50 kPa

3) How many types of primary functions of geosynthetics are there?
a) 5 b) 4
c) 6 d) 7

4) To protect geosynthetic from UV exposure _____ is added to it.
a) Plastic b) Carbon Black
c) Benzene d) Cement

5) A planar, polymeric product consisting of a mesh or net-like regular open network of intersecting tensile-resistant elements, integrally connected at the junctions, is called _____.
a) Geotextile b) Geogrid
c) Geonet d) Geocell

6) MFI is acronym for _____.
a) Mount flow Instrument b) Money fix Installment
c) Metal flow Index d) Melt flow Index

7) Which of the following tests measures the toughness of road aggregates?
a) Crushing strength test b) Abrasion test
c) Impact test d) Shape test

8) The width of grips for performing the grab tensile strength is, _____.
a) 25 mm b) 10 mm
c) 15 mm d) 35 mm

9) Which of the following is not physical property of Geosynthetics?

a) Pullout resistance
b) Mass per unit area
c) Specific gravity
d) Thickness

10) What is the unit of trapezoidal tear strength?

a) Nm
b) N/m
c) N
d) None of these

SLR-GF-58

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geosynthetics and Reinforced Soil Structures (197042624)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Figures to the right indicate full marks.
2) Assume suitable data, if required and state it clearly.

Q.2 Attempt any Eight questions. **40**

a) Explain physical properties and durability properties of Geosynthetics in detail.

b) List the various raw materials used in the manufacture of Geosynthetics and explain any one in detail.

c) What are the different construction factors that affect the performance of reinforced soil?

d) Write a note on Binquet and Lee's approach.

e) With a neat sketch cross plane permeability Tests.

f) With a neat sketch explain different components of modern landfill.

g) Explain construction method for reinforced soil retaining wall.

h) Explain in detail the circular slip method for slope stability.

i) Explain Giroud-Noiray approach for Geosynthetics pavement application.

j) What is erosion of soil? How it will be controlled by using Geosynthetics.

SLR-GF-58

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geosynthetics and Reinforced Soil Structures (197042624)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume additional data, if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the sentences. **10**

1) MFI is acronym for _____.
a) Mount flow Instrument b) Money fix Installment
c) Metal flow Index d) Melt flow Index

2) Which of the following tests measures the toughness of road aggregates?
a) Crushing strength test b) Abrasion test
c) Impact test d) Shape test

3) The width of grips for performing the grab tensile strength is, _____.
a) 25 mm b) 10 mm
c) 15 mm d) 35 mm

4) Which of the following is not physical property of Geosynthetics?
a) Pullout resistance b) Mass per unit area
c) Specific gravity d) Thickness

5) What is the unit of trapezoidal tear strength?
a) Nm b) N/m
c) N d) None of these

6) What is the function of geosynthetics clay liner?
a) Containment b) Separation
c) Filtration d) Drainage

7) What should be the normal stress to measure thickness of Geotextiles?
a) 5 kPa b) 2 kPa
c) 20 kPa d) 50 kPa

8) How many types of primary functions of geosynthetics are there?
a) 5 b) 4
c) 6 d) 7

9) To protect geosynthetic from UV exposure _____ is added to it.
a) Plastic b) Carbon Black
c) Benzene d) Cement

10) A planar, polymeric product consisting of a mesh or net-like regular open network of intersecting tensile-resistant elements, integrally connected at the junctions, is called _____.

a) Geotextile
b) Geogrid
c) Geonet
d) Geocell

SLR-GF-58

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geosynthetics and Reinforced Soil Structures (197042624)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Figures to the right indicate full marks.
2) Assume suitable data, if required and state it clearly.

Q.2 Attempt any Eight questions. **40**

a) Explain physical properties and durability properties of Geosynthetics in detail.

b) List the various raw materials used in the manufacture of Geosynthetics and explain any one in detail.

c) What are the different construction factors that affect the performance of reinforced soil?

d) Write a note on Binquet and Lee's approach.

e) With a neat sketch cross plane permeability Tests.

f) With a neat sketch explain different components of modern landfill.

g) Explain construction method for reinforced soil retaining wall.

h) Explain in detail the circular slip method for slope stability.

i) Explain Giroud-Noiray approach for Geosynthetics pavement application.

j) What is erosion of soil? How it will be controlled by using Geosynthetics.

SLR-GF-58

Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geosynthetics and Reinforced Soil Structures (197042624)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume additional data, if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the sentences. **10**

1) Which of the following is not physical property of Geosynthetics?
a) Pullout resistance b) Mass per unit area
c) Specific gravity d) Thickness

2) What is the unit of trapezoidal tear strength?
a) Nm b) N/m
c) N d) None of these

3) What is the function of geosynthetics clay liner?
a) Containment b) Separation
c) Filtration d) Drainage

4) What should be the normal stress to measure thickness of Geotextiles?
a) 5 kPa b) 2 kPa
c) 20 kPa d) 50 kPa

5) How many types of primary functions of geosynthetics are there?
a) 5 b) 4
c) 6 d) 7

6) To protect geosynthetic from UV exposure _____ is added to it.
a) Plastic b) Carbon Black
c) Benzene d) Cement

7) A planar, polymeric product consisting of a mesh or net-like regular open network of intersecting tensile-resistant elements, integrally connected at the junctions, is called _____.
a) Geotextile b) Geogrid
c) Geonet d) Geocell

8) MFI is acronym for _____.
a) Mount flow Instrument b) Money fix Installment
c) Metal flow Index d) Melt flow Index

9) Which of the following tests measures the toughness of road aggregates?

a) Crushing strength test b) Abrasion test

c) Impact test d) Shape test

10) The width of grips for performing the grab tensile strength is, _____.

a) 25 mm b) 10 mm

c) 15 mm d) 35 mm

SLR-GF-58

Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geosynthetics and Reinforced Soil Structures (197042624)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Figures to the right indicate full marks.
2) Assume suitable data, if required and state it clearly.

Q.2 Attempt any Eight questions. **40**

a) Explain physical properties and durability properties of Geosynthetics in detail.

b) List the various raw materials used in the manufacture of Geosynthetics and explain any one in detail.

c) What are the different construction factors that affect the performance of reinforced soil?

d) Write a note on Binquet and Lee's approach.

e) With a neat sketch cross plane permeability Tests.

f) With a neat sketch explain different components of modern landfill.

g) Explain construction method for reinforced soil retaining wall.

h) Explain in detail the circular slip method for slope stability.

i) Explain Giroud-Noiray approach for Geosynthetics pavement application.

j) What is erosion of soil? How it will be controlled by using Geosynthetics.

SLR-GF-58

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geosynthetics and Reinforced Soil Structures (197042624)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume additional data, if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the sentences. **10**

1) How many types of primary functions of geosynthetics are there?
a) 5 b) 4
c) 6 d) 7

2) To protect geosynthetic from UV exposure _____ is added to it.
a) Plastic b) Carbon Black
c) Benzene d) Cement

3) A planar, polymeric product consisting of a mesh or net-like regular open network of intersecting tensile-resistant elements, integrally connected at the junctions, is called _____.
a) Geotextile b) Geogrid
c) Geonet d) Geocell

4) MFI is acronym for _____.
a) Mount flow Instrument b) Money fix Installment
c) Metal flow Index d) Melt flow Index

5) Which of the following tests measures the toughness of road aggregates?
a) Crushing strength test b) Abrasion test
c) Impact test d) Shape test

6) The width of grips for performing the grab tensile strength is, _____.
a) 25 mm b) 10 mm
c) 15 mm d) 35 mm

7) Which of the following is not physical property of Geosynthetics?
a) Pullout resistance b) Mass per unit area
c) Specific gravity d) Thickness

8) What is the unit of trapezoidal tear strength?
a) Nm b) N/m
c) N d) None of these

9) What is the function of geosynthetics clay liner?

a) Containment b) Separation
c) Filtration d) Drainage

10) What should be the normal stress to measure thickness of Geotextiles?

a) 5 kPa b) 2 kPa
c) 20 kPa d) 50 kPa

SLR-GF-58

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geosynthetics and Reinforced Soil Structures (197042624)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Figures to the right indicate full marks.
2) Assume suitable data, if required and state it clearly.

Q.2 Attempt any Eight questions. **40**

a) Explain physical properties and durability properties of Geosynthetics in detail.

b) List the various raw materials used in the manufacture of Geosynthetics and explain any one in detail.

c) What are the different construction factors that affect the performance of reinforced soil?

d) Write a note on Binquet and Lee's approach.

e) With a neat sketch cross plane permeability Tests.

f) With a neat sketch explain different components of modern landfill.

g) Explain construction method for reinforced soil retaining wall.

h) Explain in detail the circular slip method for slope stability.

i) Explain Giroud-Noiray approach for Geosynthetics pavement application.

j) What is erosion of soil? How it will be controlled by using Geosynthetics.

SLR-GF-59

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Rural Roads (197042625)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever needed and mention it necessary

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions. **10**

1) As per recommendations of I.R.C., traffic volume study is carried out for rural roads for 7 days continuously during _____.
a) Harvesting b) Lean season
c) Harvesting and lean season d) none of these

2) In highway construction, rolling starts from _____.
a) Sides and proceed to center
b) Centre and proceed to sides
c) One side and proceed to other side
d) Any of the above

3) The maximum spacing of contraction joints in rigid pavements-Rural roads is _____.
a) 2.5-4 m b) 10-25m
c) 15-25 m d) None of these

4) Most suitable material for highway embankment is _____.
a) Granular soil b) Organic clay
c) Silty soil d) Clayey soil

5) Which IRC code is used for the design of rigid pavements in rural areas?
a) IRC 58:2002 b) IRC SP 58:2004
c) IRC SP 62:2014 d) IRC 69:2002

6) Which IRC code is used for the design of Flexible pavements in rural areas?
a) IRC 58:2002 b) IRC SP 72:2007
c) IRC SP 62:2014 d) IRC 69:2002

7) If the traffic intensity is more than 100 vehicles per day, then width of carriageway for rural roads is taken as _____.
a) 0.5m b) 1m
c) 1.5m d) 3.75m

8) In case of Rural Roads, Traffic parameter is evaluated in terms of _____.
a) Number of Commercial Vehicles per Day (CVPD)
b) Number of two wheelers per day
c) Number of cycles per day
d) None of these

9) The maximum size of coarse aggregate shall not exceed by _____ in rural roads concrete pavements.
a) 50mm
b) 63mm
c) 25mm
d) 10mm

10) If the CBR value is less than 2, then quality of subgrade soil is _____.
a) Good
b) Extremely Good
c) Poor
d) Very Poor

SLR-GF-59

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Rural Roads (197042625)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 is solving any five questions out of eight questions.
2) Figures to the right indicate full marks.
3) Assume data wherever needed and mention it necessary

Q.2 Solve any FIVE questions (Each carries 8 marks) **40**

a) Explain problems associated with planning of Low Volume Rural Roads in India.

b) Explain various geometric design standards for Rural Roads.

c) Explain various materials used in construction of Rural Roads.

d) Write down the pavement thickness design procedure as per IRC SP:72

e) What are the various tests carried out on aggregates for quality control of rural roads as per IRC.

f) Explain surface and sub-surface drainage system for rural roads.

g) Write a short note on Maintenance of Rural Roads.

h) Write a short note on recent developments on Rural Roads in India.

SLR-GF-59

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Rural Roads (197042625)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever needed and mention it necessary

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions. **10**

1) Which IRC code is used for the design of Flexible pavements in rural areas?
a) IRC 58:2002 b) IRC SP 72:2007
c) IRC SP 62:2014 d) IRC 69:2002

2) If the traffic intensity is more than 100 vehicles per day, then width of carriageway for rural roads is taken as _____.
a) 0.5m b) 1m
c) 1.5m d) 3.75m

3) In case of Rural Roads, Traffic parameter is evaluated in terms of _____.
a) Number of Commercial Vehicles per Day (CVPD)
b) Number of two wheelers per day
c) Number of cycles per day
d) None of these

4) The maximum size of coarse aggregate shall not exceed by _____ in rural roads concrete pavements.
a) 50mm b) 63mm
c) 25mm d) 10mm

5) If the CBR value is less than 2, then quality of subgrade soil is _____.
a) Good b) Extremely Good
c) Poor d) Very Poor

6) As per recommendations of I.R.C., traffic volume study is carried out for rural roads for 7 days continuously during _____.
a) Harvesting b) Lean season
c) Harvesting and lean season d) none of these

7) In highway construction, rolling starts from _____.
a) Sides and proceed to center
b) Centre and proceed to sides
c) One side and proceed to other side
d) Any of the above

8) The maximum spacing of contraction joints in rigid pavements-Rural roads is _____.

a) 2.5-4 m
b) 10-25m
c) 15-25 m
d) None of these

9) Most suitable material for highway embankment is _____.

a) Granular soil
b) Organic clay
c) Silty soil
d) Clayey soil

10) Which IRC code is used for the design of rigid pavements in rural areas?

a) IRC 58:2002
b) IRC SP 58:2004
c) IRC SP 62:2014
d) IRC 69:2002

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Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Rural Roads (197042625)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 is solving any five questions out of eight questions.
2) Figures to the right indicate full marks.
3) Assume data wherever needed and mention it necessary

Q.2 Solve any FIVE questions (Each carries 8 marks) **40**

a) Explain problems associated with planning of Low Volume Rural Roads in India.

b) Explain various geometric design standards for Rural Roads.

c) Explain various materials used in construction of Rural Roads.

d) Write down the pavement thickness design procedure as per IRC SP:72

e) What are the various tests carried out on aggregates for quality control of rural roads as per IRC.

f) Explain surface and sub-surface drainage system for rural roads.

g) Write a short note on Maintenance of Rural Roads.

h) Write a short note on recent developments on Rural Roads in India.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Rural Roads (197042625)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever needed and mention it necessary

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions. **10**

1) The maximum size of coarse aggregate shall not exceed by _____ in rural roads concrete pavements.
a) 50mm b) 63mm
c) 25mm d) 10mm

2) If the CBR value is less than 2, then quality of subgrade soil is _____.
a) Good b) Extremely Good
c) Poor d) Very Poor

3) As per recommendations of I.R.C., traffic volume study is carried out for rural roads for 7 days continuously during _____.
a) Harvesting b) Lean season
c) Harvesting and lean season d) none of these

4) In highway construction, rolling starts from _____.
a) Sides and proceed to center
b) Centre and proceed to sides
c) One side and proceed to other side
d) Any of the above

5) The maximum spacing of contraction joints in rigid pavements-Rural roads is _____.
a) 2.5-4 m b) 10-25m
c) 15-25 m d) None of these

6) Most suitable material for highway embankment is _____.
a) Granular soil b) Organic clay
c) Silty soil d) Clayey soil

7) Which IRC code is used for the design of rigid pavements in rural areas?
a) IRC 58:2002 b) IRC SP 58:2004
c) IRC SP 62:2014 d) IRC 69:2002

8) Which IRC code is used for the design of Flexible pavements in rural areas?
a) IRC 58:2002 b) IRC SP 72:2007
c) IRC SP 62:2014 d) IRC 69:2002

9) If the traffic intensity is more than 100 vehicles per day, then width of carriageway for rural roads is taken as _____.

a) 0.5m b) 1m
c) 1.5m d) 3.75m

10) In case of Rural Roads, Traffic parameter is evaluated in terms of _____.

a) Number of Commercial Vehicles per Day (CVPD)
b) Number of two wheelers per day
c) Number of cycles per day
d) None of these

SLR-GF-59

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Rural Roads (197042625)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 is solving any five questions out of eight questions.
2) Figures to the right indicate full marks.
3) Assume data wherever needed and mention it necessary

Q.2 Solve any FIVE questions (Each carries 8 marks) **40**

a) Explain problems associated with planning of Low Volume Rural Roads in India.

b) Explain various geometric design standards for Rural Roads.

c) Explain various materials used in construction of Rural Roads.

d) Write down the pavement thickness design procedure as per IRC SP:72

e) What are the various tests carried out on aggregates for quality control of rural roads as per IRC.

f) Explain surface and sub-surface drainage system for rural roads.

g) Write a short note on Maintenance of Rural Roads.

h) Write a short note on recent developments on Rural Roads in India.

SLR-GF-59

Seat No.	

Set S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Rural Roads (197042625)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever needed and mention it necessary

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Multiple Choice Questions. **10**

1) The maximum spacing of contraction joints in rigid pavements-Rural roads is _____.
a) 2.5-4 m b) 10-25m
c) 15-25 m d) None of these

2) Most suitable material for highway embankment is _____.
a) Granular soil b) Organic clay
c) Silty soil d) Clayey soil

3) Which IRC code is used for the design of rigid pavements in rural areas?
a) IRC 58:2002 b) IRC SP 58:2004
c) IRC SP 62:2014 d) IRC 69:2002

4) Which IRC code is used for the design of Flexible pavements in rural areas?
a) IRC 58:2002 b) IRC SP 72:2007
c) IRC SP 62:2014 d) IRC 69:2002

5) If the traffic intensity is more than 100 vehicles per day, then width of carriageway for rural roads is taken as _____.
a) 0.5m b) 1m
c) 1.5m d) 3.75m

6) In case of Rural Roads, Traffic parameter is evaluated in terms of _____.
a) Number of Commercial Vehicles per Day (CVPD)
b) Number of two wheelers per day
c) Number of cycles per day
d) None of these

7) The maximum size of coarse aggregate shall not exceed by _____ in rural roads concrete pavements.
a) 50mm b) 63mm
c) 25mm d) 10mm

8) If the CBR value is less than 2, then quality of subgrade soil is _____.

a) Good b) Extremely Good
c) Poor d) Very Poor

9) As per recommendations of I.R.C., traffic volume study is carried out for rural roads for 7 days continuously during _____.

a) Harvesting b) Lean season
c) Harvesting and lean season d) none of these

10) In highway construction, rolling starts from _____.

a) Sides and proceed to center
b) Centre and proceed to sides
c) One side and proceed to other side
d) Any of the above

SLR-GF-59

Seat No.	

Set S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Rural Roads (197042625)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 is solving any five questions out of eight questions.
2) Figures to the right indicate full marks.
3) Assume data wherever needed and mention it necessary

Q.2 Solve any FIVE questions (Each carries 8 marks) **40**

a) Explain problems associated with planning of Low Volume Rural Roads in India.

b) Explain various geometric design standards for Rural Roads.

c) Explain various materials used in construction of Rural Roads.

d) Write down the pavement thickness design procedure as per IRC SP:72

e) What are the various tests carried out on aggregates for quality control of rural roads as per IRC.

f) Explain surface and sub-surface drainage system for rural roads.

g) Write a short note on Maintenance of Rural Roads.

h) Write a short note on recent developments on Rural Roads in India.

SLR-GF-60

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Planning for Sustainable Development (197042626)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Figures to the right indicates full marks.
2) Assume data wherever necessary

Attempt any five of the following question. (10 marks each)

Q.1 What are the necessities of sustainable development? **10**

Q.2 Explain two alternative approaches of sustainable development used in waste management. **10**

Q.3 What are various policy reforms done for prevention of environmental degradation? **10**

Q.4 Write a short note on innovation in sustainable development. **10**

Q.5 With help of example, enlist the procedure of energy recovery implemented under sustainable development of landfill. **10**

Q.6 How environmental degradation can be reduced using innovative strategies. **10**

Q.7 Explain institutional theory in sustainable development. **10**

SLR-GF-61

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (197042627)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) After E. Deming, who is considered to have the greatest impact in quality management?
a) Kauro Ishikawa b) Joseph M. Juran
c) W.E. Deming d) Genichi Taguchi

2) The objective of ISO-9000 family of Quality management is _____.
a) Customer satisfaction b) Employee satisfaction
c) Skill enhancement d) Environmental issues

3) Total Quality Management (TQM) focuses on _____.
a) Employee b) Customer
c) Both (a) and (b) d) None of the above

4) TQM & ISO both focuses on _____
a) Customer b) Employee
c) Supplier d) All of above

5) A fundamental attribute of TQM is _____
a) Drawing control charts
b) Top management's direct involvement
c) Meeting ISO 9000 audit
d) All of above

6) Combination of Six Sigma and Lean manufacturing is known as _____.
a) Advanced Six Sigma b) Lean Six Sigma
c) Operational Six Sigma d) None of the above

7) The information of MIS comes from the _____.
a) Internal source
b) External source
c) Both internal and external source
d) None of the above

8) An information system that supports the planning and assessment needs of executive management is _____.
a) DSS b) ERP
c) MIS d) None of the above

9) The back bone of any organization is _____.
a) Information b) Employee
c) Management d) Capital

10) Which one is not Prerequisite of an effective MIS _____.
a) Database b) Support from staff
c) Both a) and b) d) None of these

11) A computer-based information system _____.
a) Require manually input b) No need manually input
c) Auto input d) None of these

12) The flow of information through MIS is _____.
a) Need Dependent b) Organization Dependent
c) Information Dependent d) Management Dependent

13) The basic component(s) of DSS is (are) _____.
a) Database b) Model base
c) DSS software system d) All of the above

14) _____technology includes computers hardware, software, database management systems and data communication system.
a) Information b) Computer
c) Marketing d) All of the above

SLR-GF-61

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (197042627)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
3) Use of non-programmable calculator is allowed.

Q.2 Attempt Any Four questions. **28**

a) What are the principles of TQM? Explain in brief function of 'Total Quality Management'.
b) What are the factors to be considered to have good quality control in construction project?
c) Explain in brief with objective and significance of "Total Quality Management".
d) What is "Quality Circle"? Explain the objective and function of "Quality Circle".?
e) Explain in brief "Supply Chain Management" as a tool in TQM.
f) What is "Statistical Quality Control"? Explain the various quality control chart used for quality assurance.

Q.3 Attempt Any Four question **28**

a) What is "Management Information System (MIS)"? Explain in brief objective and function MIS.
b) Explain in brief the Software and Hardware section of MIS.
c) Why MIS is having high need of management today?
d) Write a note on Data processing.
e) Define the term Database and its benefits to any sector.
f) Write a note on use of "Computer system in Civil engineering sector".

SLR-GF-61

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (197042627)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) An information system that supports the planning and assessment needs of executive management is _____.
a) DSS b) ERP
c) MIS d) None of the above

2) The back bone of any organization is _____.
a) Information b) Employee
c) Management d) Capital

3) Which one is not Prerequisite of an effective MIS _____.
a) Database b) Support from staff
c) Both a) and b) d) None of these

4) A computer-based information system _____.
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5) The flow of information through MIS is _____.
a) Need Dependent b) Organization Dependent
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6) The basic component(s) of DSS is (are) _____.
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8) After E. Deming, who is considered to have the greatest impact in quality management?
a) Kauro Ishikawa b) Joseph M. Juran
c) W.E. Deming d) Genichi Taguchi

9) The objective of ISO-9000 family of Quality management is _____.
a) Customer satisfaction b) Employee satisfaction
c) Skill enhancement d) Environmental issues

10) Total Quality Management (TQM) focuses on _____.
a) Employee b) Customer
c) Both (a) and (b) d) None of the above

11) TQM & ISO both focuses on _____
a) Customer b) Employee
c) Supplier d) All of above

12) A fundamental attribute of TQM is _____
a) Drawing control charts
b) Top management's direct involvement
c) Meeting ISO 9000 audit
d) All of above

13) Combination of Six Sigma and Lean manufacturing is known as _____.
a) Advanced Six Sigma b) Lean Six Sigma
c) Operational Six Sigma d) None of the above

14) The information of MIS comes from the _____.
a) Internal source
b) External source
c) Both internal and external source
d) None of the above

SLR-GF-61

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (197042627)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
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Instructions: 1) All questions are compulsory.
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Q.2 Attempt Any Four questions. **28**

a) What are the principles of TQM? Explain in brief function of 'Total Quality Management'.
b) What are the factors to be considered to have good quality control in construction project?
c) Explain in brief with objective and significance of "Total Quality Management".
d) What is "Quality Circle"? Explain the objective and function of "Quality Circle".?
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f) What is "Statistical Quality Control"? Explain the various quality control chart used for quality assurance.

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c) Why MIS is having high need of management today?
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e) Define the term Database and its benefits to any sector.
f) Write a note on use of "Computer system in Civil engineering sector".

SLR-GF-61

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (197042627)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) A computer-based information system _____.
a) Require manually input b) No need manually input
c) Auto input d) None of these

2) The flow of information through MIS is _____.
a) Need Dependent b) Organization Dependent
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a) DSS
b) ERP
c) MIS
d) None of the above

13) The back bone of any organization is _____.
a) Information
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c) Management
d) Capital

14) Which one is not Prerequisite of an effective MIS _____.
a) Database
b) Support from staff
c) Both a) and b)
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SLR-GF-61

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (197042627)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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a) What are the principles of TQM? Explain in brief function of 'Total Quality Management'.
b) What are the factors to be considered to have good quality control in construction project?
c) Explain in brief with objective and significance of "Total Quality Management".
d) What is "Quality Circle"? Explain the objective and function of "Quality Circle".?
e) Explain in brief "Supply Chain Management" as a tool in TQM.
f) What is "Statistical Quality Control"? Explain the various quality control chart used for quality assurance.

Q.3 Attempt Any Four question **28**

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b) Explain in brief the Software and Hardware section of MIS.
c) Why MIS is having high need of management today?
d) Write a note on Data processing.
e) Define the term Database and its benefits to any sector.
f) Write a note on use of "Computer system in Civil engineering sector".

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (197042627)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Combination of Six Sigma and Lean manufacturing is known as _____.
a) Advanced Six Sigma b) Lean Six Sigma
c) Operational Six Sigma d) None of the above

2) The information of MIS comes from the _____.
a) Internal source
b) External source
c) Both internal and external source
d) None of the above

3) An information system that supports the planning and assessment needs of executive management is _____.
a) DSS b) ERP
c) MIS d) None of the above

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a) Information b) Employee
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5) Which one is not Prerequisite of an effective MIS _____.
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c) Both a) and b) d) None of these

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c) DSS software system d) All of the above

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c) Both (a) and (b) d) None of the above

13) TQM & ISO both focuses on _____

a) Customer b) Employee
c) Supplier d) All of above

14) A fundamental attribute of TQM is _____

a) Drawing control charts
b) Top management's direct involvement
c) Meeting ISO 9000 audit
d) All of above

SLR-GF-61

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
TQM and MIS in Civil Engineering (197042627)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
3) Use of non-programmable calculator is allowed.

Q.2 Attempt Any Four questions. **28**

a) What are the principles of TQM? Explain in brief function of 'Total Quality Management'.
b) What are the factors to be considered to have good quality control in construction project?
c) Explain in brief with objective and significance of "Total Quality Management".
d) What is "Quality Circle"? Explain the objective and function of "Quality Circle".?
e) Explain in brief "Supply Chain Management" as a tool in TQM.
f) What is "Statistical Quality Control"? Explain the various quality control chart used for quality assurance.

Q.3 Attempt Any Four question **28**

a) What is "Management Information System (MIS)"? Explain in brief objective and function MIS.
b) Explain in brief the Software and Hardware section of MIS.
c) Why MIS is having high need of management today?
d) Write a note on Data processing.
e) Define the term Database and its benefits to any sector.
f) Write a note on use of "Computer system in Civil engineering sector".

SLR-GF-62

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Earthquake Resistant Non-Engineered Construction (197042628)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any five questions.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Q.1 Which are the planning aspects incorporated for Earthquake resistant design. **10**

Q.2 What is meant by Strengthening? Explain few Strengthening features for walls. **10**

Q.3 Explain the significance of RC bands in masonry construction. **10**

Q.4 Elaborate the effects generated after an Earthquake. **10**

Q.5 What are causes of damages due to earthquake in the Brick masonry construction? **10**

Q.6 Explain the different magnitude scales to measure an earthquake. **10**

SLR-GF-63

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume additional data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The Damp Proof Course (D.P.C.) is measured in _____.
a) Cub.m. b) Sq.m.
c) Meters d) None of these

2) The excavation exceeding 1.5 m in width and 10 sq.m., in plan area with a depth not exceeding 30 cm, is termed as _____.
a) Excavation b) Surface dressing
c) Cutting d) Surface excavation

3) In normal circumstances, minimum period before striking vertical formwork of columns, beams shall be _____.
a) 16-24 Hr. b) 7 days
c) 14 days d) 21 days

4) In rate analysis, salary of technical personnel engaged for the work are covered in _____.
a) Labour cost b) General overheads
c) Job overheads d) Contingencies

5) During the execution of project, structural modifications are required or addition work is added for construction. The estimate for additional work is called ____.
a) Preliminary estimate b) Supplementary estimate
c) Revised estimate d) Detailed estimate

6) We prepare revised estimate against the original estimate due to change in _____.
a) the rate of material or change in specification of materials
b) structural drawing
c) additional items
d) all the above

7) If rise and tread of a step is 0.15m and 0.25m respectively, then the volume (in cubic meter) of 9 number of steps of 1 m length be recorded in measurement sheet shall be _____.
a) 0.3375 b) 0.337
c) 0.34 d) 0.33

8) Earnest money is paid to enable the Government to ensure that a tenderer does not _____.
a) back out of his tender before its acceptance
b) refuse to execute the work after it has been awarded to him
c) compromise with quality of work
d) a or b

9) For labour component the escalation rise will be payable based on _____.
a) Increase in the minimum wages of unskilled male mazdoor
b) Increase in the actual wages of unskilled male mazdoor
c) Increase in the minimum wages of skilled male mazdoor
d) Increase in the actual wages of skilled male mazdoor

10) 'Money received today is more worth than money received in future' is based on which of the following term _____.
a) Time Value of money
b) Storage Value of Money
c) Time Machine
d) Cash Value of Machine

11) The net present value (NPV) is _____.
a) equal to the sum of the present values of all cash flows
b) equal to the sum of returns
c) equal to the sum of all cash flows
d) none of the above

12) The value at the end of utility of property but without dismantling is known as _____.
a) Scrap Value
b) Salvage value
c) Market value
d) Book value

13) Following is not the purpose of Valuation _____.
a) For submission to financial agency/bank while borrowing loan
b) For preparing tender documents
c) For income tax/wealth tax assessment
d) For compensation after the land acquisition

14) Valuation of the properties which perform non profitable community functions is done by _____.
a) Rental method
b) Land and building method
c) Direct comparison method
d) Profit based method

SLR-GF-63

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 is compulsory; answer any two from remaining questions from Sec - I
2) Q. 6 is compulsory; answer any two from remaining questions from Sec - II
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2 **a)** Calculate the quantity of reinforcement required in R.C.C. column and footing shown in attached drawing. **08**
b) Also prepare an Abstract sheet for these items by assuming suitable market rates. **04**

Q.3 **a)** Explain General and Detailed Specification. **04**
b) Write the detailed specifications for Water Bound Macadam. **04**

Q.4 **a)** What is the Rate analysis? Explain the factors affecting rate analysis. **04**
b) Carry out rate analysis for external plastering 20 mm thick in cement mortar 1:4. **04**

Q.5 **a)** Explain administrative approval and technical sanction to estimates. **04**
b) Write a thumb rule for Number of cement bags required for construction of building. **04**

Section – II

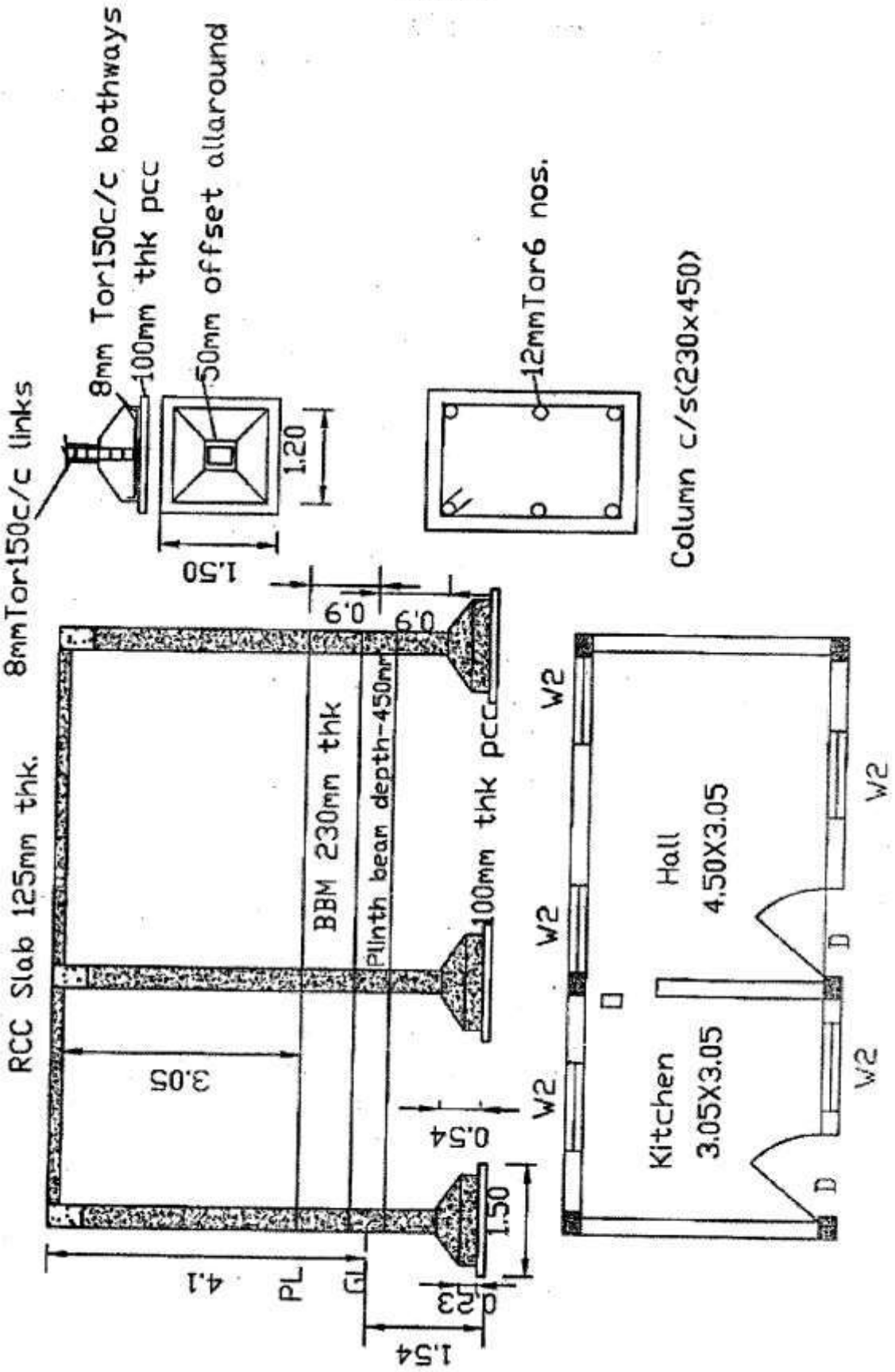
Q.6 **a)** Prepare a tender notice for the work of construction of a hospital of 120 beds capacity RCC structure of 12,000 Sq. ft built up area. Make suitable assumptions for required data. **08**
b) Write a short note on BOT projects with suitable example. **04**

Q.7 **a)** Explain following Acts **04**
i) Minimum Wages Act
ii) Workers Compensation Act
b) Write advantages and disadvantages of Item Rate Contract. **04**

Q.8 **a)** Explain different types of values - Market value, Potential value, Distress value. **04**
b) Compare following methods of calculating depreciation **04**
- Straight line method & declining balance method.

Q.9 **a)** Explain belting method of valuation. **04**
b) Calculate Years Purchase for a property with a useful life of 30 years if rate of interest is 5% per year. Assume rate of interest for sinking fund as 3%. **04**

QUE.02


8mm Tor150c/c bothways
100mm thk pcc
50mm offset allaround
1.20
1.50
12mmTor6 nos.
Column c/s(230x450)
8mmTor150c/c links
RCC Slab 125mm thk.
6'0
6'0
BBM 230mm thk
Plinth beam depth-450mm
100mm thk pcc
W2
W2
W2
W2
W2
W2
Hall
4.50X3.05
Kitchen
3.05X3.05
D
D
3.05
0.54
1.50
4.1
PL
GL
R3
1.54

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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Duration: 30 Minutes Marks:14

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SLR-GF-63

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 is compulsory; answer any two from remaining questions from Sec - I
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3) Figures to the right indicate full marks.
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Section – II

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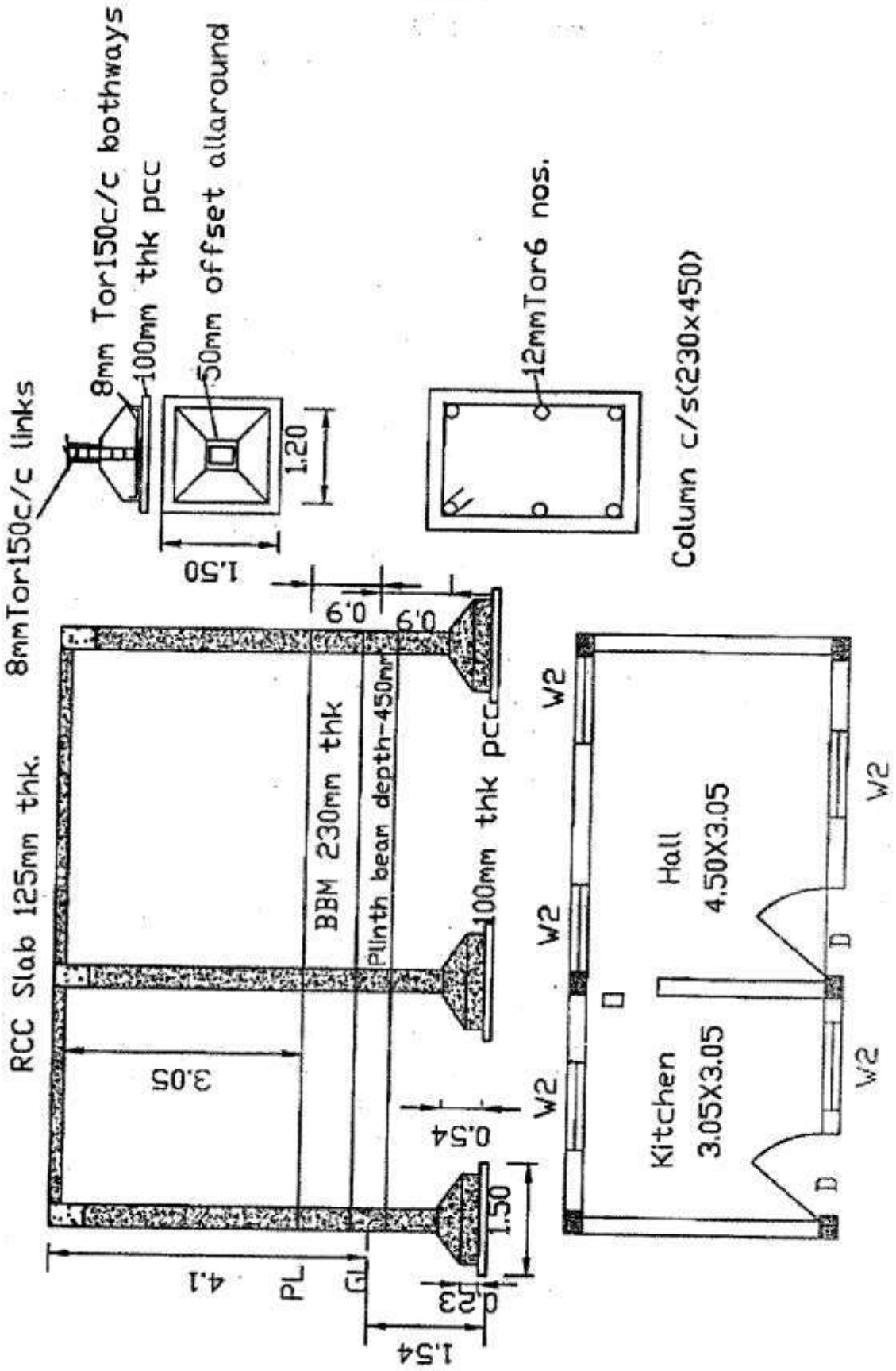
b) Calculate Years Purchase for a property with a useful life of 30 years if rate of interest is 5% per year. Assume rate of interest for sinking fund as 3%. **04**

QUE.02


8mm Tor150c/c bothways
100mm thk pcc
50mm offset allaround
1.20
1.50
12mmTor6 nos.
Column c/s(230x450)
8mmTor150c/c links
RCC Slab 125mm thk.
6'0
6'0
BBM 230mm thk
Plinth beam depth-450mm
100mm thk pcc
W2
W2
W2
W2
W2
Hall
4.50X3.05
Kitchen
3.05X3.05
D
D
3.05
0.54
1.50
4.1
PL
GL
R3
1.54

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume additional data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The net present value (NPV) is _____.
a) equal to the sum of the present values of all cash flows
b) equal to the sum of returns
c) equal to the sum of all cash flows
d) none of the above

2) The value at the end of utility of property but without dismantling is known as _____.
a) Scrap Value b) Salvage value
c) Market value d) Book value

3) Following is not the purpose of Valuation _____.
a) For submission to financial agency/bank while borrowing loan
b) For preparing tender documents
c) For income tax/wealth tax assessment
d) For compensation after the land acquisition

4) Valuation of the properties which perform non profitable community functions is done by _____.
a) Rental method
b) Land and building method
c) Direct comparison method
d) Profit based method

5) The Damp Proof Course (D.P.C.) is measured in _____.
a) Cub.m. b) Sq.m.
c) Meters d) None of these

6) The excavation exceeding 1.5 m in width and 10 sq.m., in plan area with a depth not exceeding 30 cm, is termed as _____.
a) Excavation b) Surface dressing
c) Cutting d) Surface excavation

7) In normal circumstances, minimum period before striking vertical formwork of columns, beams shall be _____.

a) 16-24 Hr. b) 7 days
c) 14 days d) 21 days

8) In rate analysis, salary of technical personnel engaged for the work are covered in _____.

a) Labour cost b) General overheads
c) Job overheads d) Contingencies

9) During the execution of project, structural modifications are required or addition work is added for construction. The estimate for additional work is called ____.

a) Preliminary estimate b) Supplementary estimate
c) Revised estimate d) Detailed estimate

10) We prepare revised estimate against the original estimate due to change in _____.

a) the rate of material or change in specification of materials
b) structural drawing
c) additional items
d) all the above

11) If rise and tread of a step is 0.15m and 0.25m respectively, then the volume (in cubic meter) of 9 number of steps of 1 m length be recorded in measurement sheet shall be _____.

a) 0.3375 b) 0.337
c) 0.34 d) 0.33

12) Earnest money is paid to enable the Government to ensure that a tenderer does not _____.

a) back out of his tender before its acceptance
b) refuse to execute the work after it has been awarded to him
c) compromise with quality of work
d) a or b

13) For labour component the escalation rise will be payable based on _____.

a) Increase in the minimum wages of unskilled male mazdoor
b) Increase in the actual wages of unskilled male mazdoor
c) Increase in the minimum wages of skilled male mazdoor
d) Increase in the actual wages of skilled male mazdoor

14) 'Money received today is more worth than money received in future' is based on which of the following term _____.

a) Time Value of money b) Storage Value of Money
c) Time Machine d) Cash Value of Machine

SLR-GF-63

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 is compulsory; answer any two from remaining questions from Sec - I
2) Q. 6 is compulsory; answer any two from remaining questions from Sec - II
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2 **a)** Calculate the quantity of reinforcement required in R.C.C. column and footing shown in attached drawing. **08**
b) Also prepare an Abstract sheet for these items by assuming suitable market rates. **04**

Q.3 **a)** Explain General and Detailed Specification. **04**
b) Write the detailed specifications for Water Bound Macadam. **04**

Q.4 **a)** What is the Rate analysis? Explain the factors affecting rate analysis. **04**
b) Carry out rate analysis for external plastering 20 mm thick in cement mortar 1:4. **04**

Q.5 **a)** Explain administrative approval and technical sanction to estimates. **04**
b) Write a thumb rule for Number of cement bags required for construction of building. **04**

Section – II

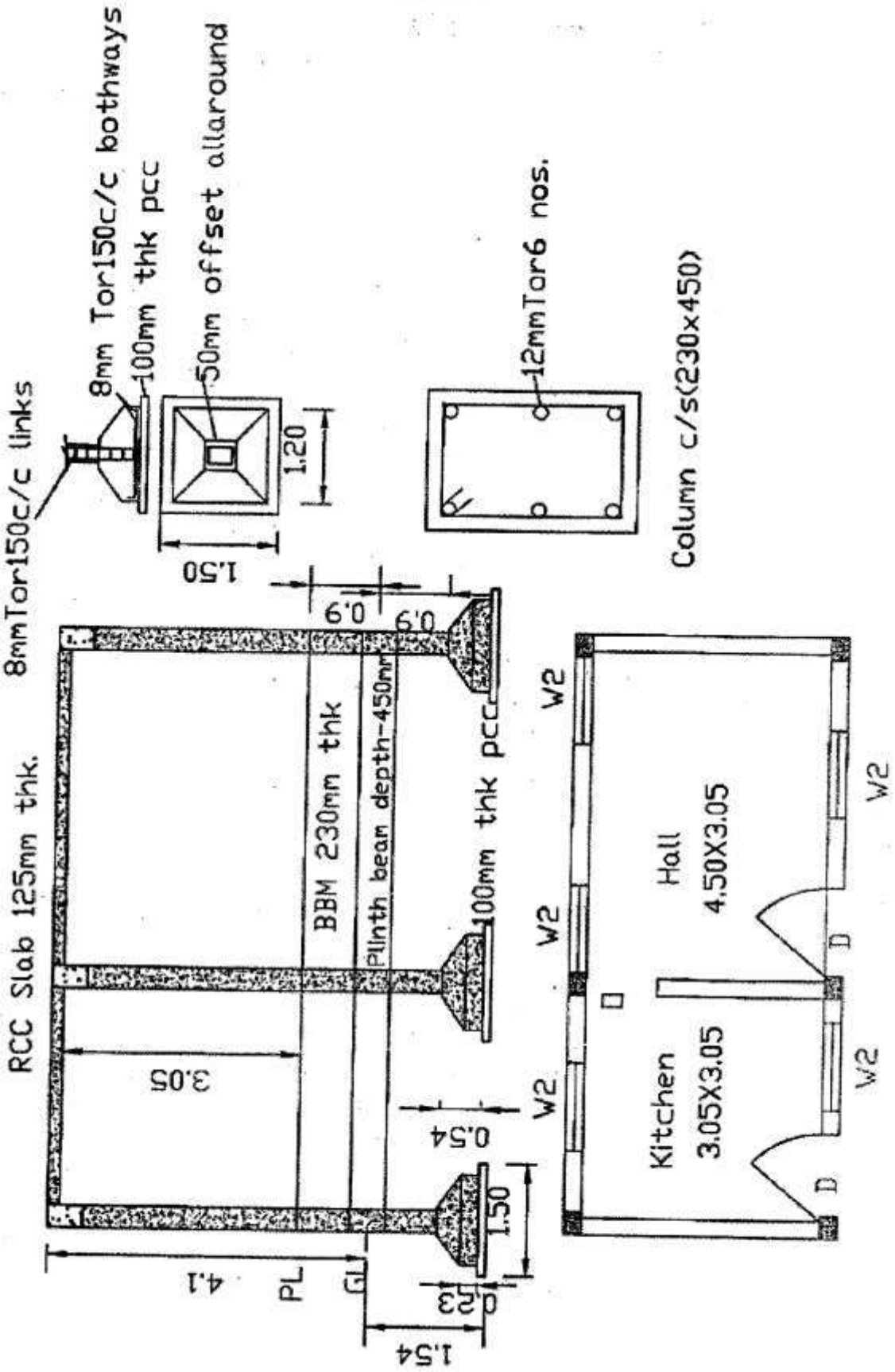
Q.6 **a)** Prepare a tender notice for the work of construction of a hospital of 120 beds capacity RCC structure of 12,000 Sq. ft built up area. Make suitable assumptions for required data. **08**
b) Write a short note on BOT projects with suitable example. **04**

Q.7 **a)** Explain following Acts **04**
i) Minimum Wages Act
ii) Workers Compensation Act
b) Write advantages and disadvantages of Item Rate Contract. **04**

Q.8 **a)** Explain different types of values - Market value, Potential value, Distress value. **04**
b) Compare following methods of calculating depreciation **04**
- Straight line method & declining balance method.

Q.9 **a)** Explain belting method of valuation. **04**
b) Calculate Years Purchase for a property with a useful life of 30 years if rate of interest is 5% per year. Assume rate of interest for sinking fund as 3%. **04**

QUE.02


8mm Tor150c/c bothways
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Plinth beam depth-450mm
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W2
W2
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4.50X3.05
Kitchen
3.05X3.05
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D
D
3.05
0.54
1.50
4.1
PL
GL
R3
1.54

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) We prepare revised estimate against the original estimate due to change in _____.
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b) structural drawing
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2) If rise and tread of a step is 0.15m and 0.25m respectively, then the volume (in cubic meter) of 9 number of steps of 1 m length be recorded in measurement sheet shall be _____.
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11) The excavation exceeding 1.5 m in width and 10 sq.m., in plan area with a depth not exceeding 30 cm, is termed as _____.
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c) Cutting d) Surface excavation

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a) 16-24 Hr. b) 7 days
c) 14 days d) 21 days

13) In rate analysis, salary of technical personnel engaged for the work are covered in _____.
a) Labour cost b) General overheads
c) Job overheads d) Contingencies

14) During the execution of project, structural modifications are required or addition work is added for construction. The estimate for additional work is called ____.
a) Preliminary estimate b) Supplementary estimate
c) Revised estimate d) Detailed estimate

SLR-GF-63

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Estimating, Costing and Valuation (BTN01701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 is compulsory; answer any two from remaining questions from Sec - I
2) Q. 6 is compulsory; answer any two from remaining questions from Sec - II
3) Figures to the right indicate full marks.
4) Assume additional data if required and mention it clearly.

Section – I

Q.2 **a)** Calculate the quantity of reinforcement required in R.C.C. column and footing shown in attached drawing. **08**
b) Also prepare an Abstract sheet for these items by assuming suitable market rates. **04**

Q.3 **a)** Explain General and Detailed Specification. **04**
b) Write the detailed specifications for Water Bound Macadam. **04**

Q.4 **a)** What is the Rate analysis? Explain the factors affecting rate analysis. **04**
b) Carry out rate analysis for external plastering 20 mm thick in cement mortar 1:4. **04**

Q.5 **a)** Explain administrative approval and technical sanction to estimates. **04**
b) Write a thumb rule for Number of cement bags required for construction of building. **04**

Section – II

Q.6 **a)** Prepare a tender notice for the work of construction of a hospital of 120 beds capacity RCC structure of 12,000 Sq. ft built up area. Make suitable assumptions for required data. **08**
b) Write a short note on BOT projects with suitable example. **04**

Q.7 **a)** Explain following Acts **04**
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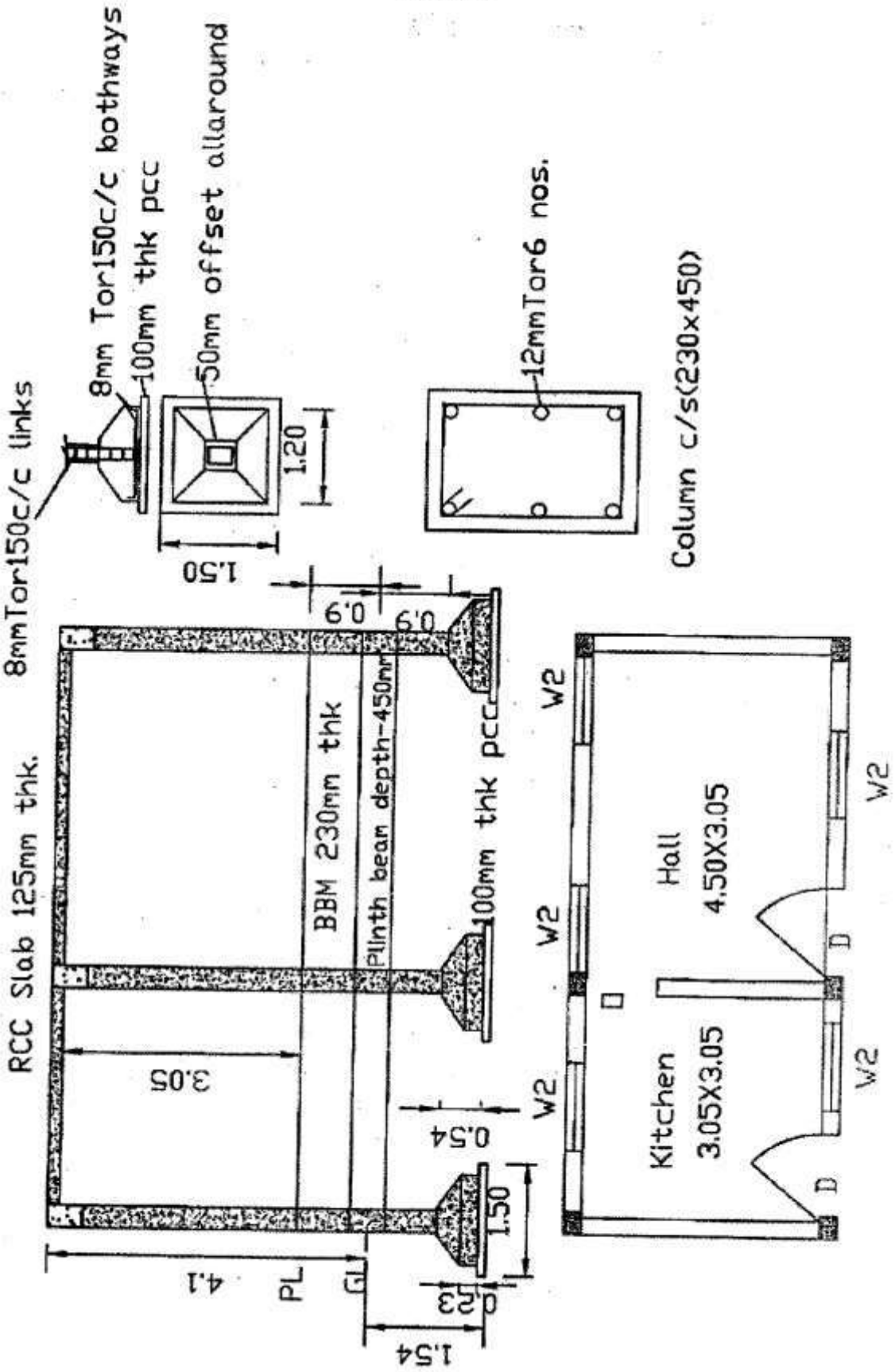
ii) Workers Compensation Act
b) Write advantages and disadvantages of Item Rate Contract. **04**

Q.8 **a)** Explain different types of values - Market value, Potential value, Distress value. **04**
b) Compare following methods of calculating depreciation **04**
- Straight line method & declining balance method.

Q.9 **a)** Explain belting method of valuation. **04**
b) Calculate Years Purchase for a property with a useful life of 30 years if rate of interest is 5% per year. Assume rate of interest for sinking fund as 3%. **04**

QUE.02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100mm thk pcc
W2
W2
W2
W2
W2
W2
Hall
4.50X3.05
Kitchen
3.05X3.05
D
D
D
3.05
0.54
1.50
4.1
PL
GL
R3
1.54

SLR-GF-64

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Friday, 19-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries two marks.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Each MCQ carries two marks each.
5) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Choose the correct option from following statements:
a) Earthquake causes landslide b) Landslide causes earthquake
c) a) and b) are wrong d) a) and b) both are correct

2) The response steadily decreases when the frequency ratio is _____.
a) < 1 b) > 1
c) = 1 d) = 2

3) In the equivalent static procedure, the natural period of the building is _____.
a) Computed by the free-vibration analysis
b) Estimated according to the formula in IS-1893
c) Assumed
d) As given in book

4) Special confining reinforcement is provided in the form of _____.
a) Longitudinal reinforcement b) Temperature reinforcement
c) Lateral reinforcement d) Shrinkage reinforcement

5) The transmissibility is zero at the frequency ratio (ω/ω_n) equal to _____.
a) 0.5 b) 1.0
c) $\sqrt{2}$ d) 2^2

6) The modal damping ratio is _____.
a) $C_n/(M_n\omega_n)$ b) $C_n/(2\omega_n)$
c) $C_n/(2M_n\omega_n)$ d) $2C_n/(M_n\omega_n)$

7) The acceleration response spectrum in IS-1893-2002 is for the damping of _____.
a) 2% b) 10%
c) 8% d) 5%

SLR-GF-64

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Friday, 19-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 3 & Q. 6 are compulsory. Attempt any two questions from the remaining of each section.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Explain plate tectonics theory and its mechanism. **09**

Q.3 From first principle derive the governing differential equation for free vibration of undamped SDOF system. Obtain the general solution of this differential equation. Plot the graph if system is given initial displacement y_0. **10**

Q.4 Derive the governing differential equation of undamped forced vibration of a SDOF system subjected to harmonic loading. Also obtain the complete solution of differential equation and plot graph of magnification factor vs frequency ratio 'r'. **09**

Q.5 Explain the concept of Duhamel's integral for damped systems. Derive its expression. **09**

Section – II

Q.6 It is proposed to construct a R.C.C. three storied residential building having plan dimensions as shown in fig. 1 in zone III with following data. Determine the lateral forces and base shear. The all column sizes are 300 x 550 mm & beams sizes are 300 x 450 mm. The slab thickness is 120mm & thk. of walls is 230mm. The ht. of floor is 3.0 m & Live load is 3.5 kN/m^2. IS 13920 provisions are incorporated in the structure. The strata is Medium. **10**

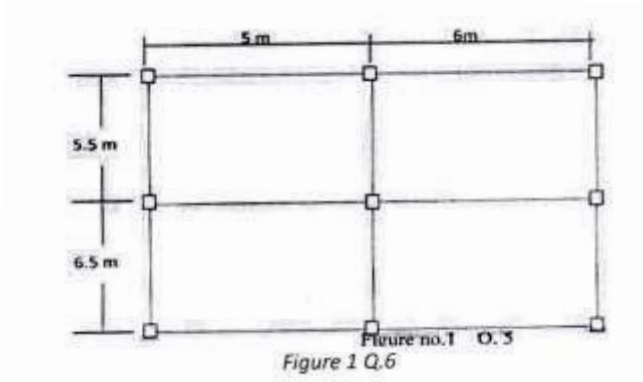

Figure 1 Q.6

Q.7 Describe the weak storey? How weak storey differs from soft storey? **09**

Q.8 Explain the significance of ductility in earthquake resistant buildings. **09**

Q.9 Describe the various earthquake resistant features that can be introduced in masonry building to make it earthquake resistant. **09**

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Friday, 19-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries two marks.
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5) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Special confining reinforcement is provided in the form of _____.
a) Longitudinal reinforcement b) Temperature reinforcement
c) Lateral reinforcement d) Shrinkage reinforcement

2) The transmissibility is zero at the frequency ratio (ω/ω_n) equal to _____.
a) 0.5 b) 1.0
c) $\sqrt{2}$ d) 2^2

3) The modal damping ratio is _____.
a) $C_n/(M_n\omega_n)$ b) $C_n/(2\omega_n)$
c) $C_n/(2M_n\omega_n)$ d) $2C_n/(M_n\omega_n)$

4) The acceleration response spectrum in IS-1893-2002 is for the damping of _____.
a) 2% b) 10%
c) 8% d) 5%

5) Choose the correct option from following statements:
a) Earthquake causes landslide b) Landslide causes earthquake
c) a) and b) are wrong d) a) and b) both are correct

6) The response steadily decreases when the frequency ratio is _____.
a) < 1 b) > 1
c) = 1 d) = 2

7) In the equivalent static procedure, the natural period of the building is _____.
a) Computed by the free-vibration analysis
b) Estimated according to the formula in IS-1893
c) Assumed
d) As given in book

SLR-GF-64

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Friday, 19-01-2024 Max. Marks: 56
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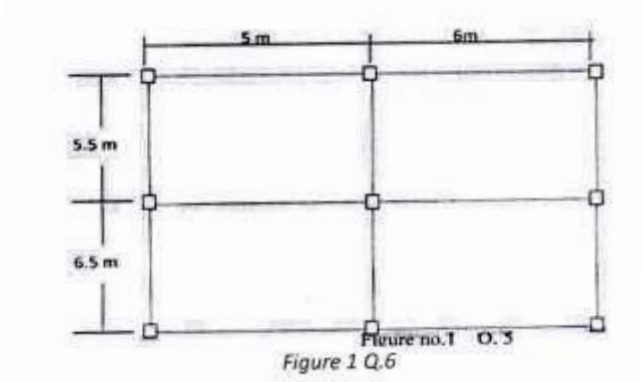
Q.5 Explain the concept of Duhamel's integral for damped systems. Derive its expression. **09**

Section – II

Q.6 It is proposed to construct a R.C.C. three storied residential building having plan dimensions as shown in fig. 1 in zone III with following data. Determine the lateral forces and base shear. The all column sizes are 300 x 550 mm & beams sizes are 300 x 450 mm. The slab thickness is 120mm & thk. of walls is 230mm. The ht. of floor is 3.0 m & Live load is 3.5 kN/m^2. IS 13920 provisions are incorporated in the structure. The strata is Medium. **10**



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Q.9 Describe the various earthquake resistant features that can be introduced in masonry building to make it earthquake resistant. **09**

SLR-GF-64

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Friday, 19-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) The modal damping ratio is _____.
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SLR-GF-64

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Friday, 19-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – II

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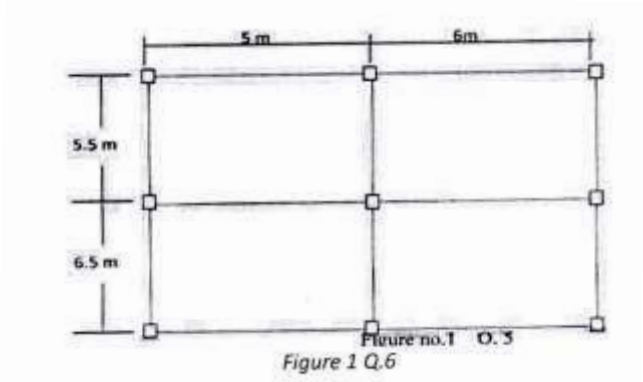

Figure 1 Q.6

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SLR-GF-64

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Friday, 19-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries two marks.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Each MCQ carries two marks each.
5) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) The response steadily decreases when the frequency ratio is _____.
a) < 1 b) > 1
c) = 1 d) = 2

2) In the equivalent static procedure, the natural period of the building is _____.
a) Computed by the free-vibration analysis
b) Estimated according to the formula in IS-1893
c) Assumed
d) As given in book

3) Special confining reinforcement is provided in the form of _____.
a) Longitudinal reinforcement b) Temperature reinforcement
c) Lateral reinforcement d) Shrinkage reinforcement

4) The transmissibility is zero at the frequency ratio (ω/ω_n) equal to _____.
a) 0.5 b) 1.0
c) $\sqrt{2}$ d) 2^2

5) The modal damping ratio is _____.
a) $C_n/(M_n\omega_n)$ b) $C_n/(2\omega_n)$
c) $C_n/(2M_n\omega_n)$ d) $2C_n/(M_n\omega_n)$

6) The acceleration response spectrum in IS-1893-2002 is for the damping of _____.
a) 2% b) 10%
c) 8% d) 5%

7) Choose the correct option from following statements:
a) Earthquake causes landslide b) Landslide causes earthquake
c) a) and b) are wrong d) a) and b) both are correct

SLR-GF-64

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Earthquake Engineering (BTN01702)

Day & Date: Friday, 19-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 3 & Q. 6 are compulsory. Attempt any two questions from the remaining of each section.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Explain plate tectonics theory and its mechanism. **09**

Q.3 From first principle derive the governing differential equation for free vibration of undamped SDOF system. Obtain the general solution of this differential equation. Plot the graph if system is given initial displacement y_0. **10**

Q.4 Derive the governing differential equation of undamped forced vibration of a SDOF system subjected to harmonic loading. Also obtain the complete solution of differential equation and plot graph of magnification factor vs frequency ratio 'r'. **09**

Q.5 Explain the concept of Duhamel's integral for damped systems. Derive its expression. **09**

Section – II

Q.6 It is proposed to construct a R.C.C. three storied residential building having plan dimensions as shown in fig. 1 in zone III with following data. Determine the lateral forces and base shear. The all column sizes are 300 x 550 mm & beams sizes are 300 x 450 mm. The slab thickness is 120mm & thk. of walls is 230mm. The ht. of floor is 3.0 m & Live load is 3.5 kN/m^2. IS 13920 provisions are incorporated in the structure. The strata is Medium. **10**

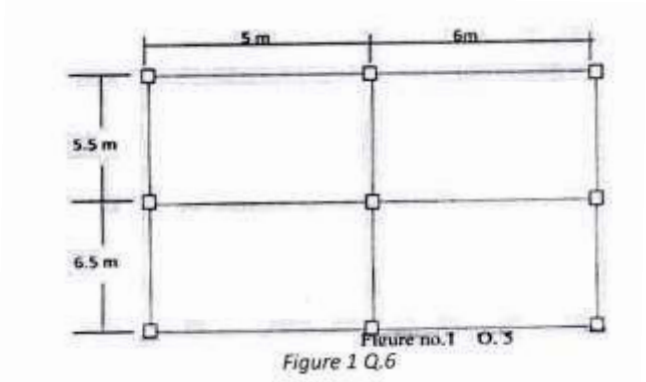

Figure 1 Q.6

Q.7 Describe the weak storey? How weak storey differs from soft storey? **09**

Q.8 Explain the significance of ductility in earthquake resistant buildings. **09**

Q.9 Describe the various earthquake resistant features that can be introduced in masonry building to make it earthquake resistant. **09**

SLR-GF-65

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) The time span between the start and completion of a project represent
a) Project Span b) Project Duration
c) Project Lifecycle d) None of the above

2) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.
a) Mobile b) Derrick
c) Gantry d) Hydraulic

3) If for an activity optimistic time is 7 days, pessimistic time is 13 days and most likely time is 10 days, its standard deviation will be _____.
a) 10 b) 3.28
c) 10.77 d) 1

4) The area under the Beta distribution curve is divided into two equal parts by
a) Most likely time b) Optimistic time
c) Pessimistic time d) Expected time

5) If D is the duration, ES and EF are the earliest start and finish, LS and LF are latest start and latest finish time, then the following relation holds good
a) EF = ES + D b) D = EF – ES
c) LF = LS + D d) All of the above

6) Choose the best option that fits the following statement.
The _____ of time management tools depends on the _____ of the project.
a) Identity, Quality b) Utility, Complexity
c) Functionality, Creativity d) Equity, Quantity

7) A milestone chart
a) shows the interdependencies of various jobs
b) depicts the delay of jobs, if any
c) points outgoing ahead of schedule of jobs, if any
d) none of these

8) _____ are used to excavate below the ground on which the machine stands.
a) Hoes
b) Power Shovel
c) Trenchers
d) Rippers

9) What is the process of incorporating changes and rescheduling or re planning called?
a) Resource Allocation
b) Resource smoothing
c) Resource levelling
d) Updating

10) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.
a) Mobile
b) Derrick
c) Gantry
d) Hydraulic

11) The size of the bulldozer is indicated by the dimension of its _____.
a) Site
b) Tyre
c) Engine
d) Blades

12) _____ consists of a large bucket which is attached to a tractor.
a) Bulldozer
b) Scraper
c) Grader
d) Escalator

13) Hot-mix plant is used for
a) Cement concrete pavement Construction.
b) Bituminous pavement construction.
c) Water bound macadam construction.
d) All the above

14) Sheep foot roller is used for compacting
a) Granular soil
b) Non-plastic silts
c) Fine sands
d) Clay soil

SLR-GF-65

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Answer the following questions. **12**

Consider a project shown in the Table.

1) Draw CPM Network
2) Find critical path
3) Find duration of the project

Activity	Duration (days)
1-2	3
2-3	4
2-4	4
3-7	4
4-5	2
4-7	2
5-6	3
6-7	2

Q.3 Answer the following questions. **08**

a) What is WBS? Explain its importance in project management.
b) Explain the process of network compression in details with suitable example.

Q.4 Answer the following questions. **08**

a) Explain the process of resource allocation in detail.
b) Differentiate between Bar Chart and Milestone Chart.

Q.5 Answer the following questions. **08**

a) Write a short note on MS Project Software.
b) What is BIM? Also explain the output of BIM.

Section – II

Q.6 Write Short notes on **12**

a) Hoes
b) Compactors
c) Hot mix plant

Q.7 Explain in details. **08**

a) Safety measures on construction sites.
b) Safety against accidents.

Q.8 Explain in details. **08**

a) Write a short note on Prefabricated construction.
b) Write a short note on Mivan formwork.

Q.9 Explain in details. **08**

a) Explain the uses of floating equipment
b) Explain the types and uses of diaphragm walls.

SLR-GF-65

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) _____ are used to excavate below the ground on which the machine stands.
a) Hoes b) Power Shovel
c) Trenchers d) Rippers

2) What is the process of incorporating changes and rescheduling or re planning called?
a) Resource Allocation b) Resource smoothing
c) Resource levelling d) Updating

3) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.
a) Mobile b) Derrick
c) Gantry d) Hydraulic

4) The size of the bulldozer is indicated by the dimension of its _____.
a) Site b) Tyre
c) Engine d) Blades

5) _____ consists of a large bucket which is attached to a tractor.
a) Bulldozer b) Scraper
c) Grader d) Escalator

6) Hot-mix plant is used for
a) Cement concrete pavement Construction.
b) Bituminous pavement construction.
c) Water bound macadam construction.
d) All the above

7) Sheep foot roller is used for compacting
a) Granular soil b) Non-plastic silts
c) Fine sands d) Clay soil

8) The time span between the start and completion of a project represent
a) Project Span b) Project Duration
c) Project Lifecycle d) None of the above

9) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.

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c) Gantry d) Hydraulic

10) If for an activity optimistic time is 7 days, pessimistic time is 13 days and most likely time is 10 days, its standard deviation will be _____.

a) 10 b) 3.28

c) 10.77 d) 1

11) The area under the Beta distribution curve is divided into two equal parts by

a) Most likely time b) Optimistic time

c) Pessimistic time d) Expected time

12) If D is the duration, ES and EF are the earliest start and finish, LS and LF are latest start and latest finish time, then the following relation holds good

a) EF = ES + D b) D = EF – ES

c) LF = LS + D d) All of the above

13) Choose the best option that fits the following statement.
The _____ of time management tools depends on the _____ of the project.

a) Identity, Quality b) Utility, Complexity

c) Functionality, Creativity d) Equity, Quantity

14) A milestone chart

a) shows the interdependencies of various jobs

b) depicts the delay of jobs, if any

c) points outgoing ahead of schedule of jobs, if any

d) none of these

SLR-GF-65

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Answer the following questions. **12**

Consider a project shown in the Table.

1) Draw CPM Network
2) Find critical path
3) Find duration of the project

Activity	Duration (days)
1-2	3
2-3	4
2-4	4
3-7	4
4-5	2
4-7	2
5-6	3
6-7	2

Q.3 Answer the following questions. **08**

a) What is WBS? Explain its importance in project management.
b) Explain the process of network compression in details with suitable example.

Q.4 Answer the following questions. **08**

a) Explain the process of resource allocation in detail.
b) Differentiate between Bar Chart and Milestone Chart.

Q.5 Answer the following questions. **08**

a) Write a short note on MS Project Software.
b) What is BIM? Also explain the output of BIM.

Section – II

Q.6 Write Short notes on **12**

a) Hoes
b) Compactors
c) Hot mix plant

Q.7 Explain in details. **08**

a) Safety measures on construction sites.
b) Safety against accidents.

Q.8 Explain in details. **08**

a) Write a short note on Prefabricated construction.
b) Write a short note on Mivan formwork.

Q.9 Explain in details. **08**

a) Explain the uses of floating equipment
b) Explain the types and uses of diaphragm walls.

SLR-GF-65

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) The size of the bulldozer is indicated by the dimension of its _____.
a) Site b) Tyre
c) Engine d) Blades

2) _____ consists of a large bucket which is attached to a tractor.
a) Bulldozer b) Scraper
c) Grader d) Escalator

3) Hot-mix plant is used for
a) Cement concrete pavement Construction.
b) Bituminous pavement construction.
c) Water bound macadam construction.
d) All the above

4) Sheep foot roller is used for compacting
a) Granular soil b) Non-plastic silts
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5) The time span between the start and completion of a project represent
a) Project Span b) Project Duration
c) Project Lifecycle d) None of the above

6) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.
a) Mobile b) Derrick
c) Gantry d) Hydraulic

7) If for an activity optimistic time is 7 days, pessimistic time is 13 days and most likely time is 10 days, its standard deviation will be _____.
a) 10 b) 3.28
c) 10.77 d) 1

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9) If D is the duration, ES and EF are the earliest start and finish, LS and LF are latest start and latest finish time, then the following relation holds good

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12) _____ are used to excavate below the ground on which the machine stands.

a) Hoes
b) Power Shovel
c) Trenchers
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13) What is the process of incorporating changes and rescheduling or re planning called?

a) Resource Allocation
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14) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.

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SLR-GF-65

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
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Section – I

Q.2 Answer the following questions. **12**

Consider a project shown in the Table.

1) Draw CPM Network
2) Find critical path
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2-3	4
2-4	4
3-7	4
4-5	2
4-7	2
5-6	3
6-7	2

Q.3 Answer the following questions. **08**

a) What is WBS? Explain its importance in project management.
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a) Explain the process of resource allocation in detail.
b) Differentiate between Bar Chart and Milestone Chart.

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a) Write a short note on MS Project Software.
b) What is BIM? Also explain the output of BIM.

Section – II

Q.6 Write Short notes on **12**

a) Hoes
b) Compactors
c) Hot mix plant

Q.7 Explain in details. **08**

a) Safety measures on construction sites.
b) Safety against accidents.

Q.8 Explain in details. **08**

a) Write a short note on Prefabricated construction.
b) Write a short note on Mivan formwork.

Q.9 Explain in details. **08**

a) Explain the uses of floating equipment
b) Explain the types and uses of diaphragm walls.

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

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The _____ of time management tools depends on the _____ of the project.
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6) The size of the bulldozer is indicated by the dimension of its _____.
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c) Engine d) Blades

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a) Cement concrete pavement Construction.
b) Bituminous pavement construction.
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a) 10 b) 3.28
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a) Most likely time b) Optimistic time
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14) If D is the duration, ES and EF are the earliest start and finish, LS and LF are latest start and latest finish time, then the following relation holds good
a) EF = ES + D b) D = EF – ES
c) LF = LS + D d) All of the above

SLR-GF-65

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Construction Management and Practices (BTN01703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Answer the following questions. **12**

Consider a project shown in the Table.

1) Draw CPM Network
2) Find critical path
3) Find duration of the project

Activity	Duration (days)
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2-3	4
2-4	4
3-7	4
4-5	2
4-7	2
5-6	3
6-7	2

Q.3 Answer the following questions. **08**

a) What is WBS? Explain its importance in project management.
b) Explain the process of network compression in details with suitable example.

Q.4 Answer the following questions. **08**

a) Explain the process of resource allocation in detail.
b) Differentiate between Bar Chart and Milestone Chart.

Q.5 Answer the following questions. **08**

a) Write a short note on MS Project Software.
b) What is BIM? Also explain the output of BIM.

Section – II

Q.6 Write Short notes on **12**

a) Hoes
b) Compactors
c) Hot mix plant

Q.7 Explain in details. **08**

a) Safety measures on construction sites.
b) Safety against accidents.

Q.8 Explain in details. **08**

a) Write a short note on Prefabricated construction.
b) Write a short note on Mivan formwork.

Q.9 Explain in details. **08**

a) Explain the uses of floating equipment
b) Explain the types and uses of diaphragm walls.

SLR-GF-66

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Structural Analysis (BTN01707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

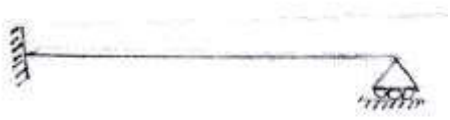
MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) To draw qualitative ILD of indeterminate structure, which of the following concept is used. 01
a) Mullers Breslau's Principle
b) Kani's Method
c) Unit Load Method
d) Castigliano's First energy theorem

2) Degree of kinematic indeterminacy for the beam shown in fig. 01



a) 0 b) 2
c) 1 d) 3

3) In curved beams, normally the nature of stress distribution is _____. 01
a) Linear b) Circular
c) Parabolic d) Hyperbolic

4) A beam curved in plan is designed for _____? 01
a) bending moment and shear
b) bending moment and torsion
c) shear and torsion
d) bending moment, shear and torsion

5) Which of the following methods of structural analysis is a force method? 01

a) three moment equation b) slope deflection method
c) column analogy method d) moment distribution method

6) In the slope deflection equations, the deformations are considered to be caused by 01

a) Bending Moment b) Shear Force
c) Axial Force d) Torsional moment

7) Degree of kinematic indeterminacy of pin jointed plane frame is given by 01

a) 2j-r b) 3j-r
c) 2j+r d) j-2r

8) In the stiffness matrix of structural analysis, the quantity taken as redundant is _____. 01

a) Both rotation and deflection b) Rotation
c) Only Deflection d) none of the above

9) Select the correct statement 01

a) Flexibility matrix is a square symmetrical matrix
b) Stiffness matrix is a square symmetrical matrix
c) Both (A) and (B)
d) None of the above

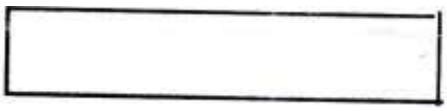
10) The deformation of a spring produced by a unit load is called _____. 01

a) Stiffness b) Flexibility
c) Influence coefficient d) Unit strain

11) ILD for the shear force at the support of the cantilever beam is _____. 02

a)

b)

c) 

d)

12) Stiffness of the end A if the far end B is free is _____. 02

a) EI/L b) 2EI/L
c) 3EI/L d) 0

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Structural Analysis (BTN01707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2 Draw ILD for SF & BM @ point c of beam shown is fig. (1), Draw ordinate at 1m interval. **08**

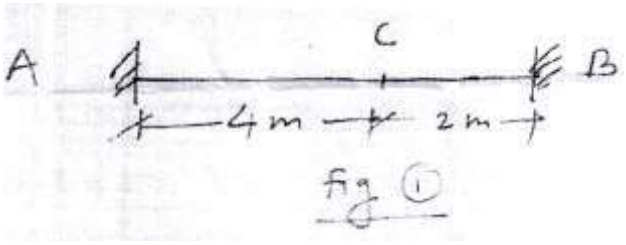


Fig (1)

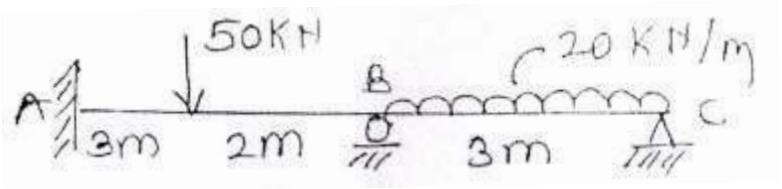
Q.3 A quarter circle beam of radius 'R' fixed at A and free at B. carrying a load P at free end. Draw SFD, BMD, TMD, also find vertical deflection of point B. **10**

Q.4 A long beam supported on elastic foundation is subjected to a concentrated clockwise moment 'Mo'. The beam is infinitely long on both the sides of concentrated moment. Draw SF and BM diagram. **10**

Q.5 Draw SF, BM, deflection diagram for a semi-infinite beam on elastic foundation winged at one end and subjected to UDL of 'W' over entire length. **10**

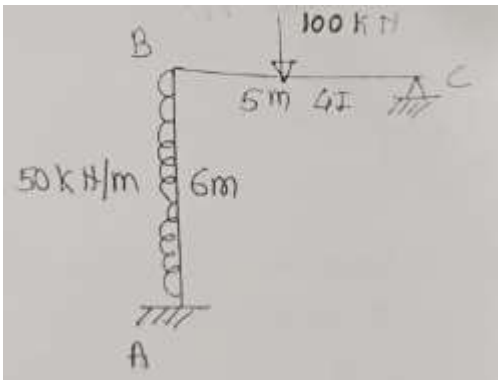
Section – II

Q.6 Analyze the beam shown in fig. by stiffness method. **08**

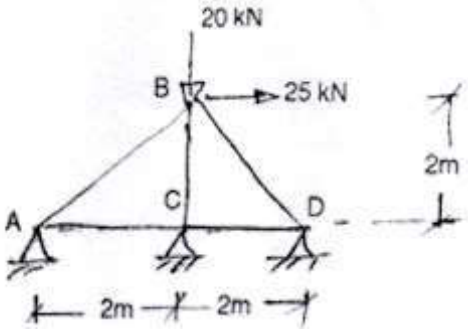


Q.7 A simply supported beam-column is subjected to an axial compressive force 'P' at both ends and an uniformly distributed load of 'w' throughout its span. Derive expression for maximum deflection and bending moment. **10**

Q.8 Analyze the frame shown in fig. by stiffness method. **10**



Q.9 Find the forces in all members of the truss show in fig. by using memberoriented stiffness method. Assume axial rigidity of all members is constant. **10**



Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Structural Analysis (BTN01707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In the slope deflection equations, the deformations are considered to be caused by 01
a) Bending Moment b) Shear Force
c) Axial Force d) Torsional moment

2) Degree of kinematic indeterminacy of pin jointed plane frame is given by 01
a) 2j-r b) 3j-r
c) 2j+r d) j-2r

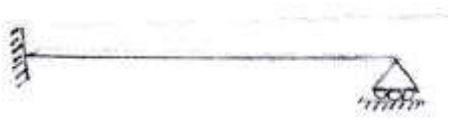
3) In the stiffness matrix of structural analysis, the quantity taken as redundant is _____. 01
a) Both rotation and deflection b) Rotation
c) Only Deflection d) none of the above

4) Select the correct statement 01
a) Flexibility matrix is a square symmetrical matrix
b) Stiffness matrix is a square symmetrical matrix
c) Both (A) and (B)
d) None of the above

5) The deformation of a spring produced by a unit load is called _____. 01
a) Stiffness b) Flexibility
c) Influence coefficient d) Unit strain

6) To draw qualitative ILD of indeterminate structure, which of the following concept is used. 01
a) Mullers Breslau's Principle
b) Kani's Method
c) Unit Load Method
d) Castigliano's First energy theorem

7) Degree of kinematic indeterminacy for the beam shown in fig. 01



a) 0 b) 2
c) 1 d) 3

8) In curved beams, normally the nature of stress distribution is _____. 01
a) Linear b) Circular
c) Parabolic d) Hyperbolic

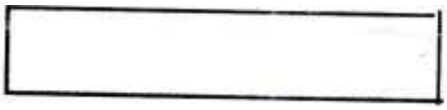
9) A beam curved in plan is designed for _____? 01
a) bending moment and shear
b) bending moment and torsion
c) shear and torsion
d) bending moment, shear and torsion

10) Which of the following methods of structural analysis is a force method? 01
a) three moment equation b) slope deflection method
c) column analogy method d) moment distribution method

11) ILD for the shear force at the support of the cantilever beam is _____. 02
a)

b)

c)



d)

12) Stiffness of the end A if the far end B is free is _____. 02

a) EI/L b) 2EI/L
c) 3EI/L d) 0

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Structural Analysis (BTN01707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2 Draw ILD for SF & BM @ point c of beam shown is fig. (1), Draw ordinate at 1m interval. **08**

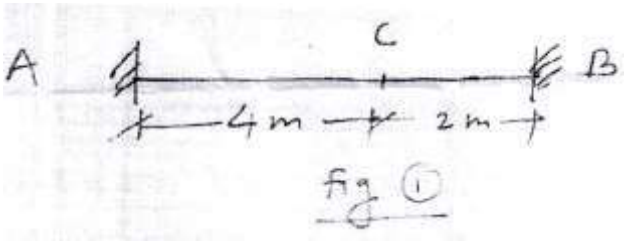


Fig (1)

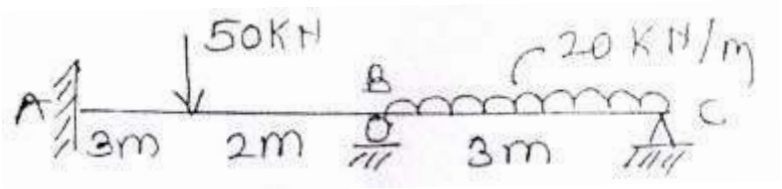
Q.3 A quarter circle beam of radius 'R' fixed at A and free at B. carrying a load P at free end. Draw SFD, BMD, TMD, also find vertical deflection of point B. **10**

Q.4 A long beam supported on elastic foundation is subjected to a concentrated clockwise moment 'Mo'. The beam is infinitely long on both the sides of concentrated moment. Draw SF and BM diagram. **10**

Q.5 Draw SF, BM, deflection diagram for a semi-infinite beam on elastic foundation winged at one end and subjected to UDL of 'W' over entire length. **10**

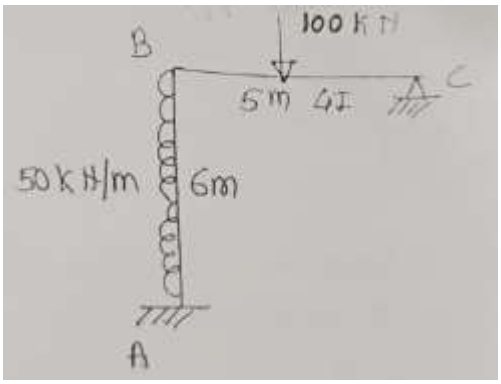
Section – II

Q.6 Analyze the beam shown in fig. by stiffness method. **08**

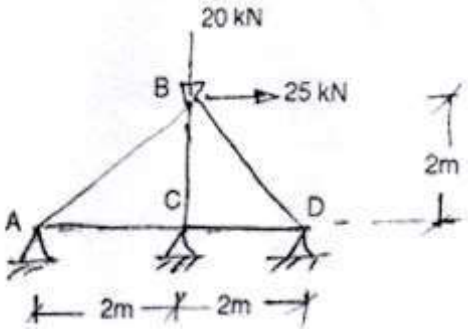


Q.7 A simply supported beam-column is subjected to an axial compressive force 'P' at both ends and an uniformly distributed load of 'w' throughout its span. Derive expression for maximum deflection and bending moment. **10**

Q.8 Analyze the frame shown in fig. by stiffness method. **10**



Q.9 Find the forces in all members of the truss show in fig. by using memberoriented stiffness method. Assume axial rigidity of all members is constant. **10**



SLR-GF-66

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Structural Analysis (BTN01707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Select the correct statement 01
a) Flexibility matrix is a square symmetrical matrix
b) Stiffness matrix is a square symmetrical matrix
c) Both (A) and (B)
d) None of the above

2) The deformation of a spring produced by a unit load is called _____. 01
a) Stiffness b) Flexibility
c) Influence coefficient d) Unit strain

3) To draw qualitative ILD of indeterminate structure, which of the following concept is used. 01
a) Mullers Breslau's Principle
b) Kani's Method
c) Unit Load Method
d) Castigliano's First energy theorem

4) Degree of kinematic indeterminacy for the beam shown in fig. 01

a) 0 b) 2
c) 1 d) 3

5) In curved beams, normally the nature of stress distribution is _____. 01
a) Linear b) Circular
c) Parabolic d) Hyperbolic

6) A beam curved in plan is designed for _____? 01
a) bending moment and shear
b) bending moment and torsion
c) shear and torsion
d) bending moment, shear and torsion

7) Which of the following methods of structural analysis is a force method? 01

a) three moment equation b) slope deflection method

c) column analogy method d) moment distribution method

8) In the slope deflection equations, the deformations are considered to be caused by 01

a) Bending Moment b) Shear Force

c) Axial Force d) Torsional moment

9) Degree of kinematic indeterminacy of pin jointed plane frame is given by 01

a) 2j-r b) 3j-r

c) 2j+r d) j-2r

10) In the stiffness matrix of structural analysis, the quantity taken as redundant is _____. 01

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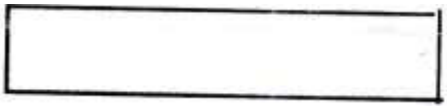
c) Only Deflection d) none of the above

11) ILD for the shear force at the support of the cantilever beam is _____. 02

a)

b)

c) 

d)

12) Stiffness of the end A if the far end B is free is _____. 02

a) EI/L b) 2EI/L

c) 3EI/L d) 0

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Structural Analysis (BTN01707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2 Draw ILD for SF & BM @ point c of beam shown is fig. (1), Draw ordinate at 1m interval. **08**

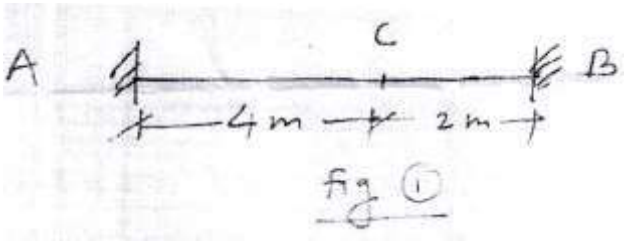


Fig (1)

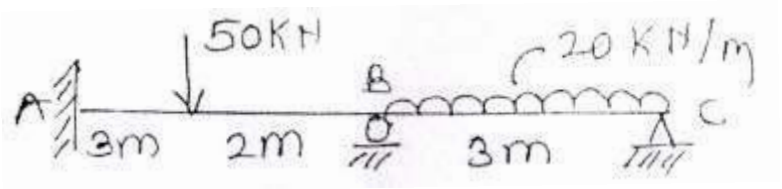
Q.3 A quarter circle beam of radius 'R' fixed at A and free at B. carrying a load P at free end. Draw SFD, BMD, TMD, also find vertical deflection of point B. **10**

Q.4 A long beam supported on elastic foundation is subjected to a concentrated clockwise moment 'Mo'. The beam is infinitely long on both the sides of concentrated moment. Draw SF and BM diagram. **10**

Q.5 Draw SF, BM, deflection diagram for a semi-infinite beam on elastic foundation winged at one end and subjected to UDL of 'W' over entire length. **10**

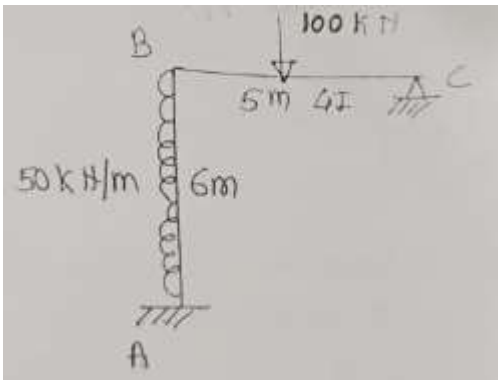
Section – II

Q.6 Analyze the beam shown in fig. by stiffness method. **08**

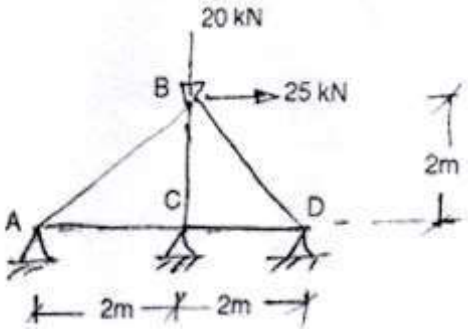


Q.7 A simply supported beam-column is subjected to an axial compressive force 'P' at both ends and an uniformly distributed load of 'w' throughout its span. Derive expression for maximum deflection and bending moment. **10**

Q.8 Analyze the frame shown in fig. by stiffness method. **10**



Q.9 Find the forces in all members of the truss show in fig. by using memberoriented stiffness method. Assume axial rigidity of all members is constant. **10**



SLR-GF-66

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Structural Analysis (BTN01707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In curved beams, normally the nature of stress distribution is _____. 01
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c) Parabolic d) Hyperbolic

2) A beam curved in plan is designed for _____? 01
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4) In the slope deflection equations, the deformations are considered to be caused by 01
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5) Degree of kinematic indeterminacy of pin jointed plane frame is given by 01
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c) Only Deflection d) none of the above

7) Select the correct statement 01
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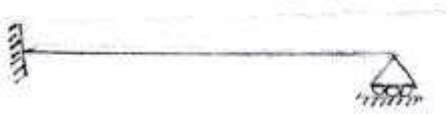
9) To draw qualitative ILD of indeterminate structure, which of the following concept is used. 01

a) Mullers Breslau's Principle
b) Kani's Method
c) Unit Load Method
d) Castigliano's First energy theorem

10) Degree of kinematic indeterminacy for the beam shown in fig. 01



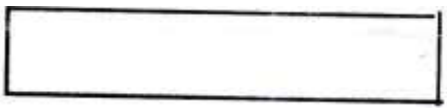
a) 0 b) 2
c) 1 d) 3

11) ILD for the shear force at the support of the cantilever beam is _____. 02

a)

b)

c)



d)

12) Stiffness of the end A if the far end B is free is _____. 02

a) EI/L b) 2EI/L
c) 3EI/L d) 0

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Structural Analysis (BTN01707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2 Draw ILD for SF & BM @ point c of beam shown is fig. (1), Draw ordinate at 1m interval. **08**

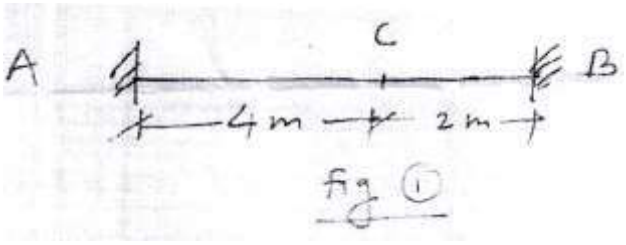


Fig (1)

Q.3 A quarter circle beam of radius 'R' fixed at A and free at B. carrying a load P at free end. Draw SFD, BMD, TMD, also find vertical deflection of point B. **10**

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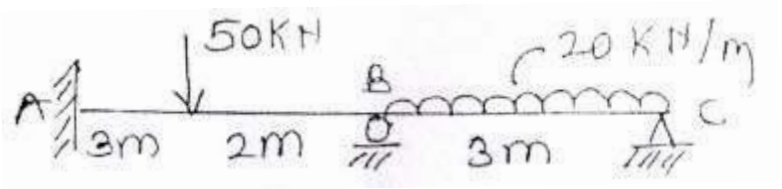
Q.5 Draw SF, BM, deflection diagram for a semi-infinite beam on elastic foundation winged at one end and subjected to UDL of 'W' over entire length. **10**

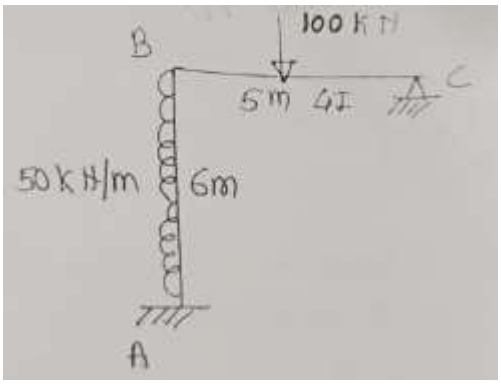
Section – II

Q.6 Analyze the beam shown in fig. by stiffness method. **08**

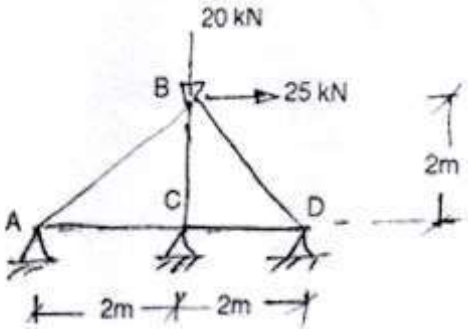


Q.7 A simply supported beam-column is subjected to an axial compressive force 'P' at both ends and an uniformly distributed load of 'w' throughout its span. Derive expression for maximum deflection and bending moment. **10**

Q.8 Analyze the frame shown in fig. by stiffness method. **10**



Q.9 Find the forces in all members of the truss show in fig. by using memberoriented stiffness method. Assume axial rigidity of all members is constant. **10**



SLR-GF-69

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Tuesday,16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume any missing data suitably and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The traffic starts discharging from an approach at an intersection with the signal turning green. The constant headway considered from the fourth or fifth headway position is referred to as _____.
a) Discharge Headway b) Saturation Headway
c) Effective Headway d) Intersection Headway

2) The speed-density relationship in a mid-block section of a highway follows the Greenshield's model. If the free flow speed is V_f, and the jam density is K_j, the maximum flow observed in this section is _____.
a) $V_f * K_j$ b) $\frac{V_f * k_j}{2}$
c) $\frac{V_f * k_j}{4}$ d) $\frac{V_f * k_j}{8}$

3) If the space headway is 7m, then the jam density in vehicle/km is _____.
a) 142 b) 144
c) 145 d) 146

4) If the jam density is 145vehicles/km, and velocity is 60kph then the capacity flow is _____.
a) 2175 b) 2200
c) 2375 d) 2500

5) Level of Service A and F represents _____.
a) Forced Flow and Free Flow respectively
b) Free Flow and Forced Flow respectively
c) Both are free-flow
d) Both are Forced flow

6) As per IRC:67-2001, a traffic sign indicating the speed limit on a road should be of _____.
a) Circular shape with White Background and Red Border
b) Triangular shape with White Background and Red Border
c) Triangular shape with Red Background and White Border
d) Circular shape with Red Background and White Border

7) In signal design as per Indian Roads Congress specifications, if the sum of the ratios of normal flows to saturation flow of two directional traffic flows is 0.50 and the total lost time per cycle is 10 seconds, the optimum cycle length in seconds is _____.

a) 100 b) 80
c) 60 d) 40

8) Two broken yellow line marking at center of road indicates,

a) No passing allowed on both side
b) Passing allowed on one side
c) Passing allowed on both side
d) Passing allowed only for left side vehicle

9) Maximum number of vehicles can be parked with _____.

a) Parallel parking b) 30° angle parking
c) 45° angle parking d) 90° angle parking

10) When volume of the road reaches maximum flow or the capacity, the volume capacity ratio approaches to a value of, _____.

a) 1.0 b) 1.5
c) 0.0 d) 0.5

11) Speed regulations on roads is decided on the basis of _____.

a) 60^{th} percentile cumulative frequency
b) 85^{th} percentile cumulative frequency
c) 55^{th} percentile cumulative frequency
d) 98^{th} percentile cumulative frequency

12) The maximum number of vehicles observed in any five-minute period during the peak hour is 160. If the total flow in the peak hour is 1000 vehicles, the five-minute peak hour factor _____.

a) 0.44 b) 0.52
c) 0.55 d) 0.58

13) In a traffic lane at rotary, the traffic moving extreme left is 250 PCU, and in extreme right, it is 240 PCU, the sum of the weaving traffic crossing left and right is 500 PCU, so find the proportion of weaving traffic.

a) 0.5 b) 1.5
c) 2.5 d) 3.0

14) What is the full form of VMS?

a) Volatile Message Signs b) Variable Message Signs
c) Vehicle Message Signs d) Volume Message Signs

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Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Tuesday,16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Answer any two questions. **14**

a) List the various objectives of traffic engineering.

b) From an in-out survey conducted for a parking area consisting of 40 bays, the initial count was found to be 25. **Table-1** gives the result of the survey. The number of vehicles coming in and out of the parking lot for a time interval of 5 minutes is as shown in the **Table-1** below. Find the accumulation, total parking load, average occupancy and efficiency of the parking lot.

Table -1-in -out survey data

In-out survey data		
Time	In	Out
5	3	2
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15	4	2
20	5	4
25	7	3
30	8	2

In-out survey data		
Time	In	Out
35	2	7
40	4	2
45	6	4
50	4	1
55	3	3
60	2	5

c) Outline causes of accidents and suggest remedial measures for prevention.

d) Write a short note on any two

i) Level of Service
ii) Passenger Car Unit
iii) Collision and Condition Diagram
iv) O-D survey

Q.3 Answer any TWO questions. **14**

a) Explain the relationship between speed, travel time, volume, density and capacity?

b) Discuss the various types of on-street parking with their advantages and disadvantages.

c) Define the term capacity. Explain terms basic capacity, possible capacity and practical capacity.

d) A vehicle of 2000 kg skids a distance of 40 m before colliding with a stationary vehicle of 1000 kg weight. After the collision, both vehicles skid a distance of 12 m. Assuming a coefficient of friction of 0.5, determine the initial speed of the vehicle.

Section-II

Q.4 Answer any two questions. **14**

a) Explain general principles governing application of speed limits in Rural and Urban area.

b) With neat sketches show some of the important types of regulatory signs and mention the functions of each.

c) Write a short note on ITS applications in urban transport system.

d) A fixed type 2 - phase signal is to be provided at an intersection having a North - South and an East - West Road, where only straight ahead traffic is permitted. The design hour flows from the various arms and the saturation flows for these arms are given in the following table.

	North	South	East	West
Design hour flow(q) in PCU s/hour	800	400	750	600
Saturation flow (s) in PCU s /hour	2400	2000	3000	3000

Calculate the optimum cycle time and green times for the minimum overall delay. Use Webster's method. Assume time lost per phase due to starting delays as 2 seconds and value of amber period is 2 seconds. Sketch the timing diagram for each phase.

Q.5 Answer any TWO questions. **14**

a) If 'A' vehicle travelling on the major or preferential street and 'B' vehicle travelling on the minor street. Assume the speed of vehicle 'A' is 60 kmph and the distance to the obstacle from vehicle 'A' and 'B' are 15m and 20m respectively. Calculate the speed limit on the minor street by

i) National Safety Council Method

ii) AASTHO method

b) The width of a carriageway approaching an intersection is given as 15 m. The entry and exit width at the rotary are 10 m. The traffic approaching the intersection from the four sides is shown in Figure-1 below. Find the capacity of the rotary using the given data. Find the capacity of the Rotary. Assume suitable data wherever necessary and mention it clearly. Consider the Design speed as 30kmph. Consider weaving length=54m.

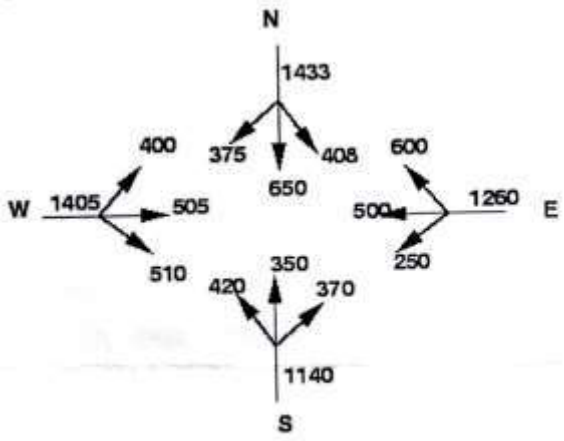

Fig-1-Traffic Approaching the Intersection

c) Explain with neat sketch.
   i) Roadway Delineators
   ii) Hazard Markers
   iii) Safety Barriers

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Tuesday,16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume any missing data suitably and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Two broken yellow line marking at center of road indicates,
a) No passing allowed on both side
b) Passing allowed on one side
c) Passing allowed on both side
d) Passing allowed only for left side vehicle

2) Maximum number of vehicles can be parked with _____.
a) Parallel parking b) 30° angle parking
c) 45° angle parking d) 90° angle parking

3) When volume of the road reaches maximum flow or the capacity, the volume capacity ratio approaches to a value of, _____.
a) 1.0 b) 1.5
c) 0.0 d) 0.5

4) Speed regulations on roads is decided on the basis of _____.
a) 60^{th} percentile cumulative frequency
b) 85^{th} percentile cumulative frequency
c) 55^{th} percentile cumulative frequency
d) 98^{th} percentile cumulative frequency

5) The maximum number of vehicles observed in any five-minute period during the peak hour is 160. If the total flow in the peak hour is 1000 vehicles, the five-minute peak hour factor _____.
a) 0.44 b) 0.52
c) 0.55 d) 0.58

6) In a traffic lane at rotary, the traffic moving extreme left is 250 PCU, and in extreme right, it is 240 PCU, the sum of the weaving traffic crossing left and right is 500 PCU, so find the proportion of weaving traffic.
a) 0.5 b) 1.5
c) 2.5 d) 3.0

7) What is the full form of VMS?
a) Volatile Message Signs b) Variable Message Signs
c) Vehicle Message Signs d) Volume Message Signs

8) The traffic starts discharging from an approach at an intersection with the signal turning green. The constant headway considered from the fourth or fifth headway position is referred to as _____.

a) Discharge Headway
b) Saturation Headway
c) Effective Headway
d) Intersection Headway

9) The speed-density relationship in a mid-block section of a highway follows the Greenshield's model. If the free flow speed is V_f, and the jam density is K_j, the maximum flow observed in this section is _____.

a) $V_f * K_j$
b) $\frac{V_f * k_j}{2}$
c) $\frac{V_f * k_j}{4}$
d) $\frac{V_f * k_j}{8}$

10) If the space headway is 7m, then the jam density in vehicle/km is _____.

a) 142
b) 144
c) 145
d) 146

11) If the jam density is 145vehicles/km, and velocity is 60kph then the capacity flow is _____.

a) 2175
b) 2200
c) 2375
d) 2500

12) Level of Service A and F represents _____.

a) Forced Flow and Free Flow respectively
b) Free Flow and Forced Flow respectively
c) Both are free-flow
d) Both are Forced flow

13) As per IRC:67-2001, a traffic sign indicating the speed limit on a road should be of _____.

a) Circular shape with White Background and Red Border
b) Triangular shape with White Background and Red Border
c) Triangular shape with Red Background and White Border
d) Circular shape with Red Background and White Border

14) In signal design as per Indian Roads Congress specifications, if the sum of the ratios of normal flows to saturation flow of two directional traffic flows is 0.50 and the total lost time per cycle is 10 seconds, the optimum cycle length in seconds is _____.

a) 100
b) 80
c) 60
d) 40

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Tuesday,16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Answer any two questions. **14**

a) List the various objectives of traffic engineering.

b) From an in-out survey conducted for a parking area consisting of 40 bays, the initial count was found to be 25. **Table-1** gives the result of the survey. The number of vehicles coming in and out of the parking lot for a time interval of 5 minutes is as shown in the **Table-1** below. Find the accumulation, total parking load, average occupancy and efficiency of the parking lot.

Table -1-in -out survey data

In-out survey data		
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In-out survey data		
Time	In	Out
35	2	7
40	4	2
45	6	4
50	4	1
55	3	3
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c) Outline causes of accidents and suggest remedial measures for prevention.

d) Write a short note on any two

i) Level of Service
ii) Passenger Car Unit
iii) Collision and Condition Diagram
iv) O-D survey

Q.3 Answer any TWO questions. **14**

a) Explain the relationship between speed, travel time, volume, density and capacity?

b) Discuss the various types of on-street parking with their advantages and disadvantages.

c) Define the term capacity. Explain terms basic capacity, possible capacity and practical capacity.

d) A vehicle of 2000 kg skids a distance of 40 m before colliding with a stationary vehicle of 1000 kg weight. After the collision, both vehicles skid a distance of 12 m. Assuming a coefficient of friction of 0.5, determine the initial speed of the vehicle.

Section-II

Q.4 Answer any two questions. **14**

a) Explain general principles governing application of speed limits in Rural and Urban area.

b) With neat sketches show some of the important types of regulatory signs and mention the functions of each.

c) Write a short note on ITS applications in urban transport system.

d) A fixed type 2 - phase signal is to be provided at an intersection having a North - South and an East - West Road, where only straight ahead traffic is permitted. The design hour flows from the various arms and the saturation flows for these arms are given in the following table.

	North	South	East	West
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Calculate the optimum cycle time and green times for the minimum overall delay. Use Webster's method. Assume time lost per phase due to starting delays as 2 seconds and value of amber period is 2 seconds. Sketch the timing diagram for each phase.

Q.5 Answer any TWO questions. **14**

a) If 'A' vehicle travelling on the major or preferential street and 'B' vehicle travelling on the minor street. Assume the speed of vehicle 'A' is 60 kmph and the distance to the obstacle from vehicle 'A' and 'B' are 15m and 20m respectively. Calculate the speed limit on the minor street by

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b) The width of a carriageway approaching an intersection is given as 15 m. The entry and exit width at the rotary are 10 m. The traffic approaching the intersection from the four sides is shown in Figure-1 below. Find the capacity of the rotary using the given data. Find the capacity of the Rotary. Assume suitable data wherever necessary and mention it clearly. Consider the Design speed as 30kmph. Consider weaving length=54m.

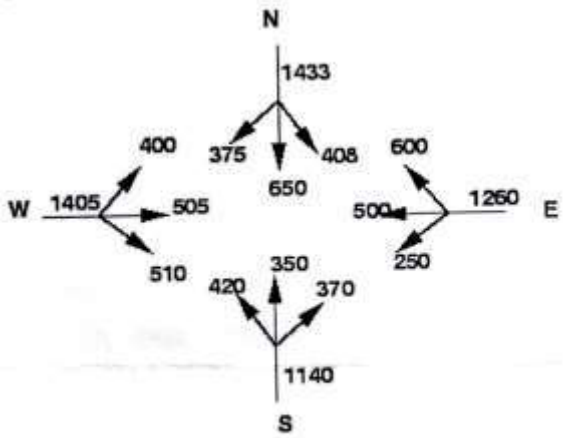

Fig-1-Traffic Approaching the Intersection

c) Explain with neat sketch.
   i) Roadway Delineators
   ii) Hazard Markers
   iii) Safety Barriers

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Tuesday,16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Speed regulations on roads is decided on the basis of _____.
a) 60^{th} percentile cumulative frequency
b) 85^{th} percentile cumulative frequency
c) 55^{th} percentile cumulative frequency
d) 98^{th} percentile cumulative frequency

2) The maximum number of vehicles observed in any five-minute period during the peak hour is 160. If the total flow in the peak hour is 1000 vehicles, the five-minute peak hour factor _____.
a) 0.44 b) 0.52
c) 0.55 d) 0.58

3) In a traffic lane at rotary, the traffic moving extreme left is 250 PCU, and in extreme right, it is 240 PCU, the sum of the weaving traffic crossing left and right is 500 PCU, so find the proportion of weaving traffic.
a) 0.5 b) 1.5
c) 2.5 d) 3.0

4) What is the full form of VMS?
a) Volatile Message Signs b) Variable Message Signs
c) Vehicle Message Signs d) Volume Message Signs

5) The traffic starts discharging from an approach at an intersection with the signal turning green. The constant headway considered from the fourth or fifth headway position is referred to as _____.
a) Discharge Headway b) Saturation Headway
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6) The speed-density relationship in a mid-block section of a highway follows the Greenshield's model. If the free flow speed is V_f, and the jam density is K_j, the maximum flow observed in this section is _____.
a) $V_f * K_j$ b) $\frac{V_f * k_j}{2}$
c) $\frac{V_f * k_j}{4}$ d) $\frac{V_f * k_j}{8}$

7) If the space headway is 7m, then the jam density in vehicle/km is _____.
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8) If the jam density is 145vehicles/km, and velocity is 60kph then the capacity flow is _____.
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b) Triangular shape with White Background and Red Border
c) Triangular shape with Red Background and White Border
d) Circular shape with Red Background and White Border

11) In signal design as per Indian Roads Congress specifications, if the sum of the ratios of normal flows to saturation flow of two directional traffic flows is 0.50 and the total lost time per cycle is 10 seconds, the optimum cycle length in seconds is _____.
a) 100 b) 80
c) 60 d) 40

12) Two broken yellow line marking at center of road indicates,
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13) Maximum number of vehicles can be parked with _____.
a) Parallel parking b) 30° angle parking
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a) 1.0 b) 1.5
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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Tuesday,16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Answer any two questions. **14**

a) List the various objectives of traffic engineering.

b) From an in-out survey conducted for a parking area consisting of 40 bays, the initial count was found to be 25. **Table-1** gives the result of the survey. The number of vehicles coming in and out of the parking lot for a time interval of 5 minutes is as shown in the **Table-1** below. Find the accumulation, total parking load, average occupancy and efficiency of the parking lot.

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In-out survey data			In-out survey data		
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30	8	2	60	2	5

c) Outline causes of accidents and suggest remedial measures for prevention.

d) Write a short note on any two

i) Level of Service
ii) Passenger Car Unit
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iv) O-D survey

Q.3 Answer any TWO questions. **14**

a) Explain the relationship between speed, travel time, volume, density and capacity?

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d) A vehicle of 2000 kg skids a distance of 40 m before colliding with a stationary vehicle of 1000 kg weight. After the collision, both vehicles skid a distance of 12 m. Assuming a coefficient of friction of 0.5, determine the initial speed of the vehicle.

Section-II

Q.4 Answer any two questions. **14**

a) Explain general principles governing application of speed limits in Rural and Urban area.

b) With neat sketches show some of the important types of regulatory signs and mention the functions of each.

c) Write a short note on ITS applications in urban transport system.

d) A fixed type 2 - phase signal is to be provided at an intersection having a North - South and an East - West Road, where only straight ahead traffic is permitted. The design hour flows from the various arms and the saturation flows for these arms are given in the following table.

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b) The width of a carriageway approaching an intersection is given as 15 m. The entry and exit width at the rotary are 10 m. The traffic approaching the intersection from the four sides is shown in Figure-1 below. Find the capacity of the rotary using the given data. Find the capacity of the Rotary. Assume suitable data wherever necessary and mention it clearly. Consider the Design speed as 30kmph. Consider weaving length=54m.

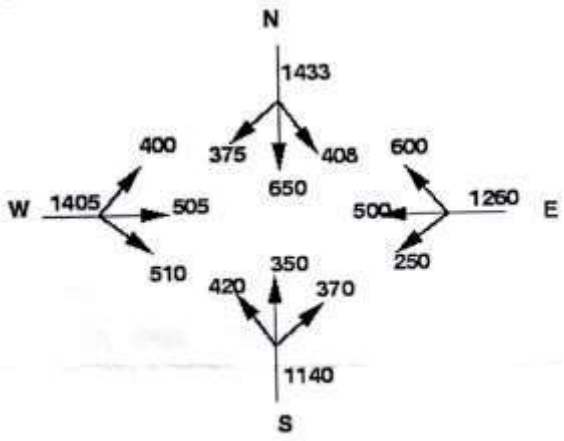

Fig-1-Traffic Approaching the Intersection

c) Explain with neat sketch.
   i) Roadway Delineators
   ii) Hazard Markers
   iii) Safety Barriers

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Tuesday,16-01-2024 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) As per IRC:67-2001, a traffic sign indicating the speed limit on a road should be of _____.
a) Circular shape with White Background and Red Border
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c) Triangular shape with Red Background and White Border
d) Circular shape with Red Background and White Border

2) In signal design as per Indian Roads Congress specifications, if the sum of the ratios of normal flows to saturation flow of two directional traffic flows is 0.50 and the total lost time per cycle is 10 seconds, the optimum cycle length in seconds is _____.
a) 100 b) 80
c) 60 d) 40

3) Two broken yellow line marking at center of road indicates,
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4) Maximum number of vehicles can be parked with _____.
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5) When volume of the road reaches maximum flow or the capacity, the volume capacity ratio approaches to a value of, _____.
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8) In a traffic lane at rotary, the traffic moving extreme left is 250 PCU, and in extreme right, it is 240 PCU, the sum of the weaving traffic crossing left and right is 500 PCU, so find the proportion of weaving traffic.

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c) 2.5 d) 3.0

9) What is the full form of VMS?

a) Volatile Message Signs b) Variable Message Signs
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10) The traffic starts discharging from an approach at an intersection with the signal turning green. The constant headway considered from the fourth or fifth headway position is referred to as _____.

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11) The speed-density relationship in a mid-block section of a highway follows the Greenshield's model. If the free flow speed is V_f, and the jam density is K_j, the maximum flow observed in this section is _____.

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13) If the jam density is 145vehicles/km, and velocity is 60kph then the capacity flow is _____.

a) 2175 b) 2200
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14) Level of Service A and F represents _____.

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SLR-GF-69

Seat No.	

Set S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Traffic Engineering and Management (BTN01710)

Day & Date: Tuesday,16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section-I

Q.2 Answer any two questions. **14**

a) List the various objectives of traffic engineering.

b) From an in-out survey conducted for a parking area consisting of 40 bays, the initial count was found to be 25. **Table-1** gives the result of the survey. The number of vehicles coming in and out of the parking lot for a time interval of 5 minutes is as shown in the **Table-1** below. Find the accumulation, total parking load, average occupancy and efficiency of the parking lot.

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45	6	4
50	4	1
55	3	3
60	2	5

c) Outline causes of accidents and suggest remedial measures for prevention.

d) Write a short note on any two

i) Level of Service
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iv) O-D survey

Q.3 Answer any TWO questions. **14**

a) Explain the relationship between speed, travel time, volume, density and capacity?

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d) A vehicle of 2000 kg skids a distance of 40 m before colliding with a stationary vehicle of 1000 kg weight. After the collision, both vehicles skid a distance of 12 m. Assuming a coefficient of friction of 0.5, determine the initial speed of the vehicle.

Section-II

Q.4 Answer any two questions. **14**

a) Explain general principles governing application of speed limits in Rural and Urban area.

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a) If 'A' vehicle travelling on the major or preferential street and 'B' vehicle travelling on the minor street. Assume the speed of vehicle 'A' is 60 kmph and the distance to the obstacle from vehicle 'A' and 'B' are 15m and 20m respectively. Calculate the speed limit on the minor street by

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ii) AASTHO method

b) The width of a carriageway approaching an intersection is given as 15 m. The entry and exit width at the rotary are 10 m. The traffic approaching the intersection from the four sides is shown in Figure-1 below. Find the capacity of the rotary using the given data. Find the capacity of the Rotary. Assume suitable data wherever necessary and mention it clearly. Consider the Design speed as 30kmph. Consider weaving length=54m.

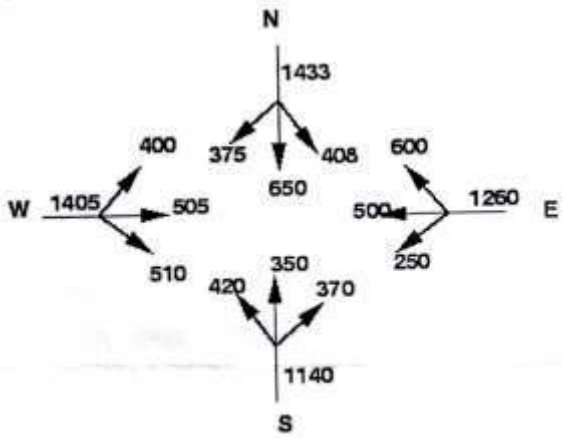

Fig-1-Traffic Approaching the Intersection

c) Explain with neat sketch.
   i) Roadway Delineators
   ii) Hazard Markers
   iii) Safety Barriers

SLR-GF-70

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geo synthetics and soil structures (BTN01711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The shape of apertures in geonets is _____.
a) Square b) Circular
c) Triangular d) Diamond

2) The core of GCL is made of _____.
a) Bentonite clay b) cement
c) clay d) timber

3) The sum of flakiness index and elongation index should not exceed.
a) 15 b) 20
c) 30 d) 40

4) The materials used in the manufacturing of geosynthetics are primarily synthetic polymers generally derived from.
a) Rubber b) Fiberglass
c) Crude petroleum oils d) Jute

5) Indian standard for sampling of geosynthetic specimens is _____.
a) IS800 b) IS14706
c) IS456 d) IS2700

6) Which of the following tests measures the toughness of road aggregates?
a) Crushing strength test b) Abrasion test
c) Impact test d) Shape test

7) MFI is acronym for _____.
a) Mount flow Instrument b) Money fix Installment
c) Metal flow Index d) Melt flow Index

8) The width of grips for performing the grab tensile strength is, _____.
a) 25mm b) 10mm
c) 15mm d) 35mm

9) Which of the following is not physical property of Geosynthetics?
a) Pull out resistance b) Mass per unit area
c) Specific gravity d) Thickness

10) What is the unit of trapezoidal tear strength?
a) Nm
b) N/m
c) N/m^2
d) N

11) Why is the cover provided above the land fill?
a) to prevent the ingress of rain water
b) to prevent the release of odour
c) to prevent the bird menace.
d) all of the above

12) Leaking of leachate occurs from the land fill due to _____.
a) Shrinkage cracks in the clay liner
b) holes in the geo-membrane ayer
c) Imperfect sealing of joints.
d) All of the above.

13) How many types of primary functions of Geo-synthetics are there?
a) 5
b) 4
c) 3
d) 6

14) The structure of a Geo cell is _____.
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b) 2D floccular
c) 3D floccular
d) 3D honeycombed

SLR-GF-70

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geo synthetics and soil structures (BTN01711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
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Section – I

Q.2 Answer any four questions: **08**
- **a)** Historical background of reinforced soil
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- **c)** Types of reinforced soil retaining walls
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- **e)** Apparent opening size

Q.3 **a)** Explain different types of geosynthetics. **05**
b) Explain the mechanical properties of geosynthetics in detail. **05**

Q.4 **a)** With a neat sketch explain procedure for inplane permeability. **05**
b) Enlist different techniques of testing strength properties of geosynthetics. **05**

Q.5 **a)** Explain in detail the BS-8006 method for describing reinforced soil retaining wall. **05**
b) Explain planar wedge method for slope analysis. **05**

Section – II

Q.6 Answer any four questions: **08**
- **a)** Erosion control on slopes using geosynthetics.
- **b)** Criteria for selection of geotextiles as filters.
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- **d)** Components of modern landfills.
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Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geo synthetics and soil structures (BTN01711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

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Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geo synthetics and soil structures (BTN01711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
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Section – I

Q.2 Answer any four questions: **08**
- **a)** Historical background of reinforced soil
- **b)** Assessment of construction induced damage
- **c)** Types of reinforced soil retaining walls
- **d)** Different slop stability analysis methods
- **e)** Apparent opening size

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b) Explain the mechanical properties of geosynthetics in detail. **05**

Q.4 **a)** With a neat sketch explain procedure for inplane permeability. **05**
b) Enlist different techniques of testing strength properties of geosynthetics. **05**

Q.5 **a)** Explain in detail the BS-8006 method for describing reinforced soil retaining wall. **05**
b) Explain planar wedge method for slope analysis. **05**

Section – II

Q.6 Answer any four questions: **08**
- **a)** Erosion control on slopes using geosynthetics.
- **b)** Criteria for selection of geotextiles as filters.
- **c)** Reflection cracking.
- **d)** Components of modern landfills.
- **e)** Collection techniques for leachate.

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b) Write a detailed note on applications of geosynthetics in drainage and filtration. **05**

Q.8	**a)**	Explain the use of geosynthetics for construction of heavy container yards and railway lines.	**05**
	b)	Explain Giroud-Noiray approach.	**05**
Q.9	**a)**	Explain geosynthetic clay liner as barrier.	**05**
	b)	Explain application geotextiles for drainage in landfills.	**05**

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Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geo synthetics and soil structures (BTN01711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Why is the cover provided above the land fill?
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Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geo synthetics and soil structures (BTN01711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
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Section – I

Q.2 Answer any four questions: **08**
- **a)** Historical background of reinforced soil
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Section – II

Q.6 Answer any four questions: **08**
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Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geo synthetics and soil structures (BTN01711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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SLR-GF-70

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Geo synthetics and soil structures (BTN01711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
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Section – I

Q.2 Answer any four questions: **08**
- **a)** Historical background of reinforced soil
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Q.5 **a)** Explain in detail the BS-8006 method for describing reinforced soil retaining wall. **05**
b) Explain planar wedge method for slope analysis. **05**

Section – II

Q.6 Answer any four questions: **08**
- **a)** Erosion control on slopes using geosynthetics.
- **b)** Criteria for selection of geotextiles as filters.
- **c)** Reflection cracking.
- **d)** Components of modern landfills.
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Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Average chart & range chart are for _____.
a) Attributes b) Variables
c) Both d) None of these

2) Military organization is _____.
a) Line and Staff b) Matrix
c) Line d) Functional

3) Short Route problem is best example of _____.
a) Graphical Method b) Integer Programming
c) Dynamic Programming d) Game Theory

4) If rate of customer arrival is 15 person per hour and rate of service is 20 persons per hour then probability of system being idle is _____.
a) 0.5 b) 0.75
c) 1.0 d) 0.25

5) An LPP is said to be _____ if has no solution that satisfies all the constraints.
a) Feasible b) Bounded
c) Infeasible d) None of these

6) The topmost row in the simplex matrix is called _____.
a) Variable Row b) Objective Row
c) Constraint Row d) None

7) Games without a saddle point requires players to play _____.
a) Pure Strategy b) Mixed Strategy
c) Market Strategy d) None

8) Which of the following method will be minimum cost for IBFS in transportation problem?
a) NWCM b) LCM
c) VAM d) None

9) EMV technique is used for decision under _____.
a) Uncertainty b) Certainty
c) Risk d) All the above

10) The cost of keeping items in inventory stock is called _____.

a) Caring Cost b) Shortage cost
c) Procurement cost d) none of this

11) Economic Order Quantity model helps to find.

a) Optimum size of order b) Annual Requirement of Units
c) Both of these d) None of these

12) At the Break-Even Point _____.

a) Profit > Loss b) Profit < Loss
c) Profit = Loss d) None of these

13) Hungarian method is suitable for _____.

a) Assignment Problem b) Transportation Problem
c) Graphical Method d) Game Theory

14) In Decision Tree problem, Event Mode is shown by _____.

a) Circle b) Rectangle
c) Square d) Triangle

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Answer any three. **24**

a) Using Graphical method, Solve

Maximize $Z = 2X_1 + 3X_2$

Subject to, $X_1 + X_2 \leq 30;$
$X_1 - X_2 \geq 0;$
$X_2 \geq 3;$
$0 \leq X_1 \leq 20;$
$0 \leq X_2 \leq 2;$

Four different jobs can be done on 4 different machines. The set-up and takedown time cost are assumed to be prohibitively high for changeovers. The matrix below gives the cost in rupees for producing job i on machine j. Assign optimum job to machine so as processing cost should be minimum.

		Machines			
		M1	M2	M3	M4
Jobs	J1	51	77	49	55
	J2	32	34	59	68
	J3	37	44	70	54
	J4	55	55	58	55

b) Determine the decision under Maximin and Laplace criteria for the following process.

Alternatives	States of nature (product demand)			
	High (₹)	Moderate (₹)	Low (₹)	Nil (₹)
Expand	50,000	25,000	-25,000	-45,000
Construct	70,000	30,000	-40,000	-80,000
Subcontract	30,000	15,000	-1,000	-10,000

c) Discuss I detail 'Planning' & 'Organising' as a Functions of Management.

d) Explain the Waiting Line Theory with all its characteristics to single channel waiting line. Discuss with the graph showing waiting time cost, Cost of Services & Total Expected cost.

Q.3 Write a note on any one. **04**

a) Advantages of Simulation Technique.

b) Theory of Games.

Section-II

Q.4 Answer any three. **24**

a) What is Break-Even Analysis? Explain with an example. How it is important for material management?

b) Find The A-Class, B-Class And C-Class Material, for following and draw the Graph.

Item ID	Annual Consumption in unit	Unit Price in Rs
1	700	50
2	2400	30
3	150	100
4	60	220
5	3800	15
6	4000	5
7	6000	2
8	300	35
9	30	80
10	2900	4

c) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data,
Annual Usages=50 Units
Procurement Cost = 15 Rs. Per Order
Unit Cost = 100 Rs. /Item
Inventory Caring Cost = 10% of the unit cost

d) The following are the mean length & ranges of lengths of finished product from 10 samples of size 5. The specification limits for length are 200 ± 5 cm. Construct $\bar{x}$ and R chart and examine whether the process is under control & state your explanation.

Sample no.	1	2	3	4	5	6	7	8	9	10
Mean $\bar{x}$	201	198	202	200	203	204	199	196	199	201
Range R	5	0	7	3	4	7	2	8	5	6

e) Write a note on the ERP system.

Q.5 Write a note on any one. **04**

a) Dynamic Programming.

b) ANN

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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Optimization Techniques (BTN01714)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) Which of the following method will be minimum cost for IBFS in transportation problem?
a) NWCM b) LCM
c) VAM d) None

2) EMV technique is used for decision under _____.
a) Uncertainty b) Certainty
c) Risk d) All the above

3) The cost of keeping items in inventory stock is called _____.
a) Caring Cost b) Shortage cost
c) Procurement cost d) none of this

4) Economic Order Quantity model helps to find.
a) Optimum size of order b) Annual Requirement of Units
c) Both of these d) None of these

5) At the Break-Even Point _____.
a) Profit > Loss b) Profit < Loss
c) Profit = Loss d) None of these

6) Hungarian method is suitable for _____.
a) Assignment Problem b) Transportation Problem
c) Graphical Method d) Game Theory

7) In Decision Tree problem, Event Mode is shown by _____.
a) Circle b) Rectangle
c) Square d) Triangle

8) Average chart & range chart are for _____.
a) Attributes b) Variables
c) Both d) None of these

9) Military organization is _____.
a) Line and Staff b) Matrix
c) Line d) Functional

10) Short Route problem is best example of _____.
a) Graphical Method b) Integer Programming
c) Dynamic Programming d) Game Theory

11) If rate of customer arrival is 15 person per hour and rate of service is 20 persons per hour then probability of system being idle is _____.
a) 0.5 b) 0.75
c) 1.0 d) 0.25

12) An LPP is said to be _____ if has no solution that satisfies all the constraints.
a) Feasible b) Bounded
c) Infeasible d) None of these

13) The topmost row in the simplex matrix is called _____.
a) Variable Row b) Objective Row
c) Constraint Row d) None

14) Games without a saddle point requires players to play _____.
a) Pure Strategy b) Mixed Strategy
c) Market Strategy d) None

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Answer any three. **24**

a) Using Graphical method, Solve

Maximize $Z = 2X_1 + 3X_2$

Subject to, $X_1 + X_2 \leq 30;$
$X_1 - X_2 \geq 0;$
$X_2 \geq 3;$
$0 \leq X_1 \leq 20;$
$0 \leq X_2 \leq 2;$

Four different jobs can be done on 4 different machines. The set-up and takedown time cost are assumed to be prohibitively high for changeovers. The matrix below gives the cost in rupees for producing job i on machine j. Assign optimum job to machine so as processing cost should be minimum.

		Machines			
		M1	M2	M3	M4
Jobs	J1	51	77	49	55
	J2	32	34	59	68
	J3	37	44	70	54
	J4	55	55	58	55

b) Determine the decision under Maximin and Laplace criteria for the following process.

Alternatives	States of nature (product demand)			
	High (₹)	Moderate (₹)	Low (₹)	Nil (₹)
Expand	50,000	25,000	-25,000	-45,000
Construct	70,000	30,000	-40,000	-80,000
Subcontract	30,000	15,000	-1,000	-10,000

c) Discuss I detail 'Planning' & 'Organising' as a Functions of Management.

d) Explain the Waiting Line Theory with all its characteristics to single channel waiting line. Discuss with the graph showing waiting time cost, Cost of Services & Total Expected cost.

Q.3 Write a note on any one. **04**

a) Advantages of Simulation Technique.

b) Theory of Games.

Section-II

Q.4 Answer any three. **24**

a) What is Break-Even Analysis? Explain with an example. How it is important for material management?

b) Find The A-Class, B-Class And C-Class Material, for following and draw the Graph.

Item ID	Annual Consumption in unit	Unit Price in Rs
1	700	50
2	2400	30
3	150	100
4	60	220
5	3800	15
6	4000	5
7	6000	2
8	300	35
9	30	80
10	2900	4

c) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data,
Annual Usages=50 Units
Procurement Cost = 15 Rs. Per Order
Unit Cost = 100 Rs. /Item
Inventory Caring Cost = 10% of the unit cost

d) The following are the mean length & ranges of lengths of finished product from 10 samples of size 5. The specification limits for length are 200 ± 5 cm. Construct $\bar{x}$ and R chart and examine whether the process is under control & state your explanation.

Sample no.	1	2	3	4	5	6	7	8	9	10
Mean $\bar{x}$	201	198	202	200	203	204	199	196	199	201
Range R	5	0	7	3	4	7	2	8	5	6

e) Write a note on the ERP system.

Q.5 Write a note on any one. **04**

a) Dynamic Programming.

b) ANN

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Economic Order Quantity model helps to find.
a) Optimum size of order b) Annual Requirement of Units
c) Both of these d) None of these

2) At the Break-Even Point _____.
a) Profit > Loss b) Profit < Loss
c) Profit = Loss d) None of these

3) Hungarian method is suitable for _____.
a) Assignment Problem b) Transportation Problem
c) Graphical Method d) Game Theory

4) In Decision Tree problem, Event Mode is shown by _____.
a) Circle b) Rectangle
c) Square d) Triangle

5) Average chart & range chart are for _____.
a) Attributes b) Variables
c) Both d) None of these

6) Military organization is _____.
a) Line and Staff b) Matrix
c) Line d) Functional

7) Short Route problem is best example of _____.
a) Graphical Method b) Integer Programming
c) Dynamic Programming d) Game Theory

8) If rate of customer arrival is 15 person per hour and rate of service is 20 persons per hour then probability of system being idle is _____.
a) 0.5 b) 0.75
c) 1.0 d) 0.25

9) An LPP is said to be _____ if has no solution that satisfies all the constraints.
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c) Infeasible d) None of these

10) The topmost row in the simplex matrix is called _____.

a) Variable Row b) Objective Row
c) Constraint Row d) None

11) Games without a saddle point requires players to play _____.

a) Pure Strategy b) Mixed Strategy
c) Market Strategy d) None

12) Which of the following method will be minimum cost for IBFS in transportation problem?

a) NWCM b) LCM
c) VAM d) None

13) EMV technique is used for decision under _____.

a) Uncertainty b) Certainty
c) Risk d) All the above

14) The cost of keeping items in inventory stock is called _____.

a) Caring Cost b) Shortage cost
c) Procurement cost d) none of this

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Answer any three. **24**

a) Using Graphical method, Solve

Maximize $Z = 2X_1 + 3X_2$

Subject to, $X_1 + X_2 \leq 30;$
$X_1 - X_2 \geq 0;$
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$0 \leq X_1 \leq 20;$
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Four different jobs can be done on 4 different machines. The set-up and takedown time cost are assumed to be prohibitively high for changeovers. The matrix below gives the cost in rupees for producing job i on machine j. Assign optimum job to machine so as processing cost should be minimum.

		Machines			
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b) Determine the decision under Maximin and Laplace criteria for the following process.

Alternatives	States of nature (product demand)			
	High (₹)	Moderate (₹)	Low (₹)	Nil (₹)
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c) Discuss I detail 'Planning' & 'Organising' as a Functions of Management.

d) Explain the Waiting Line Theory with all its characteristics to single channel waiting line. Discuss with the graph showing waiting time cost, Cost of Services & Total Expected cost.

Q.3 Write a note on any one. **04**

a) Advantages of Simulation Technique.

b) Theory of Games.

Section-II

Q.4 Answer any three. **24**

a) What is Break-Even Analysis? Explain with an example. How it is important for material management?

b) Find The A-Class, B-Class And C-Class Material, for following and draw the Graph.

Item ID	Annual Consumption in unit	Unit Price in Rs
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c) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data,
Annual Usages=50 Units
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Unit Cost = 100 Rs. /Item
Inventory Caring Cost = 10% of the unit cost

d) The following are the mean length & ranges of lengths of finished product from 10 samples of size 5. The specification limits for length are 200 ± 5 cm. Construct $\bar{x}$ and R chart and examine whether the process is under control & state your explanation.

Sample no.	1	2	3	4	5	6	7	8	9	10
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Range R	5	0	7	3	4	7	2	8	5	6

e) Write a note on the ERP system.

Q.5 Write a note on any one. **04**

a) Dynamic Programming.

b) ANN

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

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c) Constraint Row d) None

2) Games without a saddle point requires players to play _____.
a) Pure Strategy b) Mixed Strategy
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13) If rate of customer arrival is 15 person per hour and rate of service is 20 persons per hour then probability of system being idle is _____.
a) 0.5 b) 0.75
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a) Feasible b) Bounded
c) Infeasible d) None of these

SLR-GF-73

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Optimization Techniques (BTN01714)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Answer any three. **24**

a) Using Graphical method, Solve

Maximize $Z = 2X_1 + 3X_2$

Subject to, $X_1 + X_2 \leq 30;$
$X_1 - X_2 \geq 0;$
$X_2 \geq 3;$
$0 \leq X_1 \leq 20;$
$0 \leq X_2 \leq 2;$

Four different jobs can be done on 4 different machines. The set-up and takedown time cost are assumed to be prohibitively high for changeovers. The matrix below gives the cost in rupees for producing job i on machine j. Assign optimum job to machine so as processing cost should be minimum.

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	J3	37	44	70	54
	J4	55	55	58	55

b) Determine the decision under Maximin and Laplace criteria for the following process.

Alternatives	States of nature (product demand)			
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Construct	70,000	30,000	-40,000	-80,000
Subcontract	30,000	15,000	-1,000	-10,000

c) Discuss I detail 'Planning' & 'Organising' as a Functions of Management.

d) Explain the Waiting Line Theory with all its characteristics to single channel waiting line. Discuss with the graph showing waiting time cost, Cost of Services & Total Expected cost.

Q.3 Write a note on any one. **04**

a) Advantages of Simulation Technique.

b) Theory of Games.

Section-II

Q.4 Answer any three. **24**

a) What is Break-Even Analysis? Explain with an example. How it is important for material management?

b) Find The A-Class, B-Class And C-Class Material, for following and draw the Graph.

Item ID	Annual Consumption in unit	Unit Price in Rs
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3	150	100
4	60	220
5	3800	15
6	4000	5
7	6000	2
8	300	35
9	30	80
10	2900	4

c) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data,
Annual Usages=50 Units
Procurement Cost = 15 Rs. Per Order
Unit Cost = 100 Rs. /Item
Inventory Caring Cost = 10% of the unit cost

d) The following are the mean length & ranges of lengths of finished product from 10 samples of size 5. The specification limits for length are 200 ± 5 cm. Construct $\bar{x}$ and R chart and examine whether the process is under control & state your explanation.

Sample no.	1	2	3	4	5	6	7	8	9	10
Mean $\bar{x}$	201	198	202	200	203	204	199	196	199	201
Range R	5	0	7	3	4	7	2	8	5	6

e) Write a note on the ERP system.

Q.5 Write a note on any one. **04**

a) Dynamic Programming.

b) ANN

SLR-GF-74

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov – 2023
CIVIL ENGINEERING
Water Power Engineering (BTN01715)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.
5) Draw neat labels diagrams whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The load factor for the peak day of the year determines the required _____.
a) Water storage b) Pondage
c) Generating capacity d) None

2) The draft tube is provided to _____.
a) reduce the effect of water hammer
b) raise the water surface of the stream to create an artificial head
c) increase the acting head on the water wheel
d) none of the above

3) What is time period for one tide to occur in a day?
a) 6h, 12.5 min b) 6h, 40.5 min
c) 6h, 0 min d) 6h, 25.6 min

4) Unit power in a turbine is _____.
a) $pH^{1/2}$ b) P/H
c) $P/H^{3/2}$ d) P/H^{3}

5) In Francis turbine runner, the number of blades is generally of the order of _____.
a) 1-2 b) 4-6
c) 6-8 d) 12-16

6) Minimum pressure occurs in fall flowing power tunnel at the time _____.
a) load rejection b) load acceptance
c) head race d) Tail race

7) The pumped storage power plant in India _____.
a) Bhakra Nangal (Punjab) b) Kadamparai (Tamilnadu)
c) Koyna (Maharashtra) d) Does not exist

8) Run of river plant is one which _____.
a) has a limited pondage b) has no pondage at all
c) is high head plant d) is a computer storage plant

9) Cavitations in turbine causes _____.

a) low efficiency b) damage of blade surface
c) vibration and noise d) all

10) Substructure of a powerhouse should provide space for _____.

a) turbine governors
b) generators for horizontal unit
c) switch board
d) low tension switches and other auxiliaries
e) all

11) Trap efficiency of reservoir indicate _____.

a) water trapped b) sediment retained
c) sediment in flow d) sediment out flow

12) Which of the following is not a requirement for site selection of hydroelectric power plant?

a) Availability of water b) Large catchment area
c) Rocky land d) Sedimentation

13) Which of following power plant has highest depreciation charges?

a) Nuclear plant b) Thermal plant
c) Diesel plant d) Hydroelectric plant

14) Pelton turbines are mostly _____.

a) Horizontal b) Vertical
c) Inclined d) None of the above

SLR-GF-74

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov – 2023
CIVIL ENGINEERING
Water Power Engineering (BTN01715)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Use of only non programmable calculator is allowed.
4) Draw neat labeled diagrams whenever necessary.
5) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) What are the type sources?

b) Discuss the Strength, weaknesses and future prospects of water power India.

c) What is the classification of hydropower plants. Explain any one in brief.

d) Common load shared by two stations base load plant with 25 MW capacity and other being standby plant with 30 MW capacity. The yearly output for base load station is 125×10^6 KWh, and for standby station is 10.5×10^6 KWh. The peak load taken by standby station is 15 MW which works for 2500 hrs during the year. The base load station takes peak load as 22.5 MW. Calculate annual load factor, plant use factor, and capacity factor for both the stations.

e) Calculate the power factor for a utility to supply a maximum 1500 kW of real power, when the reactive power at that time is 1125 kVAR.

Q.3 Attempt any two of the following questions. **12**

a) A penstock pipe, 800 m long, takes off from a reservoir and feeds water to turbine, the level of which is 220 m below the reservoir water level. The first 300 m length of the penstock has a cross section area of 6 m^2 and the rest has an area of 4 m^2. The steady state discharge is 10m3/sec. If the turbine gates are closed completely in seconds at a uniform rate, what would be the water hammer pressure developed? (from Allieri chart= Z2=1.32).

b) What do you understand by run-of-river plants? What are the parts and arrangements of such plants? Draw a neat sketch of such plant.

c) What is water hammer in a pipe line? Derive the expression for the water hammer pressure in case of rigid pipe and elastic pipe.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) What are the important types of turbines? Enlist the factors on which choice of turbine depends.

b) What do you understand by 'pumped storage' plant? What are the advantages and disadvantages of this power plant?

c) What are the advantages of reaction turbine over the pelton wheel in respect of efficiency, size cost and maintenance?

d) Power house is equipped with 4 units of vertical shaft pelton turbines to be coupled with 70000 kVA, 3 phase. 50 hertz generators. The generation is provided with 10 pairs of poles. The gross design head is 505 m and transmission efficiency of head race tunnel and penstocks together is to be 94 percent.
The four units together will provide for a power of 256000 KW at a guaranteed efficiency of 91 percent. The nozzle efficiency is 0.98.
Find-:
1) the design discharge for the turbine
2) jet dia. and no. of jets
3) the nozzle tip diameter
4) the pitch circle dia. of the wheel
5) the specific speed and
6) number of buckets on the wheel

e) What are the types of intake structures? Explain any one with neat sketch.

Q.5 Attempt any two of the following questions. **12**

a) What are the important types of turbines? Enlist the factors on which choice of turbine depends.

b) Describe how ocean tides one generated? With tidal cycle in view describe how hydropower can be generated? Also state the limitations of tidal power generation.

c) At a hydroelectric power station Kaplan turbine is used which has following data,

Operating head = 22.5m
output power at this head = 126 MW,
discharge = 615 m3/sec
speed = 68.2 rpm,
Runner tip to tip diameter = 9.3 m
Hub diameter = 4.3m
Number of blades = 6
Calculate the speed ratio, flow ratio, and the overall efficiency.

SLR-GF-74

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov – 2023
CIVIL ENGINEERING
Water Power Engineering (BTN01715)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Run of river plant is one which _____.
a) has a limited pondage b) has no pondage at all
c) is high head plant d) is a computer storage plant

2) Cavitations in turbine causes _____.
a) low efficiency b) damage of blade surface
c) vibration and noise d) all

3) Substructure of a powerhouse should provide space for _____.
a) turbine governors
b) generators for horizontal unit
c) switch board
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4) Trap efficiency of reservoir indicate _____.
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6) Which of following power plant has highest depreciation charges?
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7) Pelton turbines are mostly _____.
a) Horizontal b) Vertical
c) Inclined d) None of the above

8) The load factor for the peak day of the year determines the required _____.
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10) What is time period for one tide to occur in a day?
a) 6h, 12.5 min
b) 6h, 40.5 min
c) 6h, 0 min
d) 6h, 25.6 min

11) Unit power in a turbine is _____.
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12) In Francis turbine runner, the number of blades is generally of the order of _____.
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14) The pumped storage power plant in India _____.
a) Bhakra Nangal (Punjab)
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c) Koyna (Maharashtra)
d) Does not exist

SLR-GF-74

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov – 2023
CIVIL ENGINEERING
Water Power Engineering (BTN01715)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
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Section – I

Q.2 Attempt any four of the following questions. **16**

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c) What is the classification of hydropower plants. Explain any one in brief.

d) Common load shared by two stations base load plant with 25 MW capacity and other being standby plant with 30 MW capacity. The yearly output for base load station is 125×10^6 KWh, and for standby station is 10.5×10^6 KWh. The peak load taken by standby station is 15 MW which works for 2500 hrs during the year. The base load station takes peak load as 22.5 MW. Calculate annual load factor, plant use factor, and capacity factor for both the stations.

e) Calculate the power factor for a utility to supply a maximum 1500 kW of real power, when the reactive power at that time is 1125 kVAR.

Q.3 Attempt any two of the following questions. **12**

a) A penstock pipe, 800 m long, takes off from a reservoir and feeds water to turbine, the level of which is 220 m below the reservoir water level. The first 300 m length of the penstock has a cross section area of 6 m^2 and the rest has an area of 4 m^2. The steady state discharge is 10m3/sec. If the turbine gates are closed completely in seconds at a uniform rate, what would be the water hammer pressure developed? (from Allieri chart= Z2=1.32).

b) What do you understand by run-of-river plants? What are the parts and arrangements of such plants? Draw a neat sketch of such plant.

c) What is water hammer in a pipe line? Derive the expression for the water hammer pressure in case of rigid pipe and elastic pipe.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) What are the important types of turbines? Enlist the factors on which choice of turbine depends.

b) What do you understand by 'pumped storage' plant? What are the advantages and disadvantages of this power plant?

c) What are the advantages of reaction turbine over the pelton wheel in respect of efficiency, size cost and maintenance?

d) Power house is equipped with 4 units of vertical shaft pelton turbines to be coupled with 70000 kVA, 3 phase. 50 hertz generators. The generation is provided with 10 pairs of poles. The gross design head is 505 m and transmission efficiency of head race tunnel and penstocks together is to be 94 percent.
The four units together will provide for a power of 256000 KW at a guaranteed efficiency of 91 percent. The nozzle efficiency is 0.98.
Find-:
1) the design discharge for the turbine
2) jet dia. and no. of jets
3) the nozzle tip diameter
4) the pitch circle dia. of the wheel
5) the specific speed and
6) number of buckets on the wheel

e) What are the types of intake structures? Explain any one with neat sketch.

Q.5 Attempt any two of the following questions. **12**

a) What are the important types of turbines? Enlist the factors on which choice of turbine depends.

b) Describe how ocean tides one generated? With tidal cycle in view describe how hydropower can be generated? Also state the limitations of tidal power generation.

c) At a hydroelectric power station Kaplan turbine is used which has following data,

Operating head = 22.5m
output power at this head = 126 MW,
discharge = 615 m3/sec
speed = 68.2 rpm,
Runner tip to tip diameter = 9.3 m
Hub diameter = 4.3m
Number of blades = 6
Calculate the speed ratio, flow ratio, and the overall efficiency.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov – 2023
CIVIL ENGINEERING
Water Power Engineering (BTN01715)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.
5) Draw neat labels diagrams whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Trap efficiency of reservoir indicate _____.
a) water trapped b) sediment retained
c) sediment in flow d) sediment out flow

2) Which of the following is not a requirement for site selection of hydroelectric power plant?
a) Availability of water b) Large catchment area
c) Rocky land d) Sedimentation

3) Which of following power plant has highest depreciation charges?
a) Nuclear plant b) Thermal plant
c) Diesel plant d) Hydroelectric plant

4) Pelton turbines are mostly _____.
a) Horizontal b) Vertical
c) Inclined d) None of the above

5) The load factor for the peak day of the year determines the required _____.
a) Water storage b) Pondage
c) Generating capacity d) None

6) The draft tube is provided to _____.
a) reduce the effect of water hammer
b) raise the water surface of the stream to create an artificial head
c) increase the acting head on the water wheel
d) none of the above

7) What is time period for one tide to occur in a day?
a) 6h, 12.5 min b) 6h, 40.5 min
c) 6h, 0 min d) 6h, 25.6 min

8) Unit power in a turbine is _____.
a) $pH^{1/2}$ b) P/H
c) $P/H^{3/2}$ d) P/H^{3}

9) In Francis turbine runner, the number of blades is generally of the order of _____.

a) 1-2 b) 4-6
c) 6-8 d) 12-16

10) Minimum pressure occurs in fall flowing power tunnel at the time _____.

a) load rejection b) load acceptance
c) head race d) Tail race

11) The pumped storage power plant in India _____.

a) Bhakra Nangal (Punjab) b) Kadamparai (Tamilnadu)
c) Koyna (Maharashtra) d) Does not exist

12) Run of river plant is one which _____.

a) has a limited pondage b) has no pondage at all
c) is high head plant d) is a computer storage plant

13) Cavitations in turbine causes _____.

a) low efficiency b) damage of blade surface
c) vibration and noise d) all

14) Substructure of a powerhouse should provide space for _____.

a) turbine governors
b) generators for horizontal unit
c) switch board
d) low tension switches and other auxiliaries
e) all

SLR-GF-74

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov – 2023
CIVIL ENGINEERING
Water Power Engineering (BTN01715)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Use of only non programmable calculator is allowed.
4) Draw neat labeled diagrams whenever necessary.
5) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) What are the type sources?

b) Discuss the Strength, weaknesses and future prospects of water power India.

c) What is the classification of hydropower plants. Explain any one in brief.

d) Common load shared by two stations base load plant with 25 MW capacity and other being standby plant with 30 MW capacity. The yearly output for base load station is 125×10^6 KWh, and for standby station is 10.5×10^6 KWh. The peak load taken by standby station is 15 MW which works for 2500 hrs during the year. The base load station takes peak load as 22.5 MW. Calculate annual load factor, plant use factor, and capacity factor for both the stations.

e) Calculate the power factor for a utility to supply a maximum 1500 kW of real power, when the reactive power at that time is 1125 kVAR.

Q.3 Attempt any two of the following questions. **12**

a) A penstock pipe, 800 m long, takes off from a reservoir and feeds water to turbine, the level of which is 220 m below the reservoir water level. The first 300 m length of the penstock has a cross section area of 6 m^2 and the rest has an area of 4 m^2. The steady state discharge is 10m3/sec. If the turbine gates are closed completely in seconds at a uniform rate, what would be the water hammer pressure developed? (from Allieri chart= Z2=1.32).

b) What do you understand by run-of-river plants? What are the parts and arrangements of such plants? Draw a neat sketch of such plant.

c) What is water hammer in a pipe line? Derive the expression for the water hammer pressure in case of rigid pipe and elastic pipe.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) What are the important types of turbines? Enlist the factors on which choice of turbine depends.

b) What do you understand by 'pumped storage' plant? What are the advantages and disadvantages of this power plant?

c) What are the advantages of reaction turbine over the pelton wheel in respect of efficiency, size cost and maintenance?

d) Power house is equipped with 4 units of vertical shaft pelton turbines to be coupled with 70000 kVA, 3 phase. 50 hertz generators. The generation is provided with 10 pairs of poles. The gross design head is 505 m and transmission efficiency of head race tunnel and penstocks together is to be 94 percent.
The four units together will provide for a power of 256000 KW at a guaranteed efficiency of 91 percent. The nozzle efficiency is 0.98.
Find-:
1) the design discharge for the turbine
2) jet dia. and no. of jets
3) the nozzle tip diameter
4) the pitch circle dia. of the wheel
5) the specific speed and
6) number of buckets on the wheel

e) What are the types of intake structures? Explain any one with neat sketch.

Q.5 Attempt any two of the following questions. **12**

a) What are the important types of turbines? Enlist the factors on which choice of turbine depends.

b) Describe how ocean tides one generated? With tidal cycle in view describe how hydropower can be generated? Also state the limitations of tidal power generation.

c) At a hydroelectric power station Kaplan turbine is used which has following data,

Operating head = 22.5m
output power at this head = 126 MW,
discharge = 615 m3/sec
speed = 68.2 rpm,
Runner tip to tip diameter = 9.3 m
Hub diameter = 4.3m
Number of blades = 6
Calculate the speed ratio, flow ratio, and the overall efficiency.

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov – 2023
CIVIL ENGINEERING
Water Power Engineering (BTN01715)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.
5) Draw neat labels diagrams whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Minimum pressure occurs in fall flowing power tunnel at the time _____.
a) load rejection b) load acceptance
c) head race d) Tail race

2) The pumped storage power plant in India _____.
a) Bhakra Nangal (Punjab) b) Kadamparai (Tamilnadu)
c) Koyna (Maharashtra) d) Does not exist

3) Run of river plant is one which _____.
a) has a limited pondage b) has no pondage at all
c) is high head plant d) is a computer storage plant

4) Cavitations in turbine causes _____.
a) low efficiency b) damage of blade surface
c) vibration and noise d) all

5) Substructure of a powerhouse should provide space for _____.
a) turbine governors
b) generators for horizontal unit
c) switch board
d) low tension switches and other auxiliaries
e) all

6) Trap efficiency of reservoir indicate _____.
a) water trapped b) sediment retained
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a) Horizontal b) Vertical
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c) Generating capacity d) None

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12) What is time period for one tide to occur in a day?
a) 6h, 12.5 min b) 6h, 40.5 min
c) 6h, 0 min d) 6h, 25.6 min

13) Unit power in a turbine is _____.
a) $pH^{1/2}$ b) P/H
c) $P/H^{3/2}$ d) P/H^{3}

14) In Francis turbine runner, the number of blades is generally of the order of _____.
a) 1-2 b) 4-6
c) 6-8 d) 12-16

Seat No.	

Set | S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov – 2023
CIVIL ENGINEERING
Water Power Engineering (BTN01715)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Use of only non programmable calculator is allowed.
4) Draw neat labeled diagrams whenever necessary.
5) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) What are the type sources?

b) Discuss the Strength, weaknesses and future prospects of water power India.

c) What is the classification of hydropower plants. Explain any one in brief.

d) Common load shared by two stations base load plant with 25 MW capacity and other being standby plant with 30 MW capacity. The yearly output for base load station is 125×10^6 KWh, and for standby station is 10.5×10^6 KWh. The peak load taken by standby station is 15 MW which works for 2500 hrs during the year. The base load station takes peak load as 22.5 MW. Calculate annual load factor, plant use factor, and capacity factor for both the stations.

e) Calculate the power factor for a utility to supply a maximum 1500 kW of real power, when the reactive power at that time is 1125 kVAR.

Q.3 Attempt any two of the following questions. **12**

a) A penstock pipe, 800 m long, takes off from a reservoir and feeds water to turbine, the level of which is 220 m below the reservoir water level. The first 300 m length of the penstock has a cross section area of 6 m^2 and the rest has an area of 4 m^2. The steady state discharge is 10m3/sec. If the turbine gates are closed completely in seconds at a uniform rate, what would be the water hammer pressure developed? (from Allieri chart= Z2=1.32).

b) What do you understand by run-of-river plants? What are the parts and arrangements of such plants? Draw a neat sketch of such plant.

c) What is water hammer in a pipe line? Derive the expression for the water hammer pressure in case of rigid pipe and elastic pipe.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) What are the important types of turbines? Enlist the factors on which choice of turbine depends.

b) What do you understand by 'pumped storage' plant? What are the advantages and disadvantages of this power plant?

c) What are the advantages of reaction turbine over the pelton wheel in respect of efficiency, size cost and maintenance?

d) Power house is equipped with 4 units of vertical shaft pelton turbines to be coupled with 70000 kVA, 3 phase. 50 hertz generators. The generation is provided with 10 pairs of poles. The gross design head is 505 m and transmission efficiency of head race tunnel and penstocks together is to be 94 percent.
The four units together will provide for a power of 256000 KW at a guaranteed efficiency of 91 percent. The nozzle efficiency is 0.98.
Find-:
1) the design discharge for the turbine
2) jet dia. and no. of jets
3) the nozzle tip diameter
4) the pitch circle dia. of the wheel
5) the specific speed and
6) number of buckets on the wheel

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Q.5 Attempt any two of the following questions. **12**

a) What are the important types of turbines? Enlist the factors on which choice of turbine depends.

b) Describe how ocean tides one generated? With tidal cycle in view describe how hydropower can be generated? Also state the limitations of tidal power generation.

c) At a hydroelectric power station Kaplan turbine is used which has following data,

Operating head = 22.5m
output power at this head = 126 MW,
discharge = 615 m3/sec
speed = 68.2 rpm,
Runner tip to tip diameter = 9.3 m
Hub diameter = 4.3m
Number of blades = 6
Calculate the speed ratio, flow ratio, and the overall efficiency.

SLR-GF-75

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each MCQ carry two marks.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Photochemical smog reduces _____ considerably.
a) Visibility b) Lapse rate
c) Odour d) Land pollution

2) _____ can remove ____.
a) Scrubers, Water soluble Gases
b) Gravity settler, Particulates
c) Adsorption tower, organic gases
d) All of above

3) Velocity of gas flow in gravity settler should be less than _____ m/s for excellent results.
a) 0.3 b) 0.5
c) 3.1 d) 10

4) If stack is having cross sectional area of 4 sq. m then number of traverse points shall be equal to _____.
a) 4 b) 12
c) 20 d) 30

5) Concentration of SPM in ambient air can be determined by using _____.
a) Stack monitoring kit
b) Auto exhaust analyzer
c) High volume sampler or respirable dust sampler
d) All of above

6) _____ are categorized under dry collectors.
a) Venturi scrubber b) Spray tower
c) Cyclonic scrubber d) Cyclone separator

7) Thickness of atmosphere is approximately _____ km.
a) 35 b) 11
c) 39 d) 500

8) Bags in bag house filter Are _____ mm in diameter.
a) 120-400 b) 10-20
c) 12-40 d) 1000-15000

9) Fugitive emissions consist of _____
a) Street dust
b) Dust from construction activities
c) Dust from farm cultivation
d) All of the above

10) According to EPA of USA, the following is not one of the six major pollutants?
a) Ozone b) Carbon monoxide
c) Nitrogen oxides d) Carbon di-oxide

11) Concentration of pollutants in stack emissions can be measured by _____.
a) High volume sampler b) Stack monitoring kit
c) Thermometer d) Hygrometer

12) As per NAAQS (old), standard for PM_{10} for eco-sensitive area considering annual average is _____ micrograms/m^3.
a) 60 b) 100
c) 8 d) 80

13) Noise pollution is created if sound is in excess to _____.
a) 70-75 dB b) 50-60 dB
c) 80-99 dB d) 40-65 dB

14) Day time noise standard prescribed for residential areas in India is _____.
a) 75 dB b) 65 dB
c) 50 dB d) 55 dB

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 7 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 6, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** What are different zones of atmosphere? Explain with the help of neat graph. **06**

b) Define air pollution based on composition of clean air. **03**

Q.3 **a)** Determine the effective stack height given by the following data: **06**
i) Physical stack height = 203 m
ii) Inside diameter of stack = 1.07 m
iii) Air temperature = 13 °C
iv) Barometric pressure = 1000 mbar
v) Stack gas velocity = 9.14 m/sec
vi) Stack gas temperature = 149°C
vii) Wind speed = 5m/sec.

b) For the following meteorological parameters give measuring unit and instrument used for measurement: **04**
i) Temperature
ii) Relative humidity
iii) Atmospheric pressure
iv) Wind Speed

Q.4 **a)** Give Gaussian dispersion model equation used for prediction of concentration of air pollutants. **04**

b) A factory uses 1.5 million litres of fuel oil/month. The exhaust gases from factory contain the following quantities of pollutants/million litres/year. **05**
i) Particulate matter = 5 tonnes / year
ii) Sulphur dioxide = 21 tonnes *I* year

Q.5 **a)** What is standard cyclone? Explain with the help of neat sketch. **04**

b) A conventional cyclone with diameter 1 m handles 3m3/sec of air carrying particles of density 2000 kg/m3. Number of effective turns = 6. Determine cut size diameter (dpc) if $\mu = 1.81 \times 10 - 5$ kg/m.sec. (Note - treat it as a standard cyclone) **05**

Section – II

Q.6 **a)** Explain with neat sketch working of spray tower. Also give advantages and disadvantages. **04**

b) It was decided to construct a fabric filter, using bags of 0.45 m diameter and 7.5 m long, for removing industrial stack gas containing particulates. The expected rate of airflow into the filter is 10 m3/s. If the filtering velocity is 2.0 m/min, compute the minimum number of bags (rounded to nearest higher integer) required for continuous cleaning operation. **05**

Q.7 **a)** An ESP with overall spacing of 0.23 cm and mean gas velocity 1.5 m/s has collector plate area of 6000 m^2 gives efficiency of 97% in treating 200 m3/s of gas. To achieve 98% and 99% efficiency. What should be plate are required? **05**

b) What is standard cyclone? Explain with the help of neat sketch. **05**

Q.8 **a)** Discuss in brief the sources of noise. **04**

b) Explain decibel scale with sample sound level and frequency of sound waves. **05**

Q.9 **Write short notes on any three following:** **09**

a) National ambient quality standards for noise

b) Effects of noise on health

c) Instrumentation Requirements in noise

Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each MCQ carry two marks.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Bags in bag house filter Are _____ mm in diameter.
a) 120-400 b) 10-20
c) 12-40 d) 1000-15000

2) Fugitive emissions consist of _____
a) Street dust
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d) All of the above

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a) Ozone b) Carbon monoxide
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10) Velocity of gas flow in gravity settler should be less than _____ m/s for excellent results.
a) 0.3 b) 0.5
c) 3.1 d) 10

11) If stack is having cross sectional area of 4 sq. m then number of traverse points shall be equal to _____.
a) 4 b) 12
c) 20 d) 30

12) Concentration of SPM in ambient air can be determined by using _____.
a) Stack monitoring kit
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13) _____ are categorized under dry collectors.
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c) Cyclonic scrubber d) Cyclone separator

14) Thickness of atmosphere is approximately _____ km.
a) 35 b) 11
c) 39 d) 500

Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 7 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 6, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** What are different zones of atmosphere? Explain with the help of neat graph. **06**

b) Define air pollution based on composition of clean air. **03**

Q.3 **a)** Determine the effective stack height given by the following data: **06**
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Section – II

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Q.9 **Write short notes on any three following:** **09**

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b) Effects of noise on health

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each MCQ carry two marks.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Concentration of pollutants in stack emissions can be measured by _____.
a) High volume sampler b) Stack monitoring kit
c) Thermometer d) Hygrometer

2) As per NAAQS (old), standard for PM_{10} for eco-sensitive area considering annual average is _____ micrograms/m^3.
a) 60 b) 100
c) 8 d) 80

3) Noise pollution is created if sound is in excess to _____.
a) 70-75 dB b) 50-60 dB
c) 80-99 dB d) 40-65 dB

4) Day time noise standard prescribed for residential areas in India is _____.
a) 75 dB b) 65 dB
c) 50 dB d) 55 dB

5) Photochemical smog reduces _____ considerably.
a) Visibility b) Lapse rate
c) Odour d) Land pollution

6) ____ can remove ____.
a) Scrubers, Water soluble Gases
b) Gravity settler, Particulates
c) Adsorption tower, organic gases
d) All of above

7) Velocity of gas flow in gravity settler should be less than _____ m/s for excellent results.
a) 0.3 b) 0.5
c) 3.1 d) 10

8) If stack is having cross sectional area of 4 sq. m then number of traverse points shall be equal to _____.
a) 4 b) 12
c) 20 d) 30

9) Concentration of SPM in ambient air can be determined by using _____.
a) Stack monitoring kit
b) Auto exhaust analyzer
c) High volume sampler or respirable dust sampler
d) All of above

10) _____ are categorized under dry collectors.
a) Venturi scrubber b) Spray tower
c) Cyclonic scrubber d) Cyclone separator

11) Thickness of atmosphere is approximately _____ km.
a) 35 b) 11
c) 39 d) 500

12) Bags in bag house filter Are _____ mm in diameter.
a) 120-400 b) 10-20
c) 12-40 d) 1000-15000

13) Fugitive emissions consist of _____
a) Street dust
b) Dust from construction activities
c) Dust from farm cultivation
d) All of the above

14) According to EPA of USA, the following is not one of the six major pollutants?
a) Ozone b) Carbon monoxide
c) Nitrogen oxides d) Carbon di-oxide

SLR-GF-75

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 7 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 6, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** What are different zones of atmosphere? Explain with the help of neat graph. **06**

b) Define air pollution based on composition of clean air. **03**

Q.3 **a)** Determine the effective stack height given by the following data: **06**
i) Physical stack height = 203 m
ii) Inside diameter of stack = 1.07 m
iii) Air temperature = 13 °C
iv) Barometric pressure = 1000 mbar
v) Stack gas velocity = 9.14 m/sec
vi) Stack gas temperature = 149°C
vii) Wind speed = 5m/sec.

b) For the following meteorological parameters give measuring unit and instrument used for measurement: **04**
i) Temperature
ii) Relative humidity
iii) Atmospheric pressure
iv) Wind Speed

Q.4 **a)** Give Gaussian dispersion model equation used for prediction of concentration of air pollutants. **04**

b) A factory uses 1.5 million litres of fuel oil/month. The exhaust gases from factory contain the following quantities of pollutants/million litres/year. **05**
i) Particulate matter = 5 tonnes / year
ii) Sulphur dioxide = 21 tonnes *I* year

Q.5 **a)** What is standard cyclone? Explain with the help of neat sketch. **04**

b) A conventional cyclone with diameter 1 m handles 3m3/sec of air carrying particles of density 2000 kg/m3. Number of effective turns = 6. Determine cut size diameter (dpc) if $\mu = 1.81 \times 10 - 5$ kg/m.sec. (Note - treat it as a standard cyclone) **05**

Section – II

Q.6 **a)** Explain with neat sketch working of spray tower. Also give advantages and disadvantages. **04**

b) It was decided to construct a fabric filter, using bags of 0.45 m diameter and 7.5 m long, for removing industrial stack gas containing particulates. The expected rate of airflow into the filter is 10 m3/s. If the filtering velocity is 2.0 m/min, compute the minimum number of bags (rounded to nearest higher integer) required for continuous cleaning operation. **05**

Q.7 **a)** An ESP with overall spacing of 0.23 cm and mean gas velocity 1.5 m/s has collector plate area of 6000 m^2 gives efficiency of 97% in treating 200 m3/s of gas. To achieve 98% and 99% efficiency. What should be plate are required? **05**

b) What is standard cyclone? Explain with the help of neat sketch. **05**

Q.8 **a)** Discuss in brief the sources of noise. **04**

b) Explain decibel scale with sample sound level and frequency of sound waves. **05**

Q.9 **Write short notes on any three following:** **09**

a) National ambient quality standards for noise

b) Effects of noise on health

c) Instrumentation Requirements in noise

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each MCQ carry two marks.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) _____ are categorized under dry collectors.
a) Venturi scrubber b) Spray tower
c) Cyclonic scrubber d) Cyclone separator

2) Thickness of atmosphere is approximately _____ km.
a) 35 b) 11
c) 39 d) 500

3) Bags in bag house filter Are _____ mm in diameter.
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c) 12-40 d) 1000-15000

4) Fugitive emissions consist of _____
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b) Dust from construction activities
c) Dust from farm cultivation
d) All of the above

5) According to EPA of USA, the following is not one of the six major pollutants?
a) Ozone b) Carbon monoxide
c) Nitrogen oxides d) Carbon di-oxide

6) Concentration of pollutants in stack emissions can be measured by _____.
a) High volume sampler b) Stack monitoring kit
c) Thermometer d) Hygrometer

7) As per NAAQS (old), standard for PM_{10} for eco-sensitive area considering annual average is _____ micrograms/m^3.
a) 60 b) 100
c) 8 d) 80

8) Noise pollution is created if sound is in excess to _____.
a) 70-75 dB b) 50-60 dB
c) 80-99 dB d) 40-65 dB

9) Day time noise standard prescribed for residential areas in India is _____.
a) 75 dB b) 65 dB
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a) Scrubers, Water soluble Gases
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12) Velocity of gas flow in gravity settler should be less than _____ m/s for excellent results.
a) 0.3 b) 0.5
c) 3.1 d) 10

13) If stack is having cross sectional area of 4 sq. m then number of traverse points shall be equal to _____.
a) 4 b) 12
c) 20 d) 30

14) Concentration of SPM in ambient air can be determined by using _____.
a) Stack monitoring kit
b) Auto exhaust analyzer
c) High volume sampler or respirable dust sampler
d) All of above

SLR-GF-75

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Air and Noise Pollution and Control (BTN01716)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 7 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 6, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** What are different zones of atmosphere? Explain with the help of neat graph. **06**

b) Define air pollution based on composition of clean air. **03**

Q.3 **a)** Determine the effective stack height given by the following data: **06**
i) Physical stack height = 203 m
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iii) Air temperature = 13 °C
iv) Barometric pressure = 1000 mbar
v) Stack gas velocity = 9.14 m/sec
vi) Stack gas temperature = 149°C
vii) Wind speed = 5m/sec.

b) For the following meteorological parameters give measuring unit and instrument used for measurement: **04**
i) Temperature
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iii) Atmospheric pressure
iv) Wind Speed

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b) A factory uses 1.5 million litres of fuel oil/month. The exhaust gases from factory contain the following quantities of pollutants/million litres/year. **05**
i) Particulate matter = 5 tonnes / year
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b) A conventional cyclone with diameter 1 m handles 3m3/sec of air carrying particles of density 2000 kg/m3. Number of effective turns = 6. Determine cut size diameter (dpc) if $\mu = 1.81 \times 10 - 5$ kg/m.sec. (Note - treat it as a standard cyclone) **05**

Section – II

Q.6 **a)** Explain with neat sketch working of spray tower. Also give advantages and disadvantages. **04**

b) It was decided to construct a fabric filter, using bags of 0.45 m diameter and 7.5 m long, for removing industrial stack gas containing particulates. The expected rate of airflow into the filter is 10 m3/s. If the filtering velocity is 2.0 m/min, compute the minimum number of bags (rounded to nearest higher integer) required for continuous cleaning operation. **05**

Q.7 **a)** An ESP with overall spacing of 0.23 cm and mean gas velocity 1.5 m/s has collector plate area of 6000 m^2 gives efficiency of 97% in treating 200 m3/s of gas. To achieve 98% and 99% efficiency. What should be plate are required? **05**

b) What is standard cyclone? Explain with the help of neat sketch. **05**

Q.8 **a)** Discuss in brief the sources of noise. **04**

b) Explain decibel scale with sample sound level and frequency of sound waves. **05**

Q.9 **Write short notes on any three following:** **09**

a) National ambient quality standards for noise

b) Effects of noise on health

c) Instrumentation Requirements in noise

SLR-GF-76

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New/Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Economics, Estimation& Costing (197042701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) A Rs. 1000 investment that results in interest of Rs. 50 has a _____% return on investment.
a) 0.05 b) 5
c) 20 d) 50

2) _____ is a cost control method which involves multiplying the percentage of work completed on a project by the budget at the time of the project completion.
a) Planning the budget properly b) Using change control systems
c) Having time management d) Tracking earned value

3) _____ is a depreciation method wherein funds will accumulate for replacement purposes.
a) Straight-line depreciation
b) Double Declining Balance Depreciation
c) Quantity survey method
d) Sinking fund method

4) Which of the following equation is used to calculate the future value of the cash flow?
a) $NPV (1 - i)^n$ b) $NPV + (1 - i)^n$
c) $NPV (1 + i)^n$ d) $NPV / (1 + i)^n$

5) The internal rate of return is the discount rate for which the NPV is _____.
a) less than 1 b) +ve
c) -ve d) zero

6) While submitting a tender, the contractor is required to deposit some amount with the department as a guarantee of the tender known as _____.
a) Earnest money b) Bank guarantee
c) Security deposit d) Caution money

7) To make out an estimate for a work the following data are necessary - Drawing, Specification and _____.
a) materials b) rates
c) labours d) transportation

8) Workout the years purchase of the property if the rate of interest is 6% per annum _____.

a) 6 b) 16.67
c) 0.1667 d) 0.06

9) The value at the end of utility of property but without dismantling is known as _____.

a) Scrap Value b) Salvage value
c) Market value d) Book value

10) Definition of "Employee" under the Minimum Wages Act, 1948 includes _____.

a) Skilled labour - Clerical labour
b) Skilled and unskilled both labour - Manual labour
c) Skilled and unskilled both labour - Manual and clerical both labour
d) Unskilled labour - Manual labour

11) If the wall thickness is one and half brick thick, the brickwork is measured in _____.

a) Running m b) Sq.m
c) Cu.m d) None of the above

12) The minimum number of layers for compaction of 0.60 m deep plinth filling, shall be_____.

a) 1 b) 2
c) 3 d) 5

13) The lease is _____.

a) Transferable, heritable, revocable
b) Transferable, revocable, non-heritable
c) Transferable, heritable, non-revocable
d) Heritable, revocable, non- transferable

14) Years purchase in perpetuity for highest rate of interest 2.5% will be _____.

a) 2.5 b) 100
c) 40 d) 25

SLR-GF-76

Seat No.	

Set P

Fourth. Y. (B. Tech)(Sem - I)(New/Old)(CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Economics, Estimation & Costing (197042701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 and Q. 9 are compulsory.
2) Solve any two from remaining question from each section.
3) Figures to right indicate full marks.

Section – I

Q.2 Prepare the measurement sheet and Abstract Sheet to calculate following items from the attached Drawing. **12**
- Brickwork in superstructure

Q.3 **a)** A machine costs Rs. 3,00,000 with a salvage value of Rs. 50,000 at the end of its life of 10 years. If money is worth 6% annually, use Sinking Fund Method and determine the depreciation at the 6th year. **04**

b) Explain five methods of cost control. **04**

Q.4 Write the detailed specifications for **08**
a) Construction of Water Bound Macadam Methods
b) Earthwork for excavation

Q.5 Carry out Rate analysis for the following items. **08**
a) 230 mm thick Brickwork in superstructure in cement mortar 1:6
b) 20mm thick External plastering in (1:4) cement plaster mortar.

Section – II

Q.6 **a)** Explain four types of Contracts. **04**

b) Explain two envelope system. **04**

Q.7 **a)** Explain four methods of valuation of properties. **04**

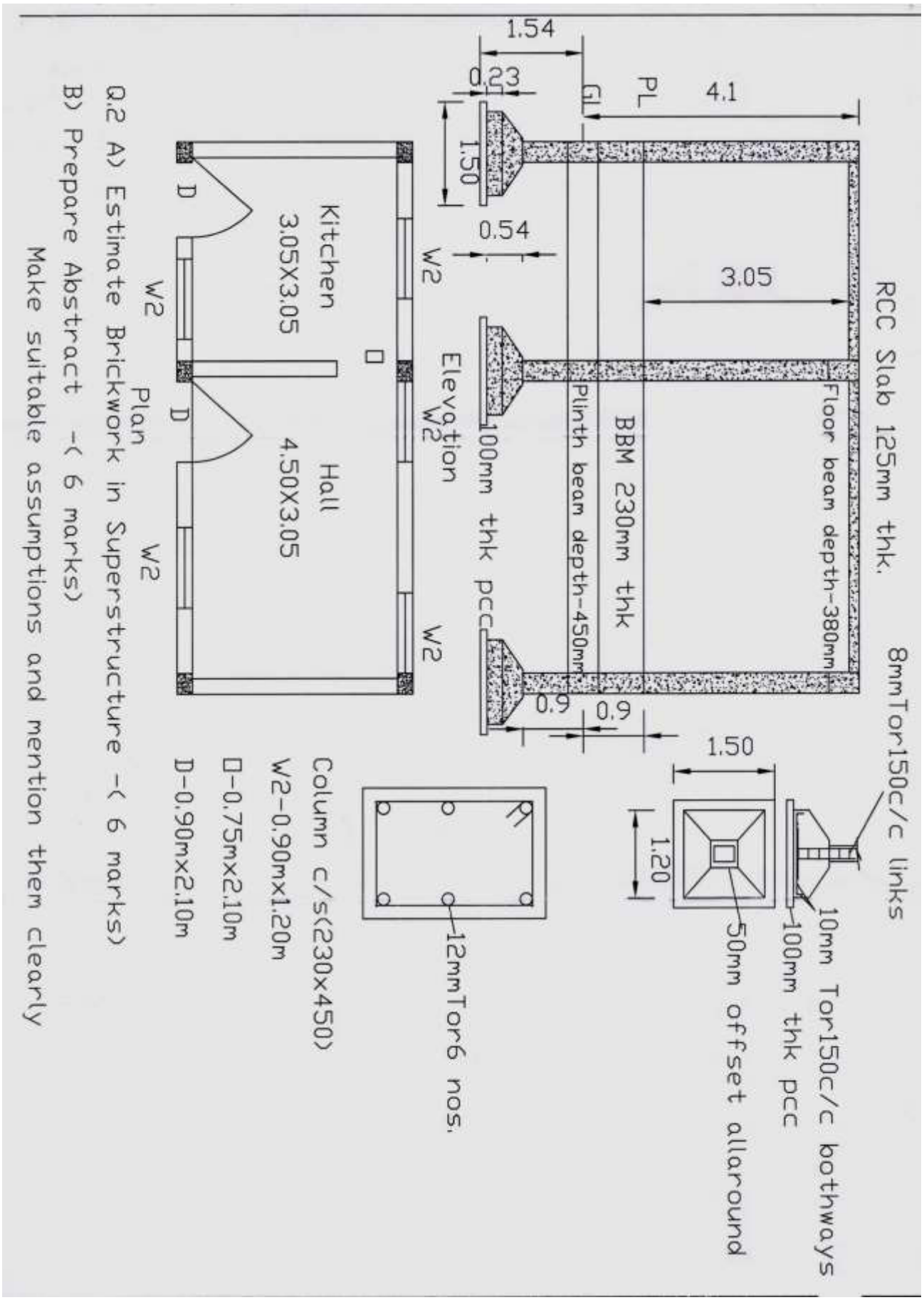
b) Differentiate between salvage value and scrap value. **04**

Q.8 **a)** Find the value of a four storied residential apartment with three flats per floor. Each flat is let out on a gross rent of Rs. 120000/year. The municipal tax is Rs. 8000/flat/year other outgoings are Lift maintenance, Salary of watchmen and sweepers, electricity charges all-inclusive Rs. 24000/flat/year. Calculate the value of one flat capitalizing the net annual rent at 8% in perpetuity with Years Purchase. **04**

b) Differentiate between free hold and lease hold property. **04**

Q.9 **a)** Work out fair market value of flat with carpet area 100 Sq.m. Rate of sale of similar newly constructed flat in vicinity is Rs. 1000 per Sq.m. Assume depreciation of 10%. Assume Rate of construction as Rs. 550 per Sq.m., and Rs. 450 per Sq.m. for land. **04**

b) Explain various factors affecting valuation of property. **08**



Q.2 A) Estimate Brickwork in Superstructure -(6 marks)

B) Prepare Abstract -(6 marks)

Make suitable assumptions and mention them clearly

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem - I) (New/Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Economics, Estimation& Costing (197042701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Workout the years purchase of the property if the rate of interest is 6% per annum _____.
a) 6 b) 16.67
c) 0.1667 d) 0.06

2) The value at the end of utility of property but without dismantling is known as _____.
a) Scrap Value b) Salvage value
c) Market value d) Book value

3) Definition of "Employee" under the Minimum Wages Act, 1948 includes _____.
a) Skilled labour - Clerical labour
b) Skilled and unskilled both labour - Manual labour
c) Skilled and unskilled both labour - Manual and clerical both labour
d) Unskilled labour - Manual labour

4) If the wall thickness is one and half brick thick, the brickwork is measured in _____.
a) Running m b) Sq.m
c) Cu.m d) None of the above

5) The minimum number of layers for compaction of 0.60 m deep plinth filling, shall be_____.
a) 1 b) 2
c) 3 d) 5

6) The lease is _____.
a) Transferable, heritable, revocable
b) Transferable, revocable, non-heritable
c) Transferable, heritable, non-revocable
d) Heritable, revocable, non- transferable

7) Years purchase in perpetuity for highest rate of interest 2.5% will be _____.
a) 2.5 b) 100
c) 40 d) 25

8) A Rs. 1000 investment that results in interest of Rs. 50 has a _____% return on investment.

a) 0.05 b) 5
c) 20 d) 50

9) _____ is a cost control method which involves multiplying the percentage of work completed on a project by the budget at the time of the project completion.

a) Planning the budget properly b) Using change control systems
c) Having time management d) Tracking earned value

10) _____ is a depreciation method wherein funds will accumulate for replacement purposes.

a) Straight-line depreciation
b) Double Declining Balance Depreciation
c) Quantity survey method
d) Sinking fund method

11) Which of the following equation is used to calculate the future value of the cash flow?

a) $NPV\ (1 - i)^n$ b) $NPV + (1 - i)^n$
c) $NPV\ (1 + i)^n$ d) $NPV / (1 + i)^n$

12) The internal rate of return is the discount rate for which the NPV is _____.

a) less than 1 b) +ve
c) -ve d) zero

13) While submitting a tender, the contractor is required to deposit some amount with the department as a guarantee of the tender known as _____.

a) Earnest money b) Bank guarantee
c) Security deposit d) Caution money

14) To make out an estimate for a work the following data are necessary - Drawing, Specification and _____.

a) materials b) rates
c) labours d) transportation

Seat No.	

Set | Q

Fourth. Y. (B. Tech)(Sem - I)(New/Old)(CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Economics, Estimation & Costing (197042701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 and Q. 9 are compulsory.
2) Solve any two from remaining question from each section.
3) Figures to right indicate full marks.

Section – I

Q.2 Prepare the measurement sheet and Abstract Sheet to calculate following items from the attached Drawing. **12**
- Brickwork in superstructure

Q.3 **a)** A machine costs Rs. 3,00,000 with a salvage value of Rs. 50,000 at the end of its life of 10 years. If money is worth 6% annually, use Sinking Fund Method and determine the depreciation at the 6th year. **04**
b) Explain five methods of cost control. **04**

Q.4 Write the detailed specifications for **08**
a) Construction of Water Bound Macadam Methods
b) Earthwork for excavation

Q.5 Carry out Rate analysis for the following items. **08**
a) 230 mm thick Brickwork in superstructure in cement mortar 1:6
b) 20mm thick External plastering in (1:4) cement plaster mortar.

Section – II

Q.6 **a)** Explain four types of Contracts. **04**
b) Explain two envelope system. **04**

Q.7 **a)** Explain four methods of valuation of properties. **04**
b) Differentiate between salvage value and scrap value. **04**

Q.8 **a)** Find the value of a four storied residential apartment with three flats per floor. Each flat is let out on a gross rent of Rs. 120000/year. The municipal tax is Rs. 8000/flat/year other outgoings are Lift maintenance, Salary of watchmen and sweepers, electricity charges all-inclusive Rs. 24000/flat/year. Calculate the value of one flat capitalizing the net annual rent at 8% in perpetuity with Years Purchase. **04**
b) Differentiate between free hold and lease hold property. **04**

Q.9 **a)** Work out fair market value of flat with carpet area 100 Sq.m. Rate of sale of similar newly constructed flat in vicinity is Rs. 1000 per Sq.m. Assume depreciation of 10%. Assume Rate of construction as Rs. 550 per Sq.m., and Rs. 450 per Sq.m. for land. **04**
b) Explain various factors affecting valuation of property. **08**

Q.2 A) Estimate Brickwork in Superstructure -(6 marks)

B) Prepare Abstract -(6 marks)

Make suitable assumptions and mention them clearly

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem - I) (New/Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Economics, Estimation& Costing (197042701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) If the wall thickness is one and half brick thick, the brickwork is measured in _____.
a) Running m b) Sq.m
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2) The minimum number of layers for compaction of 0.60 m deep plinth filling, shall be_____.
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c) 3 d) 5

3) The lease is _____.
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b) Transferable, revocable, non-heritable
c) Transferable, heritable, non-revocable
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4) Years purchase in perpetuity for highest rate of interest 2.5% will be _____.
a) 2.5 b) 100
c) 40 d) 25

5) A Rs. 1000 investment that results in interest of Rs. 50 has a _____% return on investment.
a) 0.05 b) 5
c) 20 d) 50

6) _____ is a cost control method which involves multiplying the percentage of work completed on a project by the budget at the time of the project completion.
a) Planning the budget properly b) Using change control systems
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7) _____ is a depreciation method wherein funds will accumulate for replacement purposes.
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8) Which of the following equation is used to calculate the future value of the cash flow?
a) $NPV (1 - i)^n$ b) $NPV + (1 - i)^n$
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9) The internal rate of return is the discount rate for which the NPV is _____.
a) less than 1 b) +ve
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10) While submitting a tender, the contractor is required to deposit some amount with the department as a guarantee of the tender known as _____.
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a) materials b) rates
c) labours d) transportation

12) Workout the years purchase of the property if the rate of interest is 6% per annum _____.
a) 6 b) 16.67
c) 0.1667 d) 0.06

13) The value at the end of utility of property but without dismantling is known as _____.
a) Scrap Value b) Salvage value
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14) Definition of “Employee” under the Minimum Wages Act, 1948 includes _____.
a) Skilled labour - Clerical labour
b) Skilled and unskilled both labour - Manual labour
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Seat No.	

Set **R**

Fourth. Y. (B. Tech)(Sem - I)(New/Old)(CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Economics, Estimation & Costing (197042701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 and Q. 9 are compulsory.
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Section – I

Q.2 Prepare the measurement sheet and Abstract Sheet to calculate following items from the attached Drawing. **12**
- Brickwork in superstructure

Q.3 **a)** A machine costs Rs. 3,00,000 with a salvage value of Rs. 50,000 at the end of its life of 10 years. If money is worth 6% annually, use Sinking Fund Method and determine the depreciation at the 6th year. **04**
b) Explain five methods of cost control. **04**

Q.4 Write the detailed specifications for **08**
a) Construction of Water Bound Macadam Methods
b) Earthwork for excavation

Q.5 Carry out Rate analysis for the following items. **08**
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Section – II

Q.6 **a)** Explain four types of Contracts. **04**
b) Explain two envelope system. **04**

Q.7 **a)** Explain four methods of valuation of properties. **04**
b) Differentiate between salvage value and scrap value. **04**

Q.8 **a)** Find the value of a four storied residential apartment with three flats per floor. Each flat is let out on a gross rent of Rs. 120000/year. The municipal tax is Rs. 8000/flat/year other outgoings are Lift maintenance, Salary of watchmen and sweepers, electricity charges all-inclusive Rs. 24000/flat/year. Calculate the value of one flat capitalizing the net annual rent at 8% in perpetuity with Years Purchase. **04**
b) Differentiate between free hold and lease hold property. **04**

Q.9 **a)** Work out fair market value of flat with carpet area 100 Sq.m. Rate of sale of similar newly constructed flat in vicinity is Rs. 1000 per Sq.m. Assume depreciation of 10%. Assume Rate of construction as Rs. 550 per Sq.m., and Rs. 450 per Sq.m. for land. **04**
b) Explain various factors affecting valuation of property. **08**

Q.2 A) Estimate Brickwork in Superstructure -(6 marks)

B) Prepare Abstract -(6 marks)

Make suitable assumptions and mention them clearly

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New/Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Economics, Estimation& Costing (197042701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) While submitting a tender, the contractor is required to deposit some amount with the department as a guarantee of the tender known as _____.
a) Earnest money b) Bank guarantee
c) Security deposit d) Caution money

2) To make out an estimate for a work the following data are necessary - Drawing, Specification and _____.
a) materials b) rates
c) labours d) transportation

3) Workout the years purchase of the property if the rate of interest is 6% per annum _____.
a) 6 b) 16.67
c) 0.1667 d) 0.06

4) The value at the end of utility of property but without dismantling is known as _____.
a) Scrap Value b) Salvage value
c) Market value d) Book value

5) Definition of "Employee" under the Minimum Wages Act, 1948 includes _____.
a) Skilled labour - Clerical labour
b) Skilled and unskilled both labour - Manual labour
c) Skilled and unskilled both labour - Manual and clerical both labour
d) Unskilled labour - Manual labour

6) If the wall thickness is one and half brick thick, the brickwork is measured in _____.
a) Running m b) Sq.m
c) Cu.m d) None of the above

7) The minimum number of layers for compaction of 0.60 m deep plinth filling, shall be_____.
a) 1 b) 2
c) 3 d) 5

8) The lease is _____.
a) Transferable, heritable, revocable
b) Transferable, revocable, non-heritable
c) Transferable, heritable, non-revocable
d) Heritable, revocable, non- transferable

9) Years purchase in perpetuity for highest rate of interest 2.5% will be _____.
a) 2.5 b) 100
c) 40 d) 25

10) A Rs. 1000 investment that results in interest of Rs. 50 has a _____% return on investment.
a) 0.05 b) 5
c) 20 d) 50

11) _____ is a cost control method which involves multiplying the percentage of work completed on a project by the budget at the time of the project completion.
a) Planning the budget properly b) Using change control systems
c) Having time management d) Tracking earned value

12) _____ is a depreciation method wherein funds will accumulate for replacement purposes.
a) Straight-line depreciation
b) Double Declining Balance Depreciation
c) Quantity survey method
d) Sinking fund method

13) Which of the following equation is used to calculate the future value of the cash flow?
a) $NPV (1 - i)^n$ b) $NPV + (1 - i)^n$
c) $NPV (1 + i)^n$ d) $NPV / (1 + i)^n$

14) The internal rate of return is the discount rate for which the NPV is _____.
a) less than 1 b) +ve
c) -ve d) zero

Seat No.	

Set | S

Fourth. Y. (B. Tech)(Sem - I)(New/Old)(CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Economics, Estimation & Costing (197042701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. 2 and Q. 9 are compulsory.
2) Solve any two from remaining question from each section.
3) Figures to right indicate full marks.

Section – I

Q.2 Prepare the measurement sheet and Abstract Sheet to calculate following items from the attached Drawing. **12**
- Brickwork in superstructure

Q.3 **a)** A machine costs Rs. 3,00,000 with a salvage value of Rs. 50,000 at the end of its life of 10 years. If money is worth 6% annually, use Sinking Fund Method and determine the depreciation at the 6th year. **04**
b) Explain five methods of cost control. **04**

Q.4 Write the detailed specifications for **08**
a) Construction of Water Bound Macadam Methods
b) Earthwork for excavation

Q.5 Carry out Rate analysis for the following items. **08**
a) 230 mm thick Brickwork in superstructure in cement mortar 1:6
b) 20mm thick External plastering in (1:4) cement plaster mortar.

Section – II

Q.6 **a)** Explain four types of Contracts. **04**
b) Explain two envelope system. **04**

Q.7 **a)** Explain four methods of valuation of properties. **04**
b) Differentiate between salvage value and scrap value. **04**

Q.8 **a)** Find the value of a four storied residential apartment with three flats per floor. Each flat is let out on a gross rent of Rs. 120000/year. The municipal tax is Rs. 8000/flat/year other outgoings are Lift maintenance, Salary of watchmen and sweepers, electricity charges all-inclusive Rs. 24000/flat/year. Calculate the value of one flat capitalizing the net annual rent at 8% in perpetuity with Years Purchase. **04**
b) Differentiate between free hold and lease hold property. **04**

Q.9 **a)** Work out fair market value of flat with carpet area 100 Sq.m. Rate of sale of similar newly constructed flat in vicinity is Rs. 1000 per Sq.m. Assume depreciation of 10%. Assume Rate of construction as Rs. 550 per Sq.m., and Rs. 450 per Sq.m. for land. **04**
b) Explain various factors affecting valuation of property. **08**

Q.2 A) Estimate Brickwork in Superstructure -(6 marks)

B) Prepare Abstract -(6 marks)

Make suitable assumptions and mention them clearly

SLR-GF-77

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
CIVIL ENGINEERING
Construction Engineering, Management & Construction Practices (197042702)

Day & Date: Friday, 19-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The time span between the start and completion of a project represents _____.
a) Project Span b) Project Duration
c) Project Lifecycle d) none of the above

2) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.
a) Mobile b) Derrick
c) Gantry d) Hydraulic

3) If for an activity optimistic time is 7 days, pessimistic time is 13 days and most likely time is 10 days, its standard deviation will be _____.
a) 10 b) 3.28
c) 10.77 d) 1

4) The area under the Beta distribution curve is divided into two equal parts by _____.
a) Most likely time b) Optimistic time
c) Pessimistic time d) Expected time

5) If D is the duration, ES and EF are the earliest start and finish, LS and LF are latest start and latest finish time, then the following relation holds good _____.
a) EF = ES + D b) D = EF – ES
c) LF = LS + D d) All of the above

6) Choose the best option that fits the following statement.
The _____ of time management tools depends on the _____ of the project.
a) Identity, Quality b) Utility, Complexity
c) Functionality, Creativity d) Equity, Quantity

7) A milestone chart _____.
a) shows the interdependencies of various jobs
b) depicts the delay of jobs, if any
c) points outgoing ahead of schedule of jobs, if any
d) none of these

8) Which of the following software is not used for Project Management?
a) Primavera b) Power Point
c) MS-Project d) MS-Excel

9) Project Management techniques involves _____.
a) Bar-Chart b) CPM
c) PERT d) All of these

10) PERT is used for _____.
a) Normal Projects b) Research projects
c) All Projects d) None of these

11) Resource levelling and smoothening are _____.
a) Same concept b) Different Concept
c) Both 'a' and 'b' d) None of these

12) Updating is nothing but taking _____.
a) Review of project b) Reducing the project duration
c) Allocating Resources d) None of these

13) Time estimates in PERT are _____.
a) Optimistic Time b) Pessimistic Time
c) Most Likely Time d) All of these

14) Which of the following software is mostly used for Project Management?
a) Primavera b) MS-Word
c) Power point d) MS-Excel

SLR-GF-77

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
CIVIL ENGINEERING
Construction Engineering, Management & Construction Practices (197042702)

Day & Date: Friday, 19-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 is compulsory. Attempt any two questions from Q. No. 3 to 5
2) Q. No.6 is compulsory. Attempt any two questions from Q. No. 7 to 9
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** The following table shows the list of activities and their durations. Calculate the project duration and critical path of the network. **08**

Activity	Duration	Depends on
A	2	-
B	4	A
C	3	A
D	6	B,C
E	7	B
F	3	D,E

b) Explain the concept of 'Work-Breakdown-Structure' (WBS) with suitable example. **04**

Q.3 **Explain** **08**
a) Explain the concept and process of crashing in detail.
b) Explain the concept of 'Resource Levelling' and 'Resource Smoothening' with any construction site example.

Q.4 **Explain** **08**
a) What are the various reports generated by MS-Project software?
b) What are the views available in MS-Project software?

Q.5 **Explain** **08**
a) What are the main differences between 'CPM and 'PERT'?
b) Explain three time estimates in PERT Technology.

Section – II

Q.6 Write short notes on. **12**

a) Hoes
b) Compactors
c) Hot mix plant

Q.7 Explain in detail. **08**

a) Safety measures on construction sites.
b) Safety against accidents.

Q.8 Explain in detail. **08**

a) Write a short note on Prefabricated construction.
b) Write a short note on Mivan formwork.

Q.9 Explain in detail. **08**

a) Explain the uses of floating equipment's.
b) Explain the types and uses of diaphragm walls.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
CIVIL ENGINEERING
Construction Engineering, Management & Construction Practices (197042702)

Day & Date: Friday, 19-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which of the following software is not used for Project Management?
a) Primavera b) Power Point
c) MS-Project d) MS-Excel

2) Project Management techniques involves _____.
a) Bar-Chart b) CPM
c) PERT d) All of these

3) PERT is used for _____.
a) Normal Projects b) Research projects
c) All Projects d) None of these

4) Resource levelling and smoothening are _____.
a) Same concept b) Different Concept
c) Both 'a' and 'b' d) None of these

5) Updating is nothing but taking _____.
a) Review of project b) Reducing the project duration
c) Allocating Resources d) None of these

6) Time estimates in PERT are _____.
a) Optimistic Time b) Pessimistic Time
c) Most Likely Time d) All of these

7) Which of the following software is mostly used for Project Management?
a) Primavera b) MS-Word
c) Power point d) MS-Excel

8) The time span between the start and completion of a project represents _____.
a) Project Span b) Project Duration
c) Project Lifecycle d) none of the above

9) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.
a) Mobile b) Derrick
c) Gantry d) Hydraulic

10) If for an activity optimistic time is 7 days, pessimistic time is 13 days and most likely time is 10 days, its standard deviation will be _____.

a) 10 b) 3.28
c) 10.77 d) 1

11) The area under the Beta distribution curve is divided into two equal parts by _____.

a) Most likely time b) Optimistic time
c) Pessimistic time d) Expected time

12) If D is the duration, ES and EF are the earliest start and finish, LS and LF are latest start and latest finish time, then the following relation holds good _____.

a) EF = ES + D b) D = EF – ES
c) LF = LS + D d) All of the above

13) Choose the best option that fits the following statement.
The _____ of time management tools depends on the _____ of the project.

a) Identity, Quality b) Utility, Complexity
c) Functionality, Creativity d) Equity, Quantity

14) A milestone chart _____.

a) shows the interdependencies of various jobs
b) depicts the delay of jobs, if any
c) points outgoing ahead of schedule of jobs, if any
d) none of these

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
CIVIL ENGINEERING
Construction Engineering, Management & Construction Practices (197042702)

Day & Date: Friday, 19-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 is compulsory. Attempt any two questions from Q. No. 3 to 5
2) Q. No.6 is compulsory. Attempt any two questions from Q. No. 7 to 9
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** The following table shows the list of activities and their durations. Calculate the project duration and critical path of the network. **08**

Activity	Duration	Depends on
A	2	-
B	4	A
C	3	A
D	6	B,C
E	7	B
F	3	D,E

b) Explain the concept of 'Work-Breakdown-Structure' (WBS) with suitable example. **04**

Q.3 **Explain** **08**
a) Explain the concept and process of crashing in detail.
b) Explain the concept of 'Resource Levelling' and 'Resource Smoothening' with any construction site example.

Q.4 **Explain** **08**
a) What are the various reports generated by MS-Project software?
b) What are the views available in MS-Project software?

Q.5 **Explain** **08**
a) What are the main differences between 'CPM and 'PERT'?
b) Explain three time estimates in PERT Technology.

Section – II

Q.6 Write short notes on. **12**

a) Hoes
b) Compactors
c) Hot mix plant

Q.7 Explain in detail. **08**

a) Safety measures on construction sites.
b) Safety against accidents.

Q.8 Explain in detail. **08**

a) Write a short note on Prefabricated construction.
b) Write a short note on Mivan formwork.

Q.9 Explain in detail. **08**

a) Explain the uses of floating equipment's.
b) Explain the types and uses of diaphragm walls.

SLR-GF-77

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
CIVIL ENGINEERING
Construction Engineering, Management & Construction Practices (197042702)

Day & Date: Friday, 19-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Resource levelling and smoothening are _____.
a) Same concept b) Different Concept
c) Both 'a' and 'b' d) None of these

2) Updating is nothing but taking _____.
a) Review of project b) Reducing the project duration
c) Allocating Resources d) None of these

3) Time estimates in PERT are _____.
a) Optimistic Time b) Pessimistic Time
c) Most Likely Time d) All of these

4) Which of the following software is mostly used for Project Management?
a) Primavera b) MS-Word
c) Power point d) MS-Excel

5) The time span between the start and completion of a project represents _____.
a) Project Span b) Project Duration
c) Project Lifecycle d) none of the above

6) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.
a) Mobile b) Derrick
c) Gantry d) Hydraulic

7) If for an activity optimistic time is 7 days, pessimistic time is 13 days and most likely time is 10 days, its standard deviation will be _____.
a) 10 b) 3.28
c) 10.77 d) 1

8) The area under the Beta distribution curve is divided into two equal parts by _____.
a) Most likely time b) Optimistic time
c) Pessimistic time d) Expected time

9) If D is the duration, ES and EF are the earliest start and finish, LS and LF are latest start and latest finish time, then the following relation holds good _____.

a) EF = ES + D
b) D = EF – ES
c) LF = LS + D
d) All of the above

10) Choose the best option that fits the following statement.
The _____ of time management tools depends on the _____ of the project.

a) Identity, Quality
b) Utility, Complexity
c) Functionality, Creativity
d) Equity, Quantity

11) A milestone chart _____.

a) shows the interdependencies of various jobs
b) depicts the delay of jobs, if any
c) points outgoing ahead of schedule of jobs, if any
d) none of these

12) Which of the following software is not used for Project Management?

a) Primavera
b) Power Point
c) MS-Project
d) MS-Excel

13) Project Management techniques involves _____.

a) Bar-Chart
b) CPM
c) PERT
d) All of these

14) PERT is used for _____.

a) Normal Projects
b) Research projects
c) All Projects
d) None of these

SLR-GF-77

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
CIVIL ENGINEERING
Construction Engineering, Management & Construction Practices (197042702)

Day & Date: Friday, 19-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 is compulsory. Attempt any two questions from Q. No. 3 to 5
2) Q. No.6 is compulsory. Attempt any two questions from Q. No. 7 to 9
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** The following table shows the list of activities and their durations. Calculate the project duration and critical path of the network. **08**

Activity	Duration	Depends on
A	2	-
B	4	A
C	3	A
D	6	B,C
E	7	B
F	3	D,E

b) Explain the concept of 'Work-Breakdown-Structure' (WBS) with suitable example. **04**

Q.3 **Explain** **08**
a) Explain the concept and process of crashing in detail.
b) Explain the concept of 'Resource Levelling' and 'Resource Smoothening' with any construction site example.

Q.4 **Explain** **08**
a) What are the various reports generated by MS-Project software?
b) What are the views available in MS-Project software?

Q.5 **Explain** **08**
a) What are the main differences between 'CPM and 'PERT'?
b) Explain three time estimates in PERT Technology.

Section – II

Q.6 Write short notes on. **12**

a) Hoes
b) Compactors
c) Hot mix plant

Q.7 Explain in detail. **08**

a) Safety measures on construction sites.
b) Safety against accidents.

Q.8 Explain in detail. **08**

a) Write a short note on Prefabricated construction.
b) Write a short note on Mivan formwork.

Q.9 Explain in detail. **08**

a) Explain the uses of floating equipment's.
b) Explain the types and uses of diaphragm walls.

SLR-GF-77

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
CIVIL ENGINEERING
Construction Engineering, Management & Construction Practices (197042702)

Day & Date: Friday, 19-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Choose the best option that fits the following statement.
The _____ of time management tools depends on the _____ of the project.
a) Identity, Quality b) Utility, Complexity
c) Functionality, Creativity d) Equity, Quantity

2) A milestone chart _____.
a) shows the interdependencies of various jobs
b) depicts the delay of jobs, if any
c) points outgoing ahead of schedule of jobs, if any
d) none of these

3) Which of the following software is not used for Project Management?
a) Primavera b) Power Point
c) MS-Project d) MS-Excel

4) Project Management techniques involves _____.
a) Bar-Chart b) CPM
c) PERT d) All of these

5) PERT is used for _____.
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6) Resource levelling and smoothening are _____.
a) Same concept b) Different Concept
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7) Updating is nothing but taking _____.
a) Review of project b) Reducing the project duration
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8) Time estimates in PERT are _____.
a) Optimistic Time b) Pessimistic Time
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9) Which of the following software is mostly used for Project Management?
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10) The time span between the start and completion of a project represents _____.
a) Project Span b) Project Duration
c) Project Lifecycle d) none of the above

11) _____ cranes are used for handling loads over a large rectangular area in factories, power stations, shipyards and workshops.
a) Mobile b) Derrick
c) Gantry d) Hydraulic

12) If for an activity optimistic time is 7 days, pessimistic time is 13 days and most likely time is 10 days, its standard deviation will be _____.
a) 10 b) 3.28
c) 10.77 d) 1

13) The area under the Beta distribution curve is divided into two equal parts by _____.
a) Most likely time b) Optimistic time
c) Pessimistic time d) Expected time

14) If D is the duration, ES and EF are the earliest start and finish, LS and LF are latest start and latest finish time, then the following relation holds good _____.
a) EF = ES + D b) D = EF – ES
c) LF = LS + D d) All of the above

SLR-GF-77

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
CIVIL ENGINEERING
Construction Engineering, Management & Construction Practices (197042702)

Day & Date: Friday, 19-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 is compulsory. Attempt any two questions from Q. No. 3 to 5
2) Q. No.6 is compulsory. Attempt any two questions from Q. No. 7 to 9
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** The following table shows the list of activities and their durations. Calculate the project duration and critical path of the network. **08**

Activity	Duration	Depends on
A	2	-
B	4	A
C	3	A
D	6	B,C
E	7	B
F	3	D,E

b) Explain the concept of 'Work-Breakdown-Structure' (WBS) with suitable example. **04**

Q.3 **Explain** **08**
a) Explain the concept and process of crashing in detail.
b) Explain the concept of 'Resource Levelling' and 'Resource Smoothening' with any construction site example.

Q.4 **Explain** **08**
a) What are the various reports generated by MS-Project software?
b) What are the views available in MS-Project software?

Q.5 **Explain** **08**
a) What are the main differences between 'CPM and 'PERT'?
b) Explain three time estimates in PERT Technology.

Section – II

Q.6 Write short notes on. **12**

a) Hoes
b) Compactors
c) Hot mix plant

Q.7 Explain in detail. **08**

a) Safety measures on construction sites.
b) Safety against accidents.

Q.8 Explain in detail. **08**

a) Write a short note on Prefabricated construction.
b) Write a short note on Mivan formwork.

Q.9 Explain in detail. **08**

a) Explain the uses of floating equipment's.
b) Explain the types and uses of diaphragm walls.

SLR-GF-78

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures-II (197042703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) While solving MCQ IS 456-2000, IS 3370 IV, IS 1343 are not allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) For the design of base slab in R.C.C water tank, minimum steel (for HYSD bars) required is _____ of gross cross sectional area. 01
a) 0.20% b) 0.24%
c) 0.25 % d) 0.12%

2) The horizontal portion of a step in stair case, is known as _____. 01
a) Rise b) Tread
c) Winder d) Flight

3) Total pressure on the vertical face of a retaining wall of height 'h' acts parallel to free surface and from the base at a distance of _____. 01
a) h/4 b) h/3
c) h/2 d) 2h/3

4) In design of isolated footing, the minimum percentage of steel (HYSD) provided should be _____. 01
a) 0.12% of overall cross sectional area
b) 0.8% of overall cross sectional area
c) (85/fy)% of overall cross sectional area
d) 1% of overall cross sectional area

5) For footing the minimum cover for the reinforcement shall be _____. 01
a) 30 mm b) 50 mm
c) 25 mm d) 40 mm

6) A prestressed concrete member is preferred because _____. 01
a) Its dimensions are not decided from the diagonal tensile stress
b) Large size of long beams carrying large shear force need not adopted
c) Removal of cracks in the member due to shrinkage
d) All of above

7) If the maximum dip of a parabolic tendon carrying tension 'p' is 'h' and the effective length of the pre-stressed beam is l, the upward uniform pressure will be _____. 01

a) $8hp/l$ b) $8hp/l^2$

c) $8hl/p$ d) $8hl/p^2$

8) 'P' is the pre-stressed force applied to the tendon of a rectangular pre-stressed beam whose area of cross section is 'A' and sectional modulus is 'Z'. The maximum stress in the beam, subjected to a maximum bending moment, is _____. 01

a) f = (P/A) + (Z/M) b) f = (A/P) + (M/Z)

c) f = (P/A) + (M/Z) d) f= (P/A) + (M/6Z)

9) After pre-stressing process is completed, a loss of stress is due to _____. 01

a) Shrinkage of concrete b) Elastic shortening of concrete

c) Creep of concrete d) All the above

10) The maximum upward deflection of prestressed concrete member is limited to _____. 01

a) Span/150 b) Span/250

c) Span/300 d) Span/320

11) The circular water tank having a capacity of 500000 litres and water depth is 4m including free board of 200 mm. calculate the diameter of tank. 02

a) 12.5 m b) 15.9 m

c) 12.61m d) 16.2 m

12) A concrete beam of rectangular cross section 200 mm x 400 mm is prestressed with a force of 400 kN at an eccentricity of 100 mm. The maximum compressive stress in the concrete is _____. 02

a) 12.5 MPa b) 7.5 MPa

c) 5 MPa d) 2.5 MPa

Seat No.	

Set | P

Fourth. Y. (B.Tech.) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures-II (197042703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Draw neat sketch's where required and assume suitable data if required
5) IS 456, IS 1343, IS 3370 Part IV and non-programmable calculator are allowed.

Section-I

Q.2 Design the dog-legged type staircase for a building in which vertical distance between the floors is 3.6 m. Assume 150 mm riser and 250 mm tread, width of stair is 1.2 m. Take live load as 3 kN/m^2. Use M_{25} concrete and Fe_{415} steel. The stair is supported by beams of width 230 mm at the end of outer edges of landing slabs. **08**

Q.3 Design the stem slab of a cantilever retaining wall, if the height of wall above the ground level is 3.5 m. Take SBC of soil as 200 kN/m^2, angle of internal friction is 30° and unit weight of soil 18 kN/m^2. Coefficient of friction between soil and concrete is 0.5. Use M_{25} concrete and Fe_{500} steel. **10**

Q.4 Design an isolated footing for a R.C. column carrying an axial load of 1050 kN, and having a size of 500 mm X 500 mm. The safe bearing capacity of is 250 kN/m^2. Use M_{25} concrete and Fe_{415} steel. **10**

Q.5 Design a circular water tank having capacity 4 lakh liters, rests on firm ground is free at top and bottom is fixed. The depth of water is 3.3m. Assume the free board of 0.3m. Use M30 grade of concrete and Fe_{415} steel. Solve by IS code method. **10**

Section-II

Q.6 A prestressed concrete beam 400 mm x 600 mm in section has a span of 6 m and is subjected to a uniformly distributed load of 16 kN/m including the self weight of the beam. The prestressing tendons are located at an eccentricity of 130 mm at mid span and zero at support. Determine the extreme stresses in concrete at the mid span section, if the prestressing force is 1000 kN. Use stress concept method and load balancing concept. **08**

Q.7 A prestressed concrete beam, 300mm x 400 mm in section and is provided with 40 wires of 3 mm diameter distributed uniformly over the section. Initially the wires are tensioned in the prestressing beds with a total pull of 600 kN. Determine the final stress in concrete and the percentage loss of stress in the wires. Take $E_s = 2.08 \times 10^5$ N/mm^2, $E_c = 3.2 \times 10^4$ N/mm^2, Ultimate creep strain = 32×10^{-6} mm/mm per N/mm^2 of stress, Shrinkage of concrete = 200×10^{-6}, Relaxation loss of stress in steel = 4.5% of initial stress. **10**

Q.8 A PSC beam 250 mm wide and 600 mm deep is subjected to an effective prestressing force of 1400 kN along the longitudinal centroidal axis. Take size of anchor plate as 200mm wide and 300 mm deep. Design the end block by Guyon's method. **10**

Q.9 A rectangular PSC beam has a span of 16m, supports a distributed load of 18 kN/m excluding self weight. Determine the suitable dimension of the beam section and calculate the area and position of tendons. Given the permissible stress in concrete 14 N/mm^2 and steel 1025 N/mm^2. **10**

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Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures-II (197042703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) While solving MCQ IS 456-2000, IS 3370 IV, IS 1343 are not allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) A prestressed concrete member is preferred because _____. 01
a) Its dimensions are not decided from the diagonal tensile stress
b) Large size of long beams carrying large shear force need not adopted
c) Removal of cracks in the member due to shrinkage
d) All of above

2) If the maximum dip of a parabolic tendon carrying tension 'p' is 'h' and the effective length of the pre-stressed beam is l, the upward uniform pressure will be _____. 01
a) $8hp/l$ b) $8hp/l^2$
c) $8hl/p$ d) $8hl/p^2$

3) 'P' is the pre-stressed force applied to the tendon of a rectangular pre-stressed beam whose area of cross section is 'A' and sectional modulus is 'Z'. The maximum stress in the beam, subjected to a maximum bending moment, is _____. 01
a) f = (P/A) + (Z/M) b) f = (A/P) + (M/Z)
c) f = (P/A) + (M/Z) d) f= (P/A) + (M/6Z)

4) After pre-stressing process is completed, a loss of stress is due to _____. 01
a) Shrinkage of concrete b) Elastic shortening of concrete
c) Creep of concrete d) All the above

5) The maximum upward deflection of prestressed concrete member is limited to _____. 01
a) Span/150 b) Span/250
c) Span/300 d) Span/320

6) For the design of base slab in R.C.C water tank, minimum steel (for HYSD bars) required is _____ of gross cross sectional area. 01
a) 0.20% b) 0.24%
c) 0.25 % d) 0.12%

7) The horizontal portion of a step in stair case, is known as _____. 01

a) Rise b) Tread
c) Winder d) Flight

8) Total pressure on the vertical face of a retaining wall of height 'h' acts parallel to free surface and from the base at a distance of _____. 01

a) h/4 b) h/3
c) h/2 d) 2h/3

9) In design of isolated footing, the minimum percentage of steel (HYSD) provided should be _____. 01

a) 0.12% of overall cross sectional area
b) 0.8% of overall cross sectional area
c) (85/fy)% of overall cross sectional area
d) 1% of overall cross sectional area

10) For footing the minimum cover for the reinforcement shall be _____. 01

a) 30 mm b) 50 mm
c) 25 mm d) 40 mm

11) The circular water tank having a capacity of 500000 litres and water depth is 4m including free board of 200 mm. calculate the diameter of tank. 02

a) 12.5 m b) 15.9 m
c) 12.61m d) 16.2 m

12) A concrete beam of rectangular cross section 200 mm x 400 mm is prestressed with a force of 400 kN at an eccentricity of 100 mm. The maximum compressive stress in the concrete is _____. 02

a) 12.5 MPa b) 7.5 MPa
c) 5 MPa d) 2.5 MPa

SLR-GF-78

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures-II (197042703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Draw neat sketch's where required and assume suitable data if required
5) IS 456, IS 1343, IS 3370 Part IV and non-programmable calculator are allowed.

Section-I

Q.2 Design the dog-legged type staircase for a building in which vertical distance between the floors is 3.6 m. Assume 150 mm riser and 250 mm tread, width of stair is 1.2 m. Take live load as 3 kN/m^2. Use M_{25} concrete and Fe_{415} steel. The stair is supported by beams of width 230 mm at the end of outer edges of landing slabs. **08**

Q.3 Design the stem slab of a cantilever retaining wall, if the height of wall above the ground level is 3.5 m. Take SBC of soil as 200 kN/m^2, angle of internal friction is 30° and unit weight of soil 18 kN/m^2. Coefficient of friction between soil and concrete is 0.5. Use M_{25} concrete and Fe_{500} steel. **10**

Q.4 Design an isolated footing for a R.C. column carrying an axial load of 1050 kN, and having a size of 500 mm X 500 mm. The safe bearing capacity of is 250 kN/m^2. Use M_{25} concrete and Fe_{415} steel. **10**

Q.5 Design a circular water tank having capacity 4 lakh liters, rests on firm ground is free at top and bottom is fixed. The depth of water is 3.3m. Assume the free board of 0.3m. Use M30 grade of concrete and Fe_{415} steel. Solve by IS code method. **10**

Section-II

Q.6 A prestressed concrete beam 400 mm x 600 mm in section has a span of 6 m and is subjected to a uniformly distributed load of 16 kN/m including the self weight of the beam. The prestressing tendons are located at an eccentricity of 130 mm at mid span and zero at support. Determine the extreme stresses in concrete at the mid span section, if the prestressing force is 1000 kN. Use stress concept method and load balancing concept. **08**

Q.7 A prestressed concrete beam, 300mm x 400 mm in section and is provided with 40 wires of 3 mm diameter distributed uniformly over the section. Initially the wires are tensioned in the prestressing beds with a total pull of 600 kN. Determine the final stress in concrete and the percentage loss of stress in the wires. Take $E_s = 2.08 \times 10^5$ N/mm^2, $E_c = 3.2 \times 10^4$ N/mm^2, Ultimate creep strain = 32×10^{-6} mm/mm per N/mm^2 of stress, Shrinkage of concrete = 200×10^{-6}, Relaxation loss of stress in steel = 4.5% of initial stress. **10**

Q.8 A PSC beam 250 mm wide and 600 mm deep is subjected to an effective prestressing force of 1400 kN along the longitudinal centroidal axis. Take size of anchor plate as 200mm wide and 300 mm deep. Design the end block by Guyon's method. **10**

Q.9 A rectangular PSC beam has a span of 16m, supports a distributed load of 18 kN/m excluding self weight. Determine the suitable dimension of the beam section and calculate the area and position of tendons. Given the permissible stress in concrete 14 N/mm^2 and steel 1025 N/mm^2. **10**

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures-II (197042703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) While solving MCQ IS 456-2000, IS 3370 IV, IS 1343 are not allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) After pre-stressing process is completed, a loss of stress is due to _____. 01
a) Shrinkage of concrete b) Elastic shortening of concrete
c) Creep of concrete d) All the above

2) The maximum upward deflection of prestressed concrete member is limited to _____. 01
a) Span/150 b) Span/250
c) Span/300 d) Span/320

3) For the design of base slab in R.C.C water tank, minimum steel (for HYSD bars) required is _____ of gross cross sectional area. 01
a) 0.20% b) 0.24%
c) 0.25 % d) 0.12%

4) The horizontal portion of a step in stair case, is known as _____. 01
a) Rise b) Tread
c) Winder d) Flight

5) Total pressure on the vertical face of a retaining wall of height 'h' acts parallel to free surface and from the base at a distance of _____. 01
a) h/4 b) h/3
c) h/2 d) 2h/3

6) In design of isolated footing, the minimum percentage of steel (HYSD) provided should be _____. 01
a) 0.12% of overall cross sectional area
b) 0.8% of overall cross sectional area
c) (85/fy)% of overall cross sectional area
d) 1% of overall cross sectional area

7) For footing the minimum cover for the reinforcement shall be _____. 01
a) 30 mm b) 50 mm
c) 25 mm d) 40 mm

8) A prestressed concrete member is preferred because _____. 01

a) Its dimensions are not decided from the diagonal tensile stress
b) Large size of long beams carrying large shear force need not adopted
c) Removal of cracks in the member due to shrinkage
d) All of above

9) If the maximum dip of a parabolic tendon carrying tension 'p' is 'h' and the effective length of the pre-stressed beam is l, the upward uniform pressure will be _____. 01

a) $8hp/l$ b) $8hp/l^2$
c) $8hl/p$ d) $8hl/p^2$

10) 'P' is the pre-stressed force applied to the tendon of a rectangular pre-stressed beam whose area of cross section is 'A' and sectional modulus is 'Z'. The maximum stress in the beam, subjected to a maximum bending moment, is _____. 01

a) f = (P/A) + (Z/M) b) f = (A/P) + (M/Z)
c) f = (P/A) + (M/Z) d) f= (P/A) + (M/6Z)

11) The circular water tank having a capacity of 500000 litres and water depth is 4m including free board of 200 mm. calculate the diameter of tank. 02

a) 12.5 m b) 15.9 m
c) 12.61m d) 16.2 m

12) A concrete beam of rectangular cross section 200 mm x 400 mm is prestressed with a force of 400 kN at an eccentricity of 100 mm. The maximum compressive stress in the concrete is _____. 02

a) 12.5 MPa b) 7.5 MPa
c) 5 MPa d) 2.5 MPa

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures-II (197042703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Draw neat sketch's where required and assume suitable data if required
5) IS 456, IS 1343, IS 3370 Part IV and non-programmable calculator are allowed.

Section-I

Q.2 Design the dog-legged type staircase for a building in which vertical distance between the floors is 3.6 m. Assume 150 mm riser and 250 mm tread, width of stair is 1.2 m. Take live load as 3 kN/m^2. Use M_{25} concrete and Fe_{415} steel. The stair is supported by beams of width 230 mm at the end of outer edges of landing slabs. **08**

Q.3 Design the stem slab of a cantilever retaining wall, if the height of wall above the ground level is 3.5 m. Take SBC of soil as 200 kN/m^2, angle of internal friction is 30° and unit weight of soil 18 kN/m^2. Coefficient of friction between soil and concrete is 0.5. Use M_{25} concrete and Fe_{500} steel. **10**

Q.4 Design an isolated footing for a R.C. column carrying an axial load of 1050 kN, and having a size of 500 mm X 500 mm. The safe bearing capacity of is 250 kN/m^2. Use M_{25} concrete and Fe_{415} steel. **10**

Q.5 Design a circular water tank having capacity 4 lakh liters, rests on firm ground is free at top and bottom is fixed. The depth of water is 3.3m. Assume the free board of 0.3m. Use M30 grade of concrete and Fe_{415} steel. Solve by IS code method. **10**

Section-II

Q.6 A prestressed concrete beam 400 mm x 600 mm in section has a span of 6 m and is subjected to a uniformly distributed load of 16 kN/m including the self weight of the beam. The prestressing tendons are located at an eccentricity of 130 mm at mid span and zero at support. Determine the extreme stresses in concrete at the mid span section, if the prestressing force is 1000 kN. Use stress concept method and load balancing concept. **08**

Q.7 A prestressed concrete beam, 300mm x 400 mm in section and is provided with 40 wires of 3 mm diameter distributed uniformly over the section. Initially the wires are tensioned in the prestressing beds with a total pull of 600 kN. Determine the final stress in concrete and the percentage loss of stress in the wires. Take $E_s = 2.08 \times 10^5$ N/mm^2, $E_c = 3.2 \times 10^4$ N/mm^2, Ultimate creep strain = 32×10^{-6} mm/mm per N/mm^2 of stress, Shrinkage of concrete = 200×10^{-6}, Relaxation loss of stress in steel = 4.5% of initial stress. **10**

Q.8 A PSC beam 250 mm wide and 600 mm deep is subjected to an effective prestressing force of 1400 kN along the longitudinal centroidal axis. Take size of anchor plate as 200mm wide and 300 mm deep. Design the end block by Guyon's method. **10**

Q.9 A rectangular PSC beam has a span of 16m, supports a distributed load of 18 kN/m excluding self weight. Determine the suitable dimension of the beam section and calculate the area and position of tendons. Given the permissible stress in concrete 14 N/mm^2 and steel 1025 N/mm^2. **10**

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures-II (197042703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) While solving MCQ IS 456-2000, IS 3370 IV, IS 1343 are not allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Total pressure on the vertical face of a retaining wall of height 'h' acts parallel to free surface and from the base at a distance of _____. 01
a) h/4 b) h/3
c) h/2 d) 2h/3

2) In design of isolated footing, the minimum percentage of steel (HYSD) provided should be _____. 01
a) 0.12% of overall cross sectional area
b) 0.8% of overall cross sectional area
c) (85/fy)% of overall cross sectional area
d) 1% of overall cross sectional area

3) For footing the minimum cover for the reinforcement shall be _____. 01
a) 30 mm b) 50 mm
c) 25 mm d) 40 mm

4) A prestressed concrete member is preferred because _____. 01
a) Its dimensions are not decided from the diagonal tensile stress
b) Large size of long beams carrying large shear force need not adopted
c) Removal of cracks in the member due to shrinkage
d) All of above

5) If the maximum dip of a parabolic tendon carrying tension 'p' is 'h' and the effective length of the pre-stressed beam is l, the upward uniform pressure will be _____. 01
a) $8hp/l$ b) $8hp/l^2$
c) $8hl/p$ d) $8hl/p^2$

6) 'P' is the pre-stressed force applied to the tendon of a rectangular pre-stressed beam whose area of cross section is 'A' and sectional modulus is 'Z'. The maximum stress in the beam, subjected to a maximum bending moment, is _____. 01
a) f = (P/A) + (Z/M) b) f = (A/P) + (M/Z)
c) f = (P/A) + (M/Z) d) f= (P/A) + (M/6Z)

7) After pre-stressing process is completed, a loss of stress is due to _____. 01

a) Shrinkage of concrete b) Elastic shortening of concrete
c) Creep of concrete d) All the above

8) The maximum upward deflection of prestressed concrete member is limited to _____. 01

a) Span/150 b) Span/250
c) Span/300 d) Span/320

9) For the design of base slab in R.C.C water tank, minimum steel (for HYSD bars) required is _____ of gross cross sectional area. 01

a) 0.20% b) 0.24%
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10) The horizontal portion of a step in stair case, is known as _____. 01

a) Rise b) Tread
c) Winder d) Flight

11) The circular water tank having a capacity of 500000 litres and water depth is 4m including free board of 200 mm. calculate the diameter of tank. 02

a) 12.5 m b) 15.9 m
c) 12.61m d) 16.2 m

12) A concrete beam of rectangular cross section 200 mm x 400 mm is prestressed with a force of 400 kN at an eccentricity of 100 mm. The maximum compressive stress in the concrete is _____. 02

a) 12.5 MPa b) 7.5 MPa
c) 5 MPa d) 2.5 MPa

SLR-GF-78

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Concrete Structures-II (197042703)

Day & Date: Saturday, 20-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Draw neat sketch's where required and assume suitable data if required
5) IS 456, IS 1343, IS 3370 Part IV and non-programmable calculator are allowed.

Section-I

Q.2 Design the dog-legged type staircase for a building in which vertical distance between the floors is 3.6 m. Assume 150 mm riser and 250 mm tread, width of stair is 1.2 m. Take live load as 3 kN/m^2. Use M_{25} concrete and Fe_{415} steel. The stair is supported by beams of width 230 mm at the end of outer edges of landing slabs. **08**

Q.3 Design the stem slab of a cantilever retaining wall, if the height of wall above the ground level is 3.5 m. Take SBC of soil as 200 kN/m^2, angle of internal friction is 30° and unit weight of soil 18 kN/m^2. Coefficient of friction between soil and concrete is 0.5. Use M_{25} concrete and Fe_{500} steel. **10**

Q.4 Design an isolated footing for a R.C. column carrying an axial load of 1050 kN, and having a size of 500 mm X 500 mm. The safe bearing capacity of is 250 kN/m^2. Use M_{25} concrete and Fe_{415} steel. **10**

Q.5 Design a circular water tank having capacity 4 lakh liters, rests on firm ground is free at top and bottom is fixed. The depth of water is 3.3m. Assume the free board of 0.3m. Use M30 grade of concrete and Fe_{415} steel. Solve by IS code method. **10**

Section-II

Q.6 A prestressed concrete beam 400 mm x 600 mm in section has a span of 6 m and is subjected to a uniformly distributed load of 16 kN/m including the self weight of the beam. The prestressing tendons are located at an eccentricity of 130 mm at mid span and zero at support. Determine the extreme stresses in concrete at the mid span section, if the prestressing force is 1000 kN. Use stress concept method and load balancing concept. **08**

Q.7 A prestressed concrete beam, 300mm x 400 mm in section and is provided with 40 wires of 3 mm diameter distributed uniformly over the section. Initially the wires are tensioned in the prestressing beds with a total pull of 600 kN. Determine the final stress in concrete and the percentage loss of stress in the wires. Take $E_s = 2.08 \times 10^5$ N/mm^2, $E_c = 3.2 \times 10^4$ N/mm^2, Ultimate creep strain = 32×10^{-6} mm/mm per N/mm^2 of stress, Shrinkage of concrete = 200×10^{-6}, Relaxation loss of stress in steel = 4.5% of initial stress. **10**

Q.8 A PSC beam 250 mm wide and 600 mm deep is subjected to an effective prestressing force of 1400 kN along the longitudinal centroidal axis. Take size of anchor plate as 200mm wide and 300 mm deep. Design the end block by Guyon's method. **10**

Q.9 A rectangular PSC beam has a span of 16m, supports a distributed load of 18 kN/m excluding self weight. Determine the suitable dimension of the beam section and calculate the area and position of tendons. Given the permissible stress in concrete 14 N/mm^2 and steel 1025 N/mm^2. **10**

SLR-GF-79

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023

CIVIL ENGINEERING

Earthquake Engineering (197042704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each MCQ carry two marks.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. (Two marks each) 14

1) The transmissibility is less than 1, when the frequency ratio is
a) < 0.5 b) 1.0
c) $> \sqrt{2}$ d) None of above

2) The transient motion _____
a) Lasts for the entire duration of excitation force
b) Lasts for a very short duration at the beginning
c) Lasts for a very short duration at the end
d) None of above

3) In columns, the laps for reinforcement are preferred at
a) The ends b) At the joint
c) At mid height d) Any place

4) A building structure suffers torsion under seismic action when
a) The centre of gravity does not coincide with the centre of rigidity
b) The centre of gravity does not coincide with the centre of stiffness
c) The centre of rigidity does not coincide with the centre of stiffness
d) The centre of gravity coincides with the centre of stiffness

5) _____ is the building structure which has least lateral force resistance.
a) Ordinary moment-resisting RCC frame
b) Special moment-resisting RCC frame
c) Shear wall structure
d) Masonry structure

6) The slenderness ratio of masonry is the ratio of
a) Length of wall to height of wall
b) Length of wall to thickness
c) Height of wall to area of cross-section
d) None of above

7) Special confining reinforcement is provided in the form of
a) Longitudinal reinforcement
b) Temperature reinforcement
c) Lateral reinforcement
d) Shrinkage reinforcement

SLR-GF-79

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Earthquake Engineering (197042704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 3 and Q. No. 6 are compulsory.
2) Attempt any two questions from remaining from each section.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of **only** IS 1893:2016 is allowed.

Section – I

Q.2 Elaborate in detail the internal structure of Earth **10**

Q.3 From first principle derive the governing differential equation for forced vibration of a Undamped SDOF system. Obtain the general solution of this differential equation. **09**

Q.4 Describe the force transmissibility? Derive an expression for force transmissibility to the foundation of a SDOF system subjected to harmonic force. **09**

Q.5 **a)** Explain the step by step procedure of construction of response spectrum. **05**
b) What is combined spectrum? What are its characteristics? **04**

Section – II

Q.6 It is proposed to construct a R.C.C. three storied residential building having plan dimensions as shown in fig. 1 in zone III with following data. Determine the lateral forces and base shear. The all column sizes are 300 x 550 mm & beams sizes are 300 x 450 mm. The slab thickness is 120mm & thk. Of walls is 230mm. The ht. Of floor is 3.0 m & Live load is 3.5 kN/m^2. IS 13920 provisions are incorporated in the structure. The strata is Medium. **10**

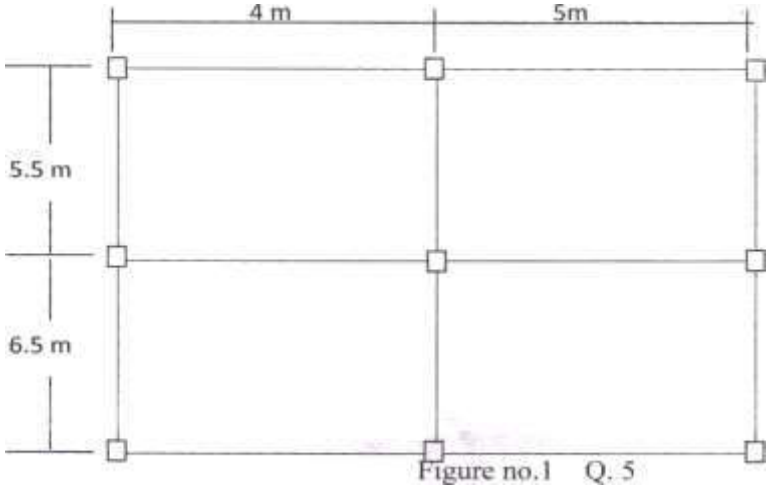

Figure no.1 Q. 5

Q.7 What do you understand by a response reduction factor? Why it is incorporated in the expression for evaluating seismic forces? **09**

Q.8 What is confining reinforcement? Explain in detail with neat sketches where and how the confining reinforcement is provided? **09**

Q.9 Explain the strengthening arrangements for masonry construction. **09**

SLR-GF-79

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023

CIVIL ENGINEERING

Earthquake Engineering (197042704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. (Two marks each) 14

1) A building structure suffers torsion under seismic action when
a) The centre of gravity does not coincide with the centre of rigidity
b) The centre of gravity does not coincide with the centre of stiffness
c) The centre of rigidity does not coincide with the centre of stiffness
d) The centre of gravity coincides with the centre of stiffness

2) _____ is the building structure which has least lateral force resistance.
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3) The slenderness ratio of masonry is the ratio of
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d) None of above

4) Special confining reinforcement is provided in the form of
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c) Lateral reinforcement
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5) The transmissibility is less than 1, when the frequency ratio is
a) < 0.5 b) 1.0
c) $> \sqrt{2}'$ d) None of above

6) The transient motion _____
a) Lasts for the entire duration of excitation force
b) Lasts for a very short duration at the beginning
c) Lasts for a very short duration at the end
d) None of above

7) In columns, the laps for reinforcement are preferred at

a) The ends
b) At the joint
c) At mid height
d) Any place

SLR-GF-79

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Earthquake Engineering (197042704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
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Q.2 Elaborate in detail the internal structure of Earth **10**

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Q.5 **a)** Explain the step by step procedure of construction of response spectrum. **05**
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Section – II

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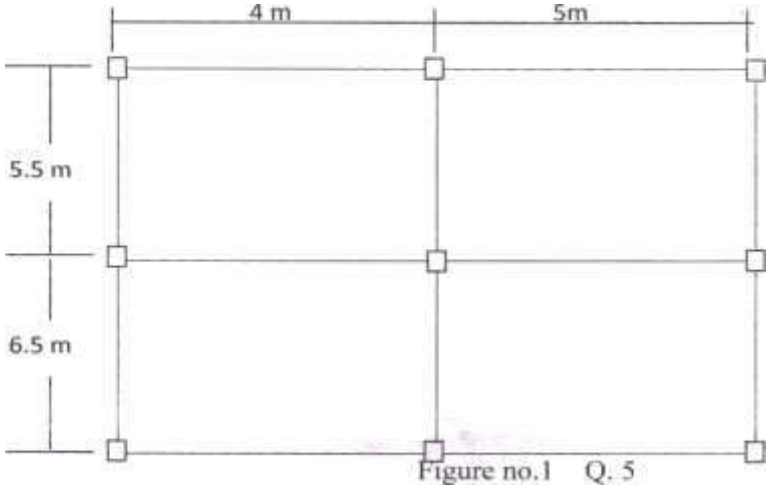

Figure no.1 Q. 5

Q.7 What do you understand by a response reduction factor? Why it is incorporated in the expression for evaluating seismic forces? **09**

Q.8 What is confining reinforcement? Explain in detail with neat sketches where and how the confining reinforcement is provided? **09**

Q.9 Explain the strengthening arrangements for masonry construction. **09**

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023

CIVIL ENGINEERING

Earthquake Engineering (197042704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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4) The transient motion _____
a) Lasts for the entire duration of excitation force
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7) _____ is the building structure which has least lateral force resistance.

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SLR-GF-79

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Earthquake Engineering (197042704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
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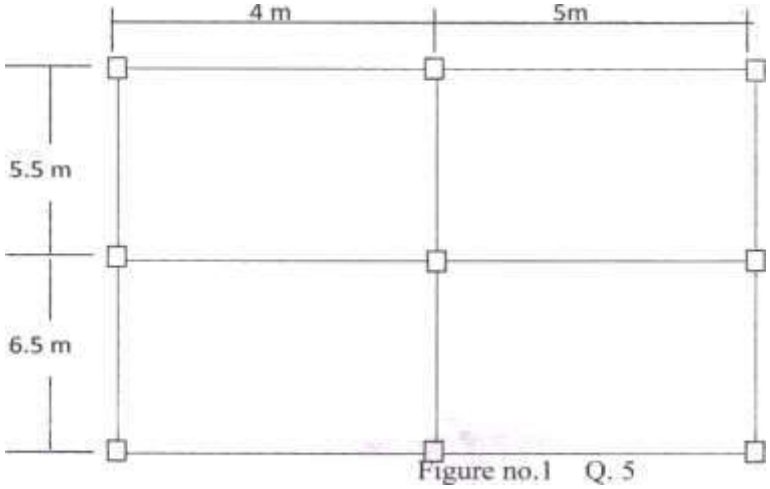

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Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023

CIVIL ENGINEERING

Earthquake Engineering (197042704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
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SLR-GF-79

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (Old) (CBCS) Examination: Oct/Nov-2023

CIVIL ENGINEERING

Earthquake Engineering (197042704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56

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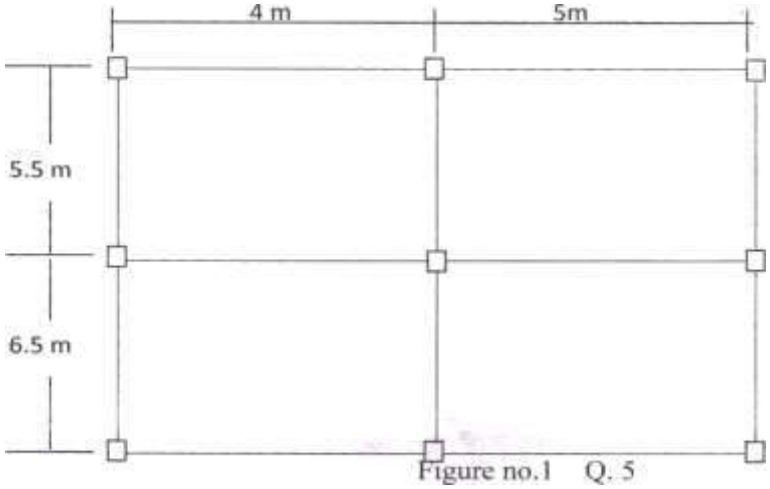

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SLR-GF-84

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Traffic Engineering and Management (197042712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume any missing data suitably and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The lost time due to starting delay on a traffic signal approach is noted to be 3 seconds, the actual green time is 25 seconds and the amber time is 3 seconds. How much is the effective green time?
a) 19 sec b) 25 sec
c) 27 sec d) 31 sec

2) Traffic hazard markers are used at_____.
a) Obstructions like guard rails and abutments
b) Horizontal curves
c) Hilly locations
d) Vertical gradients

3) Two broken yellow line marking at center of road indicates _____.
a) No passing allowed on both side
b) Passing allowed on one side
c) Passing allowed on both side
d) Passing allowed only for left side vehicle

4) Width of the vehicle affects the _____.
a) Capacity of the road and parking facility
b) Clearances to be provided under structures such as under bridges, etc.
c) Extra width of pavement and minimum turning radius
d) All the above

5) Enoscope technique is used to find out _____.
a) Spot Speed of the vehicle b) Delay of the vehicle
c) Traffic numbers d) Pedestrian counts

6) The area under the parking accumulation curve during a specified period is called _____.
a) Parking Load b) Parking Index
c) Parking Volume d) Parking Turn-over

7) The period of time required for one complete sequence of signal indications is called ____.

a) Phase b) Cycle
c) Amber d) Green

8) The time interval measured between the passage of successive vehicles from head-to-head is known as _____.

a) Headway distance b) Space headway
c) Time headway d) All of these

9) _____ signs are intended to guide the driver about intersecting routes, cities, facilities, towns and other important destinations.

a) Mandatory b) Informatory
c) Cautionary d) Warning

10) Match the Traffic parameters according to the respective definitions:

	Traffic Parameters		Definition
A	Density	1	The number of vehicles passing a specific reference point on a road section within a specified period of time
B	Flow	2	The number of vehicles occupying in a given length of roadway or a lane
C	Space Headway	3	The time between successive vehicles past a point
D	Time Headway	4	Distance between the front bumper of the leading vehicle and the front bumper of the following vehicle.

Select the correct answer from below codes:

	A	B	C	D
a)	1	2	3	4
b)	2	3	4	1
c)	2	1	4	3
d)	4	3	2	1

11) The 30^{th} hourly volume means _____.

a) Hourly volume that will be exceeded only 29 times in a year
b) Hourly volume that will be exceeded only 30 times in a year
c) Hourly volume that will be exceeded only 70 times in a year
d) All the above

12) If AADT is 4000vpd and the 30^{th} highest hourly volume for the year is 420 vph what is the K- factor for that facility?

a) 10.5% b) 12.5%
c) 15.5% d) 14.5%

13) The number of vehicles needs to be parked is 30, What is the total length of parking space required if 30°-angle parking is adopted?

a) 200m b) 150m
c) 300m d) 100m

14) Cumulative speed distribution curve is usually adopted for geometric design of highway. The percentile speed adopted for geometric design is _____.

a) 85^{th} percentile b) 90^{th} percentile
c) 98^{th} percentile d) 99.9^{th} percentile

SLR-GF-84

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Traffic Engineering and Management (197042712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume any missing data suitably and mention it clearly.

Section – I

Q.2 Answer the following questions (Any Two) **14**

a) What are the objects and scope of traffic engineering? Explain briefly.

b) Explain the term volume. Briefly explain the different methods of carrying out traffic volume studies.

c) Explain how the speed and delay studies are carried out. What are the various uses of speed and delay studies?

d) The parking survey data collected from a parking lot by license plate method is s shown in the Table-1 below. Find the average occupancy, average turnover, parking load, parking capacity and efficiency of the parking lot.

Table 1: License plate parking survey data

Bay	Time			
	0-15	15-30	30-45	45-60
1	1456	9813	-	5678
2	1945	1945	1945	1945
3	3473	5463	5463	5463
4	3741	3741	9758	4825
5	1884	1884	-	7594
6	-	7357	-	7893
7	-	4895	4895	4895
8	8932	8932	8932	-
9	7653	7653	8998	4821
10	7321	-	2789	2789
11	1213	1213	3212	4778
12	5678	6678	7778	8888

Q.3 Answer the following questions (Any Two) **14**

a) What are the various types of traffic accidents? Derive the equation for finding out initial speed of the vehicle for collision of moving vehicle with parked vehicle.

b) A vehicle of 2000 kg skids a distance of 36 m before colliding with a stationary vehicle of 1500 kg weight. After collision both vehicle skid a distance of 14 m. Assuming coefficient of friction 0.5, determine the initial speed of the vehicle.

c) Explain the level of service concept in deciding the design capacity of a road.

d) Discuss the various types of on-street parking, their advantages and disadvantages.

Section – II

Q.4 Answer the following questions (Any Two) **14**

a) List the different types of regulatory signs and explain any four important regulatory signs with neat sketch.

b) Write a short note on ITS applications in urban transport system.

c) Write a note on regulations concerning to the speed limit in urban and rural areas.

d) The A and B are two vehicles, vehicle 'A' travelling on the major street and B travelling on the side street. The view at the intersection is restricted due to the presence of an obstruction as shown in Figure-1 below. Assume V_a=60Kmph, a=15m, b=20m. Calculate the speed limit on Minor Street by.

i) National Safety Council (NSC) method.

ii) American Automobile Association method (AAA). Assume reaction time of the driver=1.15sec.

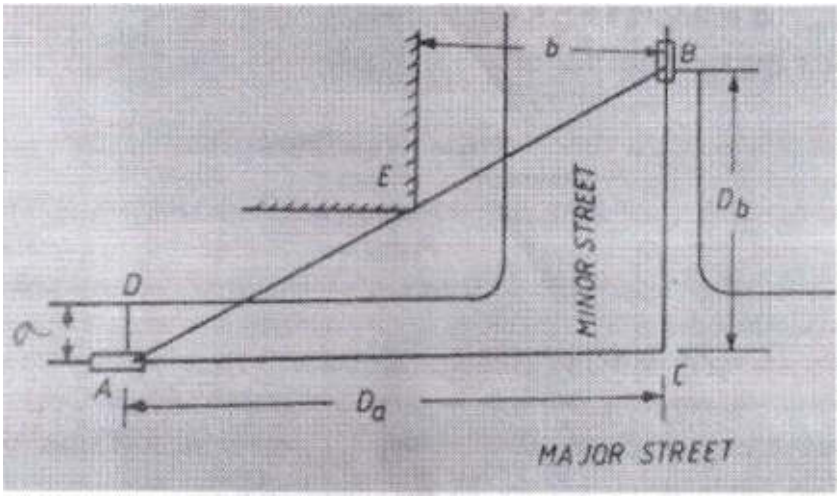

Figure-1-Basis of National Safety Council Method of Speed Zoning

Q.5 Answer the following questions (Any Two) **14**

a) Write the advantages and disadvantages of one-way street.

b) The average normal flow of traffic on cross roads 1 and 2 during design period are 440 and 280 PCU per hour; the saturation flow values on these roads are estimated as 1300 and 1100 PCU per hour respectively. The all-red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with pedestrian crossing by Webster's method. Sketch the phase diagram.

c) What are the various types of traffic markings commonly used? Sketch the marking with showing dimensions for

i) Road centerline
ii) Pedestrian crossings
iii) Marking at signalized intersection
iv) Parallel and angle parking

d) The width of a carriageway approaching an intersection is given as 15. The entry and exit width at the rotary are 10m. The traffic approaching the intersection from the four sides is shown in the figure. Find the capacity of the rotary using the given data. Design speed=30kmph. Take suitable data from Tables 1 and 2 respectively.

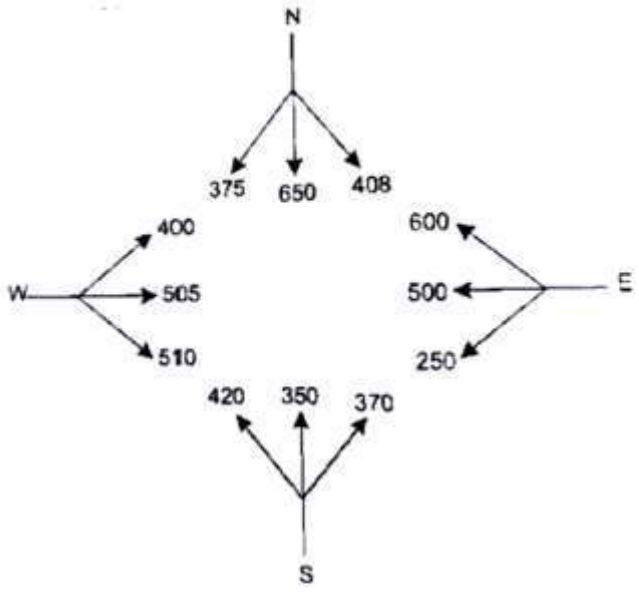

Fig-1-Traffic approaching the intersection

TABLE 1

Rotary Design Speed V (K.P.H.)	*Suggested Values of Radius at Entry (metres)*
40*	20—35
30**	15—25

Design Speed (K.P.H.)	*Minimum Weaving Length (metres)*
40	45
30	30

TABLE 2

Carriageway width of the approach road	*Radius at entry (m)*	*Width of carriageway at entry and exit (m)*
7 m (2 lanes)	25—35	6.5
10.5 m (3 lanes)		7.0
14 m (4 lanes)		8.0
21 m (6 lanes)		13.0
7 m (2 lanes)	15—25	7.0
10.5 m (3 lanes)		7.5
14 m (4 lanes)		10.0
21 m (6 lanes)		15.0

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Traffic Engineering and Management (197042712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The time interval measured between the passage of successive vehicles from head-to-head is known as _____.

a) Headway distance b) Space headway
c) Time headway d) All of these

2) _____ signs are intended to guide the driver about intersecting routes, cities, facilities, towns and other important destinations.

a) Mandatory b) Informatory
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3) Match the Traffic parameters according to the respective definitions:

	Traffic Parameters		Definition
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C	Space Headway	3	The time between successive vehicles past a point
D	Time Headway	4	Distance between the front bumper of the leading vehicle and the front bumper of the following vehicle.

Select the correct answer from below codes:

	A	B	C	D
a)	1	2	3	4
b)	2	3	4	1
c)	2	1	4	3
d)	4	3	2	1

4) The 30th hourly volume means _____.
a) Hourly volume that will be exceeded only 29 times in a year
b) Hourly volume that will be exceeded only 30 times in a year
c) Hourly volume that will be exceeded only 70 times in a year
d) All the above

5) If AADT is 4000vpd and the 30th highest hourly volume for the year is 420 vph what is the K- factor for that facility?
a) 10.5% b) 12.5%
c) 15.5% d) 14.5%

6) The number of vehicles needs to be parked is 30, What is the total length of parking space required if 30°-angle parking is adopted?
a) 200m b) 150m
c) 300m d) 100m

7) Cumulative speed distribution curve is usually adopted for geometric design of highway. The percentile speed adopted for geometric design is _____.
a) 85th percentile b) 90th percentile
c) 98th percentile d) 99.9th percentile

8) The lost time due to starting delay on a traffic signal approach is noted to be 3 seconds, the actual green time is 25 seconds and the amber time is 3 seconds. How much is the effective green time?
a) 19 sec b) 25 sec
c) 27 sec d) 31 sec

9) Traffic hazard markers are used at_____.
a) Obstructions like guard rails and abutments
b) Horizontal curves
c) Hilly locations
d) Vertical gradients

10) Two broken yellow line marking at center of road indicates _____.
a) No passing allowed on both side
b) Passing allowed on one side
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d) Passing allowed only for left side vehicle

11) Width of the vehicle affects the _____.
a) Capacity of the road and parking facility
b) Clearances to be provided under structures such as under bridges, etc.
c) Extra width of pavement and minimum turning radius
d) All the above

12) Enoscope technique is used to find out _____.
a) Spot Speed of the vehicle b) Delay of the vehicle
c) Traffic numbers d) Pedestrian counts

13) The area under the parking accumulation curve during a specified period is called _____.
a) Parking Load b) Parking Index
c) Parking Volume d) Parking Turn-over

14) The period of time required for one complete sequence of signal indications is called ____.
a) Phase b) Cycle
c) Amber d) Green

SLR-GF-84

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Traffic Engineering and Management (197042712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume any missing data suitably and mention it clearly.

Section – I

Q.2 Answer the following questions (Any Two) **14**

a) What are the objects and scope of traffic engineering? Explain briefly.

b) Explain the term volume. Briefly explain the different methods of carrying out traffic volume studies.

c) Explain how the speed and delay studies are carried out. What are the various uses of speed and delay studies?

d) The parking survey data collected from a parking lot by license plate method is s shown in the Table-1 below. Find the average occupancy, average turnover, parking load, parking capacity and efficiency of the parking lot.

Table 1: License plate parking survey data

Bay	Time			
	0-15	15-30	30-45	45-60
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5	1884	1884	-	7594
6	-	7357	-	7893
7	-	4895	4895	4895
8	8932	8932	8932	-
9	7653	7653	8998	4821
10	7321	-	2789	2789
11	1213	1213	3212	4778
12	5678	6678	7778	8888

Q.3 Answer the following questions (Any Two) **14**

a) What are the various types of traffic accidents? Derive the equation for finding out initial speed of the vehicle for collision of moving vehicle with parked vehicle.

b) A vehicle of 2000 kg skids a distance of 36 m before colliding with a stationary vehicle of 1500 kg weight. After collision both vehicle skid a distance of 14 m. Assuming coefficient of friction 0.5, determine the initial speed of the vehicle.

c) Explain the level of service concept in deciding the design capacity of a road.

d) Discuss the various types of on-street parking, their advantages and disadvantages.

Section – II

Q.4 Answer the following questions (Any Two) **14**

a) List the different types of regulatory signs and explain any four important regulatory signs with neat sketch.

b) Write a short note on ITS applications in urban transport system.

c) Write a note on regulations concerning to the speed limit in urban and rural areas.

d) The A and B are two vehicles, vehicle 'A' travelling on the major street and B travelling on the side street. The view at the intersection is restricted due to the presence of an obstruction as shown in Figure-1 below. Assume V_a=60Kmph, a=15m, b=20m. Calculate the speed limit on Minor Street by.

i) National Safety Council (NSC) method.

ii) American Automobile Association method (AAA). Assume reaction time of the driver=1.15sec.

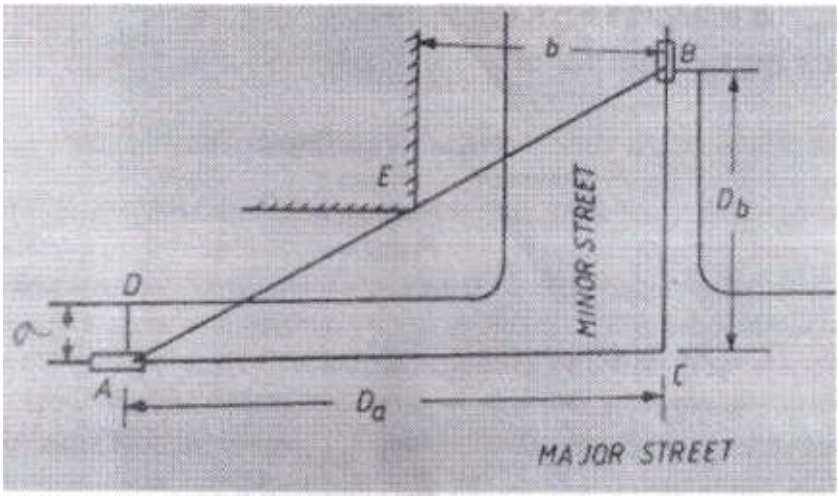

Figure-1-Basis of National Safety Council Method of Speed Zoning

Q.5 Answer the following questions (Any Two) **14**

a) Write the advantages and disadvantages of one-way street.

b) The average normal flow of traffic on cross roads 1 and 2 during design period are 440 and 280 PCU per hour; the saturation flow values on these roads are estimated as 1300 and 1100 PCU per hour respectively. The all-red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with pedestrian crossing by Webster's method. Sketch the phase diagram.

c) What are the various types of traffic markings commonly used? Sketch the marking with showing dimensions for

i) Road centerline
ii) Pedestrian crossings
iii) Marking at signalized intersection
iv) Parallel and angle parking

d) The width of a carriageway approaching an intersection is given as 15. The entry and exit width at the rotary are 10m. The traffic approaching the intersection from the four sides is shown in the figure. Find the capacity of the rotary using the given data. Design speed=30kmph. Take suitable data from Tables 1 and 2 respectively.

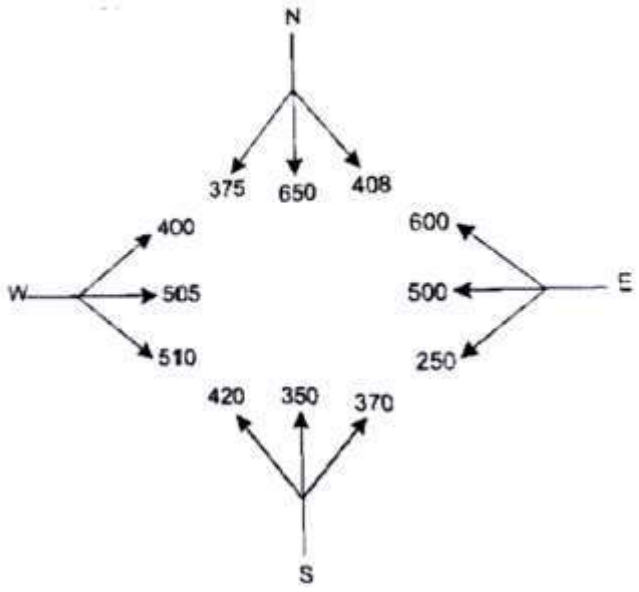

Fig-1-Traffic approaching the intersection

TABLE 1

Rotary Design Speed V (K.P.H.)	*Suggested Values of Radius at Entry (metres)*
40*	20—35
30**	15—25

Design Speed (K.P.H.)	*Minimum Weaving Length (metres)*
40	45
30	30

TABLE 2

Carriageway width of the approach road	*Radius at entry (m)*	*Width of carriageway at entry and exit (m)*
7 m (2 lanes)	25—35	6.5
10.5 m (3 lanes)		7.0
14 m (4 lanes)		8.0
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7 m (2 lanes)	15—25	7.0
10.5 m (3 lanes)		7.5
14 m (4 lanes)		10.0
21 m (6 lanes)		15.0

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Traffic Engineering and Management (197042712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume any missing data suitably and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The 30th hourly volume means _____.
a) Hourly volume that will be exceeded only 29 times in a year
b) Hourly volume that will be exceeded only 30 times in a year
c) Hourly volume that will be exceeded only 70 times in a year
d) All the above

2) If AADT is 4000vpd and the 30th highest hourly volume for the year is 420 vph what is the K- factor for that facility?
a) 10.5% b) 12.5%
c) 15.5% d) 14.5%

3) The number of vehicles needs to be parked is 30, What is the total length of parking space required if 30°-angle parking is adopted?
a) 200m b) 150m
c) 300m d) 100m

4) Cumulative speed distribution curve is usually adopted for geometric design of highway. The percentile speed adopted for geometric design is _____.
a) 85th percentile b) 90th percentile
c) 98th percentile d) 99.9th percentile

5) The lost time due to starting delay on a traffic signal approach is noted to be 3 seconds, the actual green time is 25 seconds and the amber time is 3 seconds. How much is the effective green time?
a) 19 sec b) 25 sec
c) 27 sec d) 31 sec

6) Traffic hazard markers are used at_____.
a) Obstructions like guard rails and abutments
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7) Two broken yellow line marking at center of road indicates _____.
a) No passing allowed on both side
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8) Width of the vehicle affects the _____.
a) Capacity of the road and parking facility
b) Clearances to be provided under structures such as under bridges, etc.
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9) Enoscope technique is used to find out _____.
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10) The area under the parking accumulation curve during a specified period is called _____.
a) Parking Load b) Parking Index
c) Parking Volume d) Parking Turn-over

11) The period of time required for one complete sequence of signal indications is called ____.
a) Phase b) Cycle
c) Amber d) Green

12) The time interval measured between the passage of successive vehicles from head-to-head is known as _____.
a) Headway distance b) Space headway
c) Time headway d) All of these

13) _____ signs are intended to guide the driver about intersecting routes, cities, facilities, towns and other important destinations.
a) Mandatory b) Informatory
c) Cautionary d) Warning

14) Match the Traffic parameters according to the respective definitions:

	Traffic Parameters		Definition
A	Density	1	The number of vehicles passing a specific reference point on a road section within a specified period of time
B	Flow	2	The number of vehicles occupying in a given length of roadway or a lane
C	Space Headway	3	The time between successive vehicles past a point
D	Time Headway	4	Distance between the front bumper of the leading vehicle and the front bumper of the following vehicle.

Select the correct answer from below codes:

	A	B	C	D
a)	1	2	3	4
b)	2	3	4	1
c)	2	1	4	3
d)	4	3	2	1

SLR-GF-84

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Traffic Engineering and Management (197042712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume any missing data suitably and mention it clearly.

Section – I

Q.2 Answer the following questions (Any Two) **14**

a) What are the objects and scope of traffic engineering? Explain briefly.

b) Explain the term volume. Briefly explain the different methods of carrying out traffic volume studies.

c) Explain how the speed and delay studies are carried out. What are the various uses of speed and delay studies?

d) The parking survey data collected from a parking lot by license plate method is s shown in the Table-1 below. Find the average occupancy, average turnover, parking load, parking capacity and efficiency of the parking lot.

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d) Discuss the various types of on-street parking, their advantages and disadvantages.

Section – II

Q.4 Answer the following questions (Any Two) **14**

a) List the different types of regulatory signs and explain any four important regulatory signs with neat sketch.

b) Write a short note on ITS applications in urban transport system.

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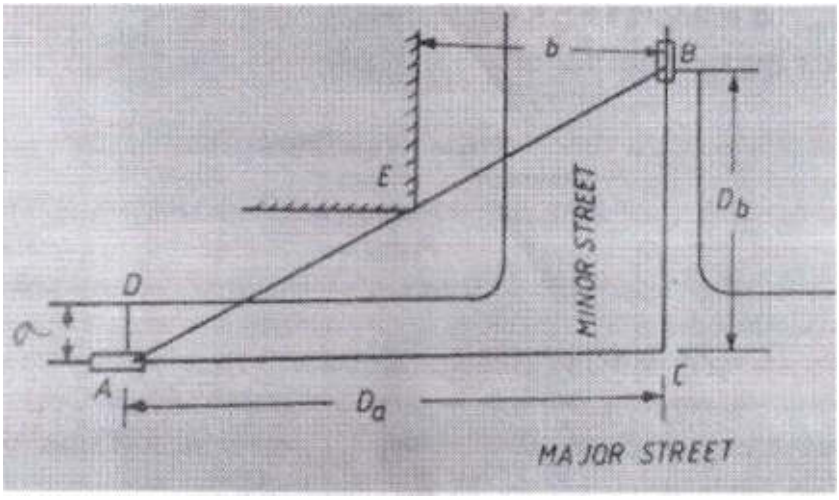

Figure-1-Basis of National Safety Council Method of Speed Zoning

Q.5 Answer the following questions (Any Two) **14**

a) Write the advantages and disadvantages of one-way street.

b) The average normal flow of traffic on cross roads 1 and 2 during design period are 440 and 280 PCU per hour; the saturation flow values on these roads are estimated as 1300 and 1100 PCU per hour respectively. The all-red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with pedestrian crossing by Webster's method. Sketch the phase diagram.

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i) Road centerline
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d) The width of a carriageway approaching an intersection is given as 15. The entry and exit width at the rotary are 10m. The traffic approaching the intersection from the four sides is shown in the figure. Find the capacity of the rotary using the given data. Design speed=30kmph. Take suitable data from Tables 1 and 2 respectively.

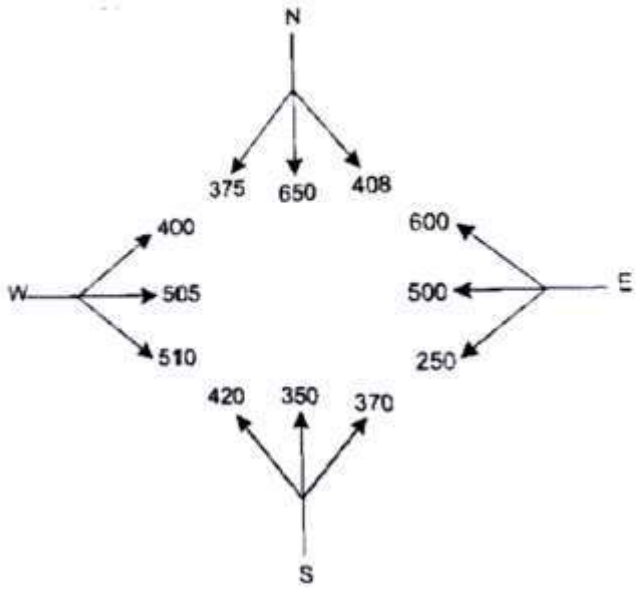

Fig-1-Traffic approaching the intersection

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40*	20—35
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Carriageway width of the approach road	*Radius at entry (m)*	*Width of carriageway at entry and exit (m)*
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Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Traffic Engineering and Management (197042712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The area under the parking accumulation curve during a specified period is called _____.
a) Parking Load b) Parking Index
c) Parking Volume d) Parking Turn-over

2) The period of time required for one complete sequence of signal indications is called ____.
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3) The time interval measured between the passage of successive vehicles from head-to-head is known as _____.
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SLR-GF-84

Seat No.	

Set S

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Traffic Engineering and Management (197042712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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Section – II

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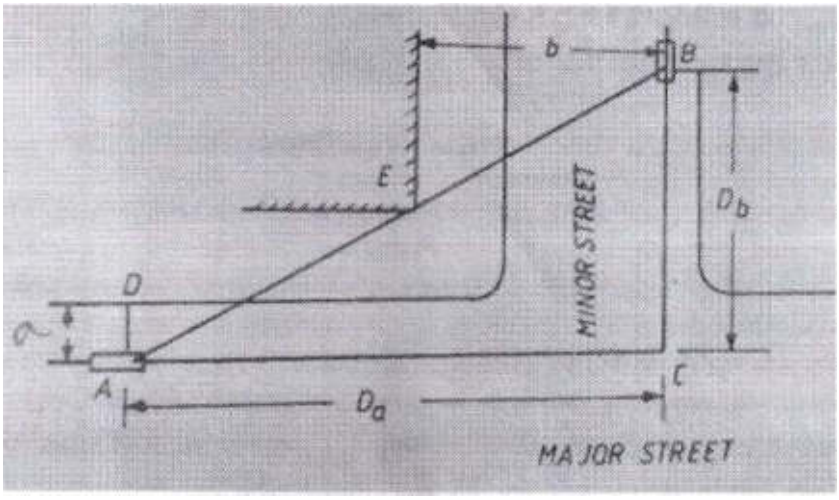

Figure-1-Basis of National Safety Council Method of Speed Zoning

Q.5 Answer the following questions (Any Two) **14**

a) Write the advantages and disadvantages of one-way street.

b) The average normal flow of traffic on cross roads 1 and 2 during design period are 440 and 280 PCU per hour; the saturation flow values on these roads are estimated as 1300 and 1100 PCU per hour respectively. The all-red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with pedestrian crossing by Webster's method. Sketch the phase diagram.

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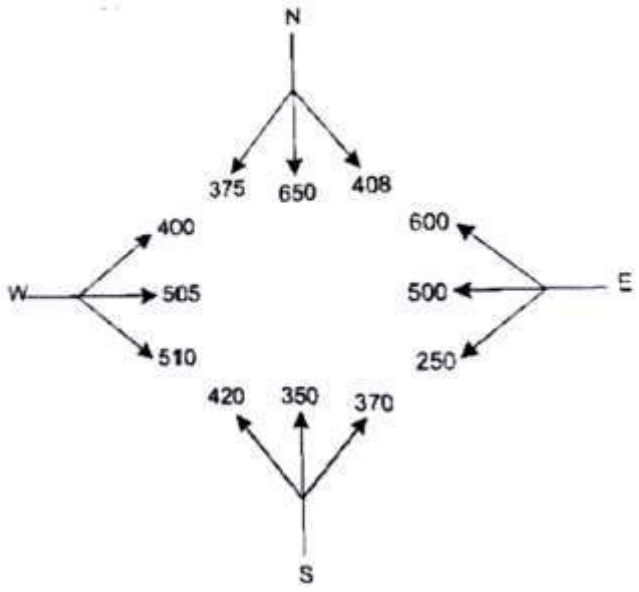

Fig-1-Traffic approaching the intersection

TABLE 1

Rotary Design Speed V (K.P.H.)	*Suggested Values of Radius at Entry (metres)*
40*	20—35
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Design Speed (K.P.H.)	*Minimum Weaving Length (metres)*
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Carriageway width of the approach road	*Radius at entry (m)*	*Width of carriageway at entry and exit (m)*
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10.5 m (3 lanes)		7.0
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21 m (6 lanes)		13.0
7 m (2 lanes)	15—25	7.0
10.5 m (3 lanes)		7.5
14 m (4 lanes)		10.0
21 m (6 lanes)		15.0

SLR-GF-86

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Advanced Railway Track (197042714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer.
Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The maximum number of machines which can work in one block section is _____.
a) Four b) Six
c) Two d) Five

2) What is the minimum clean cushion required for TTM working?
a) 100 mm b) 200 mm
c) 300 mm d) 150 mm

3) What is the tamping tool depth below the bottom edge of sleeper in case of flat bottom sleepers?
a) 8-10 mm b) 15-20 mm
c) 5-8 mm d) 10-15 mm

4) What is the squeezing pressure in case of PRC sleeper?
a) 50-60 kg/cm b) 90-100 kg/cm^2
c) 60-70 kg/cm^2 d) 110-120 kg/cm^2

5) The progress of CSM tamping m/c per effective houris _____.
a) 800 sleepers b) 1600 sleepers
c) 1200 sleepers d) 2000 sleepers

6) General lift in design levelling should be: _____.
a) 25 mm
b) 15 mm
c) General lift in design levelling is not relevant
d) 20 mm

7) What is the permissible vertical wear in 52 kg. rails?
a) 6 mm b) 10 mm
c) 8 mm d) 12 mm

8) Minimum shoulder ballast in tangential track of LWR:
a) 300mm b) 350mm
c) 600mm d) 500m

9) LWR/CWR can be laid on vertical curve where algebraic difference between two grades is:
a) 2mm/m b) 4mm/m
c) 3mm/m d) 5mm/m

10) SEJ must not fall on curves having radius.
a) >3500m b) <3500m
c) 440m d) >440m

11) Minimum gap at SEJ in 52 kg. rail shall be:
a) 40mm b) 120mm
c) 60mm d) 190mm

12) Hot weather patrolling is to be introduced in LWR territory having sleepers other than.
a) When the rail temperature goes beyond tm+10
b) When the rail temperature goes beyond td+ 20
c) When the rail temperature goes beyond td+ 10
d) None of these

13) Maintenance operation in a LWR should be restricted to a temperature range of _____ degree centigrade.
a) td + 10 to td -30 b) td to td-20
c) 30 to 45 d) td+5 to td-25

14) Oiling in SEJ is must, once_____.
a) Daily b) Fortnightly
c) Weekly d) Monthly

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Advanced Railway Track (197042714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 8 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 6, 7 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2	**a)**	Explain the following: i) On- Track Maintenance ii) Mobile Maintenance Unit iii) Sectional Gangs	**06**
	b)	With the help of diagram, illustrate the tamping procedure.	**04**
Q.3	**a)**	Explain Preliminary Works for Track Renewal.	**04**
	b)	Explain the renewal of Sleepers.	**05**
Q.4	**a)**	Elaborate the inspection of Level crossing.	**04**
	b)	Explain signs of Destressing in Group -I and Group- II Bridges.	**05**
Q.5	**a)**	Describe the chemical and mechanical composition of all types of steel used in Indian Railway tracks.	**05**
	b)	Explain the handling process of rails.	**04**

Section – II

Q.6	**a)**	Illustrate the reasons behind defects found in Rails.	**04**
	b)	Elaborate with the help of a diagram details of LWR.	**05**
Q.7	**a)**	With the help of diagram explain Alumina Thermite process.	**04**
	b)	Identify the various types of derailments and mention the aspects of derailments.	**05**

Q.8 **a)** Explain diamond crossing with help of diagram. **05**

b) A main line track on BG is having LWR of 60 kgs Laid at 45°C. The maximum rail temperature is 60°C and the minimum rail temperature is 15°C. Calculate the following: **05**

i) Tension in rail
ii) Compression in rail
iii) Tensile stress and
iv) Compressive stress

Q.9 **a)** Illustrate the requirement of Railway station. (at least six points) **04**

b) Explain the mechanism of derailment. **05**

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Advanced Railway Track (197042714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer.
Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Minimum shoulder ballast in tangential track of LWR:
a) 300mm b) 350mm
c) 600mm d) 500m

2) LWR/CWR can be laid on vertical curve where algebraic difference between two grades is:
a) 2mm/m b) 4mm/m
c) 3mm/m d) 5mm/m

3) SEJ must not fall on curves having radius.
a) >3500m b) <3500m
c) 440m d) >440m

4) Minimum gap at SEJ in 52 kg. rail shall be:
a) 40mm b) 120mm
c) 60mm d) 190mm

5) Hot weather patrolling is to be introduced in LWR territory having sleepers other than.
a) When the rail temperature goes beyond tm+10
b) When the rail temperature goes beyond td+ 20
c) When the rail temperature goes beyond td+ 10
d) None of these

6) Maintenance operation in a LWR should be restricted to a temperature range of _____ degree centigrade.
a) td + 10 to td -30 b) td to td-20
c) 30 to 45 d) td+5 to td-25

7) Oiling in SEJ is must, once_____.
a) Daily b) Fortnightly
c) Weekly d) Monthly

8) The maximum number of machines which can work in one block section is _____.
a) Four b) Six
c) Two d) Five

9) What is the minimum clean cushion required for TTM working?
a) 100 mm b) 200 mm
c) 300 mm d) 150 mm

10) What is the tamping tool depth below the bottom edge of sleeper in case of flat bottom sleepers?
a) 8-10 mm b) 15-20 mm
c) 5-8 mm d) 10-15 mm

11) What is the squeezing pressure in case of PRC sleeper?
a) 50-60 kg/cm b) 90-100 kg/cm^2
c) 60-70 kg/cm^2 d) 110-120 kg/cm^2

12) The progress of CSM tamping m/c per effective houris _____.
a) 800 sleepers b) 1600 sleepers
c) 1200 sleepers d) 2000 sleepers

13) General lift in design levelling should be: _____.
a) 25 mm
b) 15 mm
c) General lift in design levelling is not relevant
d) 20 mm

14) What is the permissible vertical wear in 52 kg. rails?
a) 6 mm b) 10 mm
c) 8 mm d) 12 mm

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Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Advanced Railway Track (197042714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 8 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 6, 7 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** Explain the following: **06**
i) On- Track Maintenance
ii) Mobile Maintenance Unit
iii) Sectional Gangs

b) With the help of diagram, illustrate the tamping procedure. **04**

Q.3 **a)** Explain Preliminary Works for Track Renewal. **04**

b) Explain the renewal of Sleepers. **05**

Q.4 **a)** Elaborate the inspection of Level crossing. **04**

b) Explain signs of Destressing in Group -I and Group- II Bridges. **05**

Q.5 **a)** Describe the chemical and mechanical composition of all types of steel used in Indian Railway tracks. **05**

b) Explain the handling process of rails. **04**

Section – II

Q.6 **a)** Illustrate the reasons behind defects found in Rails. **04**

b) Elaborate with the help of a diagram details of LWR. **05**

Q.7 **a)** With the help of diagram explain Alumina Thermite process. **04**

b) Identify the various types of derailments and mention the aspects of derailments. **05**

Q.8 **a)** Explain diamond crossing with help of diagram. **05**

b) A main line track on BG is having LWR of 60 kgs Laid at 45°C. The maximum rail temperature is 60°C and the minimum rail temperature is 15°C. Calculate the following: **05**

i) Tension in rail
ii) Compression in rail
iii) Tensile stress and
iv) Compressive stress

Q.9 **a)** Illustrate the requirement of Railway station. (at least six points) **04**

b) Explain the mechanism of derailment. **05**

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Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Advanced Railway Track (197042714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer.
Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Minimum gap at SEJ in 52 kg. rail shall be:
a) 40mm b) 120mm
c) 60mm d) 190mm

2) Hot weather patrolling is to be introduced in LWR territory having sleepers other than.
a) When the rail temperature goes beyond tm+10
b) When the rail temperature goes beyond td+ 20
c) When the rail temperature goes beyond td+ 10
d) None of these

3) Maintenance operation in a LWR should be restricted to a temperature range of _____ degree centigrade.
a) td + 10 to td -30 b) td to td-20
c) 30 to 45 d) td+5 to td-25

4) Oiling in SEJ is must, once_____.
a) Daily b) Fortnightly
c) Weekly d) Monthly

5) The maximum number of machines which can work in one block section is _____.
a) Four b) Six
c) Two d) Five

6) What is the minimum clean cushion required for TTM working?
a) 100 mm b) 200 mm
c) 300 mm d) 150 mm

7) What is the tamping tool depth below the bottom edge of sleeper in case of flat bottom sleepers?
a) 8-10 mm b) 15-20 mm
c) 5-8 mm d) 10-15 mm

8) What is the squeezing pressure in case of PRC sleeper?
a) 50-60 kg/cm b) 90-100 kg/cm^2
c) 60-70 kg/cm^2 d) 110-120 kg/cm^2

9) The progress of CSM tamping m/c per effective houris _____.
a) 800 sleepers b) 1600 sleepers
c) 1200 sleepers d) 2000 sleepers

10) General lift in design levelling should be: _____.
a) 25 mm
b) 15 mm
c) General lift in design levelling is not relevant
d) 20 mm

11) What is the permissible vertical wear in 52 kg. rails?
a) 6 mm b) 10 mm
c) 8 mm d) 12 mm

12) Minimum shoulder ballast in tangential track of LWR:
a) 300mm b) 350mm
c) 600mm d) 500m

13) LWR/CWR can be laid on vertical curve where algebraic difference between two grades is:
a) 2mm/m b) 4mm/m
c) 3mm/m d) 5mm/m

14) SEJ must not fall on curves having radius.
a) >3500m b) <3500m
c) 440m d) >440m

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Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Advanced Railway Track (197042714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 8 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 6, 7 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** Explain the following: **06**
i) On- Track Maintenance
ii) Mobile Maintenance Unit
iii) Sectional Gangs

b) With the help of diagram, illustrate the tamping procedure. **04**

Q.3 **a)** Explain Preliminary Works for Track Renewal. **04**

b) Explain the renewal of Sleepers. **05**

Q.4 **a)** Elaborate the inspection of Level crossing. **04**

b) Explain signs of Destressing in Group -I and Group- II Bridges. **05**

Q.5 **a)** Describe the chemical and mechanical composition of all types of steel used in Indian Railway tracks. **05**

b) Explain the handling process of rails. **04**

Section – II

Q.6 **a)** Illustrate the reasons behind defects found in Rails. **04**

b) Elaborate with the help of a diagram details of LWR. **05**

Q.7 **a)** With the help of diagram explain Alumina Thermite process. **04**

b) Identify the various types of derailments and mention the aspects of derailments. **05**

Q.8 **a)** Explain diamond crossing with help of diagram. **05**

b) A main line track on BG is having LWR of 60 kgs Laid at 45°C. The maximum rail temperature is 60°C and the minimum rail temperature is 15°C. Calculate the following: **05**

i) Tension in rail
ii) Compression in rail
iii) Tensile stress and
iv) Compressive stress

Q.9 **a)** Illustrate the requirement of Railway station. (at least six points) **04**

b) Explain the mechanism of derailment. **05**

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Advanced Railway Track (197042714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer.
Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) General lift in design levelling should be: _____.
a) 25 mm
b) 15 mm
c) General lift in design levelling is not relevant
d) 20 mm

2) What is the permissible vertical wear in 52 kg. rails?
a) 6 mm b) 10 mm
c) 8 mm d) 12 mm

3) Minimum shoulder ballast in tangential track of LWR:
a) 300mm b) 350mm
c) 600mm d) 500m

4) LWR/CWR can be laid on vertical curve where algebraic difference between two grades is:
a) 2mm/m b) 4mm/m
c) 3mm/m d) 5mm/m

5) SEJ must not fall on curves having radius.
a) >3500m b) <3500m
c) 440m d) >440m

6) Minimum gap at SEJ in 52 kg. rail shall be:
a) 40mm b) 120mm
c) 60mm d) 190mm

7) Hot weather patrolling is to be introduced in LWR territory having sleepers other than.
a) When the rail temperature goes beyond tm+10
b) When the rail temperature goes beyond td+ 20
c) When the rail temperature goes beyond td+ 10
d) None of these

8) Maintenance operation in a LWR should be restricted to a temperature range of _____ degree centigrade.
a) td + 10 to td -30 b) td to td-20
c) 30 to 45 d) td+5 to td-25

9) Oiling in SEJ is must, once_____.
a) Daily b) Fortnightly
c) Weekly d) Monthly

10) The maximum number of machines which can work in one block section is _____.
a) Four b) Six
c) Two d) Five

11) What is the minimum clean cushion required for TTM working?
a) 100 mm b) 200 mm
c) 300 mm d) 150 mm

12) What is the tamping tool depth below the bottom edge of sleeper in case of flat bottom sleepers?
a) 8-10 mm b) 15-20 mm
c) 5-8 mm d) 10-15 mm

13) What is the squeezing pressure in case of PRC sleeper?
a) 50-60 kg/cm b) 90-100 kg/cm^2
c) 60-70 kg/cm^2 d) 110-120 kg/cm^2

14) The progress of CSM tamping m/c per effective houris _____.
a) 800 sleepers b) 1600 sleepers
c) 1200 sleepers d) 2000 sleepers

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Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem-I) (New/Old) (CBCS) Examination: Oct/Nov2023
CIVIL ENGINEERING
Advanced Railway Track (197042714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 8 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 6, 7 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2	**a)**	Explain the following: i) On- Track Maintenance ii) Mobile Maintenance Unit iii) Sectional Gangs	**06**
	b)	With the help of diagram, illustrate the tamping procedure.	**04**
Q.3	**a)**	Explain Preliminary Works for Track Renewal.	**04**
	b)	Explain the renewal of Sleepers.	**05**
Q.4	**a)**	Elaborate the inspection of Level crossing.	**04**
	b)	Explain signs of Destressing in Group -I and Group- II Bridges.	**05**
Q.5	**a)**	Describe the chemical and mechanical composition of all types of steel used in Indian Railway tracks.	**05**
	b)	Explain the handling process of rails.	**04**

Section – II

Q.6	**a)**	Illustrate the reasons behind defects found in Rails.	**04**
	b)	Elaborate with the help of a diagram details of LWR.	**05**
Q.7	**a)**	With the help of diagram explain Alumina Thermite process.	**04**
	b)	Identify the various types of derailments and mention the aspects of derailments.	**05**

Q.8 **a)** Explain diamond crossing with help of diagram. **05**

b) A main line track on BG is having LWR of 60 kgs Laid at 45°C. The maximum rail temperature is 60°C and the minimum rail temperature is 15°C. Calculate the following: **05**

i) Tension in rail
ii) Compression in rail
iii) Tensile stress and
iv) Compressive stress

Q.9 **a)** Illustrate the requirement of Railway station. (at least six points) **04**

b) Explain the mechanism of derailment. **05**

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Systems (197042716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options **14**

1) _____ is a mathematical technique suitable for optimization of multistage decision problems.
a) Dynamic programming b) Queuing theory
c) Design of Experiments d) Game Theory

2) _____ includes testing and experimentation models as a iterative process.
a) System approach b) System Programming
c) Statistical analysis d) System analysis

3) System approach provides the _____ scheme that makes involvement accessible.
a) Life cycle planning b) Life cycle integration
c) Decision making d) integrated Training

4) _____ is a line of thought in management which Stresses the interactive nature and interdependence in an organization.
a) System analysis b) System approach
c) Quantitative methods d) System programming

5) _____ is a use of system analysis and simulation to minimize complex of ecological system.
a) Environmental modeling b) Reality & Real system
c) Ecological modeling d) Conceptual model

6) An integrated system combines and optimize waste collective system by effective sorting followed by one or more options.
a) Material recycling
b) Biological treatment
c) Thermal treatment and sanitary landfill
d) All of above

7) _____ represent the total number of individuals in a habitat and also its potential for long term survival.
a) Population size b) Population age
c) Population dispersion d) Population density

8) _____ are the interfaces between inflow and outflow.
a) Venturimetr b) Orifice
c) Connectors d) Junction box

9) The _____ model provides easy access to data for the formation and implementation to effective solid waste management.
a) Integrated waste model
b) Municipal waste management
c) Sustainable waste management
d) Environmental waste management

10) _____ is a mathematics with the application of scientific methods and techniques to decision making problems for optimal solutions.
a) Linear programming b) Statistical Methods
c) Statistical analysis d) Operation research

11) The _____ delivers the incoming flow rate and the concentration for sll components in wastewater model.
a) Inflow model b) Outflow model
c) Strategic flow model d) Dynamic flow model

12) _____ gives the concentration estimates within an order of magnitude for continuous releases over homogeneous terrain.
a) Source dispersion model b) Emission Model
c) Receptor model d) Gaussian plume model

13) _____ estimates temporal and spatial emission based on per unit of activity and meteorology.
a) Receptor model b) Emission model
c) Source dispersion model d) Plume Behavior

14) _____ helps to visualize and also helps to understand different terminologies associated with the solution of linear programming.
a) Graphical Method b) Simplex Method
c) Linear programming d) Stochastic programming

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Systems (197042716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 is compulsory in Section I, and solve any two questions from the remaining.
2) Question No. 6 is compulsory in Section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	Explain what is building modeling.	**05**
	b)	Explain with neat sketch the scope of System approach.	**05**
Q.3	**a)**	Explain the characteristics of Integrated Waste Management.	**04**
	b)	Explain three basic models which are used in system approach.	**05**
Q.4	**a)**	Explain the characteristics of Population ecology.	**04**
	b)	Explain with neat sketch the model of sustainable waste management.	**05**
Q.5	**Write Short Notes**		
	a)	Concepts and principle of Population dynamics.	**05**
	b)	Benefits of Integrated waste Management.	**04**

Section – II

Q.6	**a)**	Explain the basic concept of Wastewater model.	**05**
	b)	Explain the equation of continuity for rectangular model.	**05**
Q.7	**a)**	Explain Linear programming and its applications in civil engineering.	**05**
	b)	Explain the salient features of Optimization.	**04**
Q.8	**a)**	Explain the pollutant standard index criteria.	**04**
	b)	Explain the wastewater treatment process (Aerobic Process).	**05**
Q.9	**Write short notes.**		
	a)	Point source Gaussian plume model.	**05**
	b)	Motor Vehicle Emission.	**04**

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Systems (197042716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options **14**

1) _____ are the interfaces between inflow and outflow.
a) Venturimetr b) Orifice
c) Connectors d) Junction box

2) The _____ model provides easy access to data for the formation and implementation to effective solid waste management.
a) Integrated waste model
b) Municipal waste management
c) Sustainable waste management
d) Environmental waste management

3) _____ is a mathematics with the application of scientific methods and techniques to decision making problems for optimal solutions.
a) Linear programming b) Statistical Methods
c) Statistical analysis d) Operation research

4) The _____ delivers the incoming flow rate and the concentration for sll components in wastewater model.
a) Inflow model b) Outflow model
c) Strategic flow model d) Dynamic flow model

5) _____ gives the concentration estimates within an order of magnitude for continuous releases over homogeneous terrain.
a) Source dispersion model b) Emission Model
c) Receptor model d) Gaussian plume model

6) _____ estimates temporal and spatial emission based on per unit of activity and meteorology.
a) Receptor model b) Emission model
c) Source dispersion model d) Plume Behavior

7) _____ helps to visualize and also helps to understand different terminologies associated with the solution of linear programming.
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10) System approach provides the _____ scheme that makes involvement accessible.
a) Life cycle planning b) Life cycle integration
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11) _____ is a line of thought in management which Stresses the interactive nature and interdependence in an organization.
a) System analysis b) System approach
c) Quantitative methods d) System programming

12) _____ is a use of system analysis and simulation to minimize complex of ecological system.
a) Environmental modeling b) Reality & Real system
c) Ecological modeling d) Conceptual model

13) An integrated system combines and optimize waste collective system by effective sorting followed by one or more options.
a) Material recycling
b) Biological treatment
c) Thermal treatment and sanitary landfill
d) All of above

14) _____ represent the total number of individuals in a habitat and also its potential for long term survival.
a) Population size b) Population age
c) Population dispersion d) Population density

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Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Systems (197042716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 is compulsory in Section I, and solve any two questions from the remaining.
2) Question No. 6 is compulsory in Section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	Explain what is building modeling.	**05**
	b)	Explain with neat sketch the scope of System approach.	**05**
Q.3	**a)**	Explain the characteristics of Integrated Waste Management.	**04**
	b)	Explain three basic models which are used in system approach.	**05**
Q.4	**a)**	Explain the characteristics of Population ecology.	**04**
	b)	Explain with neat sketch the model of sustainable waste management.	**05**
Q.5	**Write Short Notes**		
	a)	Concepts and principle of Population dynamics.	**05**
	b)	Benefits of Integrated waste Management.	**04**

Section – II

Q.6	**a)**	Explain the basic concept of Wastewater model.	**05**
	b)	Explain the equation of continuity for rectangular model.	**05**
Q.7	**a)**	Explain Linear programming and its applications in civil engineering.	**05**
	b)	Explain the salient features of Optimization.	**04**
Q.8	**a)**	Explain the pollutant standard index criteria.	**04**
	b)	Explain the wastewater treatment process (Aerobic Process).	**05**
Q.9	**Write short notes.**		
	a)	Point source Gaussian plume model.	**05**
	b)	Motor Vehicle Emission.	**04**

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Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Systems (197042716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options **14**

1) The _____ delivers the incoming flow rate and the concentration for sll components in wastewater model.
a) Inflow model b) Outflow model
c) Strategic flow model d) Dynamic flow model

2) _____ gives the concentration estimates within an order of magnitude for continuous releases over homogeneous terrain.
a) Source dispersion model b) Emission Model
c) Receptor model d) Gaussian plume model

3) _____ estimates temporal and spatial emission based on per unit of activity and meteorology.
a) Receptor model b) Emission model
c) Source dispersion model d) Plume Behavior

4) _____ helps to visualize and also helps to understand different terminologies associated with the solution of linear programming.
a) Graphical Method b) Simplex Method
c) Linear programming d) Stochastic programming

5) _____ is a mathematical technique suitable for optimization of multistage decision problems.
a) Dynamic programming b) Queuing theory
c) Design of Experiments d) Game Theory

6) _____ includes testing and experimentation models as a iterative process.
a) System approach b) System Programming
c) Statistical analysis d) System analysis

7) System approach provides the _____ scheme that makes involvement accessible.
a) Life cycle planning b) Life cycle integration
c) Decision making d) integrated Training

8) _____ is a line of thought in management which Stresses the interactive nature and interdependence in an organization.
a) System analysis b) System approach
c) Quantitative methods d) System programming

9) _____ is a use of system analysis and simulation to minimize complex of ecological system.
a) Environmental modeling b) Reality & Real system
c) Ecological modeling d) Conceptual model

10) An integrated system combines and optimize waste collective system by effective sorting followed by one or more options.
a) Material recycling
b) Biological treatment
c) Thermal treatment and sanitary landfill
d) All of above

11) _____ represent the total number of individuals in a habitat and also its potential for long term survival.
a) Population size b) Population age
c) Population dispersion d) Population density

12) _____ are the interfaces between inflow and outflow.
a) Venturimetr b) Orifice
c) Connectors d) Junction box

13) The _____ model provides easy access to data for the formation and implementation to effective solid waste management.
a) Integrated waste model
b) Municipal waste management
c) Sustainable waste management
d) Environmental waste management

14) _____ is a mathematics with the application of scientific methods and techniques to decision making problems for optimal solutions.
a) Linear programming b) Statistical Methods
c) Statistical analysis d) Operation research

SLR-GF-88

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Systems (197042716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 is compulsory in Section I, and solve any two questions from the remaining.
2) Question No. 6 is compulsory in Section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	Explain what is building modeling.	**05**
	b)	Explain with neat sketch the scope of System approach.	**05**
Q.3	**a)**	Explain the characteristics of Integrated Waste Management.	**04**
	b)	Explain three basic models which are used in system approach.	**05**
Q.4	**a)**	Explain the characteristics of Population ecology.	**04**
	b)	Explain with neat sketch the model of sustainable waste management.	**05**
Q.5	**Write Short Notes**		
	a)	Concepts and principle of Population dynamics.	**05**
	b)	Benefits of Integrated waste Management.	**04**

Section – II

Q.6	**a)**	Explain the basic concept of Wastewater model.	**05**
	b)	Explain the equation of continuity for rectangular model.	**05**
Q.7	**a)**	Explain Linear programming and its applications in civil engineering.	**05**
	b)	Explain the salient features of Optimization.	**04**
Q.8	**a)**	Explain the pollutant standard index criteria.	**04**
	b)	Explain the wastewater treatment process (Aerobic Process).	**05**
Q.9	**Write short notes.**		
	a)	Point source Gaussian plume model.	**05**
	b)	Motor Vehicle Emission.	**04**

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Systems (197042716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options **14**

1) An integrated system combines and optimize waste collective system by effective sorting followed by one or more options.
a) Material recycling
b) Biological treatment
c) Thermal treatment and sanitary landfill
d) All of above

2) _____ represent the total number of individuals in a habitat and also its potential for long term survival.
a) Population size b) Population age
c) Population dispersion d) Population density

3) _____ are the interfaces between inflow and outflow.
a) Venturimetr b) Orifice
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4) The _____ model provides easy access to data for the formation and implementation to effective solid waste management.
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b) Municipal waste management
c) Sustainable waste management
d) Environmental waste management

5) _____ is a mathematics with the application of scientific methods and techniques to decision making problems for optimal solutions.
a) Linear programming b) Statistical Methods
c) Statistical analysis d) Operation research

6) The _____ delivers the incoming flow rate and the concentration for sll components in wastewater model.
a) Inflow model b) Outflow model
c) Strategic flow model d) Dynamic flow model

7) _____ gives the concentration estimates within an order of magnitude for continuous releases over homogeneous terrain.
a) Source dispersion model b) Emission Model
c) Receptor model d) Gaussian plume model

8) _____ estimates temporal and spatial emission based on per unit of activity and meteorology.
a) Receptor model b) Emission model
c) Source dispersion model d) Plume Behavior

9) _____ helps to visualize and also helps to understand different terminologies associated with the solution of linear programming.
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10) _____ is a mathematical technique suitable for optimization of multistage decision problems.
a) Dynamic programming b) Queuing theory
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11) _____ includes testing and experimentation models as a iterative process.
a) System approach b) System Programming
c) Statistical analysis d) System analysis

12) System approach provides the _____ scheme that makes involvement accessible.
a) Life cycle planning b) Life cycle integration
c) Decision making d) integrated Training

13) _____ is a line of thought in management which Stresses the interactive nature and interdependence in an organization.
a) System analysis b) System approach
c) Quantitative methods d) System programming

14) _____ is a use of system analysis and simulation to minimize complex of ecological system.
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c) Ecological modeling d) Conceptual model

SLR-GF-88

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Systems (197042716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 is compulsory in Section I, and solve any two questions from the remaining.
2) Question No. 6 is compulsory in Section II, and solve any two questions from the remaining.
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Section – I

Q.2	**a)**	Explain what is building modeling.	**05**
	b)	Explain with neat sketch the scope of System approach.	**05**
Q.3	**a)**	Explain the characteristics of Integrated Waste Management.	**04**
	b)	Explain three basic models which are used in system approach.	**05**
Q.4	**a)**	Explain the characteristics of Population ecology.	**04**
	b)	Explain with neat sketch the model of sustainable waste management.	**05**
Q.5	**Write Short Notes**		
	a)	Concepts and principle of Population dynamics.	**05**
	b)	Benefits of Integrated waste Management.	**04**

Section – II

Q.6	**a)**	Explain the basic concept of Wastewater model.	**05**
	b)	Explain the equation of continuity for rectangular model.	**05**
Q.7	**a)**	Explain Linear programming and its applications in civil engineering.	**05**
	b)	Explain the salient features of Optimization.	**04**
Q.8	**a)**	Explain the pollutant standard index criteria.	**04**
	b)	Explain the wastewater treatment process (Aerobic Process).	**05**
Q.9	**Write short notes.**		
	a)	Point source Gaussian plume model.	**05**
	b)	Motor Vehicle Emission.	**04**

SLR-GF-89

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Water Power Engineering (197042717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book).
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of only non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Unit power in a turbine is _____.
a) $P/H^{1/2}$ b) P/H
c) $P/H^{3/2}$ d) $P/H^{3/4}$

2) The pumped storage scheme is employed to supply water _____.
a) during the off-peak hours b) during the peak hours
c) system base load d) none of above

3) Minimum pressure occurs in flowing power tunnel at the time of _____.
a) load rejection b) load acceptance
c) head race d) fail race

4) The capacity of small hydro power plant are in order of _____.
a) 1-15 MW b) 15-20 MW
c) 20-50 MW d) 50-100 MW

5) The draft tube is provided to _____.
a) reduce the effect of water hammer
b) raise the water surface of the stream to create an artificial head
c) increase the artificial head on the water wheel
d) none of the above

6) The specific speed of water turbine is the speed at which the turbine _____ develops.
a) maximum horse power b) a minimum horse power
c) unit horse power at unit head d) unit horse power at all head

7) Annual depreciation of the plant is proportional to the earning capacity _____ of the plant void.
a) sinking fund depreciation b) straight line depreciation
c) reducing balance depreciation d) None of above

8) Water hammer "process in penstock result in _____.
a) pressure decreases
b) noise decreases
c) noise increases, pressure increases, velocity decreases
d) none

9) In hydro electric power station what is an enlarge body of water just above the intake and used as a regulating reservoir called as _____.
a) Penstock b) Spillways
c) Reservoir d) Fore bay

10) Jet ratio 'm' is defined as the ratio of _____.
a) Diameter of jet of water to diameter of pelton wheel
b) Velocity of vane to velocity of jet of water
c) Velocity of flow to velocity of jet of water
d) Diameter of pelton wheel to diameter of jet

11) Surge tank is necessarily provided _____.
a) long penstocks b) short length penstocks
c) surface penstocks d) embedded penstocks

12) The specific speeds of Pelton wheel, Francis and Kaplan turbines are in _____.
a) Increasing order
b) Decreasing order
c) Neither increasing nor decreasing order
d) None

13) For harnessing low variable water heads the suitable hydraulic turbine with reaction and adjustable vanes is _____.
a) Pelton b) Francis
c) Impeller d) Kaplan

14) The flow through penstocks and pressure conducts is generally _____.
a) laminar b) turbulent
c) both a) and b) d) none of these

SLR-GF-89

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Water Power Engineering (197042717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat labelled diagrams whenever necessary.
4) Use of only non-programmable calculator is allowed.
5) Assume suitable data wherever necessary.

Section – I

Q.2 Solve Any Four. **16**

a) What do you understand by non-conventional sources of power generation? What is the scope of these sources in India?

b) Discuss the merits and demerits of Hydropower plants.

c) What are the various objectives of planning for water power development?

d) Common load shared by two stations base load plant with $60\ \text{MW}$ capacity and other beuing standby plant with $60\ \text{MW}$ capacity. The yearly out put for base load station is $250 \times 10^6\ \text{KWh}$, and for standby station is $24 \times 10^6\ \text{KWh}$. The peak load taken by standby station is $20\ \text{MW}$ which works for $2200\ \text{hrs}$ during the year. The base load station takes peak load as $35\ \text{MW}$. Calculate annual load factor, plant use factor, and capacity factor for both the stations.

e) What do you understand by base load and peak load power plants?

Q.3 Solve Any Two. **12**

a) What do you understand by Run of river plants? What are the parts and arrangement of such plants? Draw a neat sketch.

b) A penstock, with an internal diameter 1.20 m. supplies water at a head equivalent to 17.0 kg/cm^2. There is a possibility of 20% in the pressure due to transient conditions. The design stress and the efficiency of the joint may be assumed to be 1000 kg/cm^{2}and 85% resp. Find the wall thickness of penstock.

c) Enlist the different types of Draft tubes. Sketch any two and write advantages of them.

Section – II

Q.4 Solve Any Four. **16**

a) What are the advantages of reaction turbine over the pelton wheel turbine in respect of efficiency, size, cost and maintenance?

b) Explain the function of Anchor block and enlist the forces acting on it.

c) A power canal, bed width 15m, may be assumed to be rectangular in shape with a steady state of flow of 3m. The canal supplies water to a power house with three turbines, each turbine rated at a discharge of $30m^3$ /s. If the in the power house is suddenly thrown off so that two of the turbines have to be shut down, what would be the height of the surge in the canal.

d) A closed cycle p-s plant, with gross head of 400 m, has a head race tunnel 4.5 m diameter and 800m long. The flow velocity is 7.0 m/sec and friction factor f=0.02, if the overall efficiencies of pumping and generation are 86% and 90% resp. calculate the plant efficiency.

e) What do you understand by 'pump storage plant? What are the advantages and disadvantages of this power plant?

Q.5 Solve Any Two. **12**

a) What topographical features are in favour of adopting underground power plant? What are its types? Draw neat layout.

b) Write short note on

i) Peak and base load power plant

ii) Geothermal power plant

c) Describe how ocean tides one generated? also state the limitations of tidal power generation.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Water Power Engineering (197042717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book).
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5) Use of only non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Water hammer "process in penstock result in _____.
a) pressure decreases
b) noise decreases
c) noise increases, pressure increases, velocity decreases
d) none

2) In hydro electric power station what is an enlarge body of water just above the intake and used as a regulating reservoir called as _____.
a) Penstock b) Spillways
c) Reservoir d) Fore bay

3) Jet ratio 'm' is defined as the ratio of _____.
a) Diameter of jet of water to diameter of pelton wheel
b) Velocity of vane to velocity of jet of water
c) Velocity of flow to velocity of jet of water
d) Diameter of pelton wheel to diameter of jet

4) Surge tank is necessarily provided _____.
a) long penstocks b) short length penstocks
c) surface penstocks d) embedded penstocks

5) The specific speeds of Pelton wheel, Francis and Kaplan turbines are in _____.
a) Increasing order
b) Decreasing order
c) Neither increasing nor decreasing order
d) None

6) For harnessing low variable water heads the suitable hydraulic turbine with reaction and adjustable vanes is _____.
a) Pelton b) Francis
c) Impeller d) Kaplan

7) The flow through penstocks and pressure conducts is generally _____.
a) laminar b) turbulent
c) both a) and b) d) none of these

8) Unit power in a turbine is _____.
a) $P/H^{1/2}$ b) P/H
c) $P/H^{3/2}$ d) $P/H^{3/4}$

9) The pumped storage scheme is employed to supply water _____.
a) during the off-peak hours b) during the peak hours
c) system base load d) none of above

10) Minimum pressure occurs in flowing power tunnel at the time of _____.
a) load rejection b) load acceptance
c) head race d) fail race

11) The capacity of small hydro power plant are in order of _____.
a) 1-15 MW b) 15-20 MW
c) 20-50 MW d) 50-100 MW

12) The draft tube is provided to _____.
a) reduce the effect of water hammer
b) raise the water surface of the stream to create an artificial head
c) increase the artificial head on the water wheel
d) none of the above

13) The specific speed of water turbine is the speed at which the turbine _____ develops.
a) maximum horse power b) a minimum horse power
c) unit horse power at unit head d) unit horse power at all head

14) Annual depreciation of the plant is proportional to the earning capacity _____ of the plant void.
a) sinking fund depreciation b) straight line depreciation
c) reducing balance depreciation d) None of above

SLR-GF-89

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Water Power Engineering (197042717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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4) Use of only non-programmable calculator is allowed.
5) Assume suitable data wherever necessary.

Section – I

Q.2 Solve Any Four. **16**

a) What do you understand by non-conventional sources of power generation? What is the scope of these sources in India?

b) Discuss the merits and demerits of Hydropower plants.

c) What are the various objectives of planning for water power development?

d) Common load shared by two stations base load plant with $60\ \text{MW}$ capacity and other beuing standby plant with $60\ \text{MW}$ capacity. The yearly out put for base load station is $250 \times 10^6\ \text{KWh}$, and for standby station is $24 \times 10^6\ \text{KWh}$. The peak load taken by standby station is $20\ \text{MW}$ which works for $2200\ \text{hrs}$ during the year. The base load station takes peak load as $35\ \text{MW}$. Calculate annual load factor, plant use factor, and capacity factor for both the stations.

e) What do you understand by base load and peak load power plants?

Q.3 Solve Any Two. **12**

a) What do you understand by Run of river plants? What are the parts and arrangement of such plants? Draw a neat sketch.

b) A penstock, with an internal diameter 1.20 m. supplies water at a head equivalent to 17.0 kg/cm^2. There is a possibility of 20% in the pressure due to transient conditions. The design stress and the efficiency of the joint may be assumed to be 1000 kg/cm^{2}and 85% resp. Find the wall thickness of penstock.

c) Enlist the different types of Draft tubes. Sketch any two and write advantages of them.

Section – II

Q.4 Solve Any Four. **16**

a) What are the advantages of reaction turbine over the pelton wheel turbine in respect of efficiency, size, cost and maintenance?

b) Explain the function of Anchor block and enlist the forces acting on it.

c) A power canal, bed width 15m, may be assumed to be rectangular in shape with a steady state of flow of 3m. The canal supplies water to a power house with three turbines, each turbine rated at a discharge of $30m^3$ /s. If the in the power house is suddenly thrown off so that two of the turbines have to be shut down, what would be the height of the surge in the canal.

d) A closed cycle p-s plant, with gross head of 400 m, has a head race tunnel 4.5 m diameter and 800m long. The flow velocity is 7.0 m/sec and friction factor f=0.02, if the overall efficiencies of pumping and generation are 86% and 90% resp. calculate the plant efficiency.

e) What do you understand by 'pump storage plant? What are the advantages and disadvantages of this power plant?

Q.5 Solve Any Two. **12**

a) What topographical features are in favour of adopting underground power plant? What are its types? Draw neat layout.

b) Write short note on

i) Peak and base load power plant

ii) Geothermal power plant

c) Describe how ocean tides one generated? also state the limitations of tidal power generation.

SLR-GF-89

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Water Power Engineering (197042717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book).
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of only non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Surge tank is necessarily provided _____.
a) long penstocks b) short length penstocks
c) surface penstocks d) embedded penstocks

2) The specific speeds of Pelton wheel, Francis and Kaplan turbines are in _____.
a) Increasing order
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3) For harnessing low variable water heads the suitable hydraulic turbine with reaction and adjustable vanes is _____.
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7) Minimum pressure occurs in flowing power tunnel at the time of _____.
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c) Reservoir d) Fore bay

14) Jet ratio 'm' is defined as the ratio of _____.
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b) Velocity of vane to velocity of jet of water
c) Velocity of flow to velocity of jet of water
d) Diameter of pelton wheel to diameter of jet

SLR-GF-89

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Water Power Engineering (197042717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat labelled diagrams whenever necessary.
4) Use of only non-programmable calculator is allowed.
5) Assume suitable data wherever necessary.

Section – I

Q.2 Solve Any Four. **16**

a) What do you understand by non-conventional sources of power generation? What is the scope of these sources in India?

b) Discuss the merits and demerits of Hydropower plants.

c) What are the various objectives of planning for water power development?

d) Common load shared by two stations base load plant with $60\ \text{MW}$ capacity and other beuing standby plant with $60\ \text{MW}$ capacity. The yearly out put for base load station is $250 \times 10^6\ \text{KWh}$, and for standby station is $24 \times 10^6\ \text{KWh}$. The peak load taken by standby station is $20\ \text{MW}$ which works for $2200\ \text{hrs}$ during the year. The base load station takes peak load as $35\ \text{MW}$. Calculate annual load factor, plant use factor, and capacity factor for both the stations.

e) What do you understand by base load and peak load power plants?

Q.3 Solve Any Two. **12**

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c) Enlist the different types of Draft tubes. Sketch any two and write advantages of them.

Section – II

Q.4 Solve Any Four. **16**

a) What are the advantages of reaction turbine over the pelton wheel turbine in respect of efficiency, size, cost and maintenance?

b) Explain the function of Anchor block and enlist the forces acting on it.

c) A power canal, bed width 15m, may be assumed to be rectangular in shape with a steady state of flow of 3m. The canal supplies water to a power house with three turbines, each turbine rated at a discharge of $30m^3$ /s. If the in the power house is suddenly thrown off so that two of the turbines have to be shut down, what would be the height of the surge in the canal.

d) A closed cycle p-s plant, with gross head of 400 m, has a head race tunnel 4.5 m diameter and 800m long. The flow velocity is 7.0 m/sec and friction factor f=0.02, if the overall efficiencies of pumping and generation are 86% and 90% resp. calculate the plant efficiency.

e) What do you understand by 'pump storage plant? What are the advantages and disadvantages of this power plant?

Q.5 Solve Any Two. **12**

a) What topographical features are in favour of adopting underground power plant? What are its types? Draw neat layout.

b) Write short note on

i) Peak and base load power plant

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c) Describe how ocean tides one generated? also state the limitations of tidal power generation.

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Water Power Engineering (197042717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book).
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of only non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The specific speed of water turbine is the speed at which the turbine _____ develops.
a) maximum horse power b) a minimum horse power
c) unit horse power at unit head d) unit horse power at all head

2) Annual depreciation of the plant is proportional to the earning capacity _____ of the plant void.
a) sinking fund depreciation b) straight line depreciation
c) reducing balance depreciation d) None of above

3) Water hammer "process in penstock result in _____.
a) pressure decreases
b) noise decreases
c) noise increases, pressure increases, velocity decreases
d) none

4) In hydro electric power station what is an enlarge body of water just above the intake and used as a regulating reservoir called as _____.
a) Penstock b) Spillways
c) Reservoir d) Fore bay

5) Jet ratio 'm' is defined as the ratio of _____.
a) Diameter of jet of water to diameter of pelton wheel
b) Velocity of vane to velocity of jet of water
c) Velocity of flow to velocity of jet of water
d) Diameter of pelton wheel to diameter of jet

6) Surge tank is necessarily provided _____.
a) long penstocks b) short length penstocks
c) surface penstocks d) embedded penstocks

7) The specific speeds of Pelton wheel, Francis and Kaplan turbines are in _____.
a) Increasing order
b) Decreasing order
c) Neither increasing nor decreasing order
d) None

8) For harnessing low variable water heads the suitable hydraulic turbine with reaction and adjustable vanes is _____.
a) Pelton b) Francis
c) Impeller d) Kaplan

9) The flow through penstocks and pressure conducts is generally _____.
a) laminar b) turbulent
c) both a) and b) d) none of these

10) Unit power in a turbine is _____.
a) $P/H^{1/2}$ b) P/H
c) $P/H^{3/2}$ d) $P/H^{3/4}$

11) The pumped storage scheme is employed to supply water _____.
a) during the off-peak hours b) during the peak hours
c) system base load d) none of above

12) Minimum pressure occurs in flowing power tunnel at the time of _____.
a) load rejection b) load acceptance
c) head race d) fail race

13) The capacity of small hydro power plant are in order of _____.
a) 1-15 MW b) 15-20 MW
c) 20-50 MW d) 50-100 MW

14) The draft tube is provided to _____.
a) reduce the effect of water hammer
b) raise the water surface of the stream to create an artificial head
c) increase the artificial head on the water wheel
d) none of the above

SLR-GF-89

Seat No.	

Set S

Fourth Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Water Power Engineering (197042717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat labelled diagrams whenever necessary.
4) Use of only non-programmable calculator is allowed.
5) Assume suitable data wherever necessary.

Section – I

Q.2 Solve Any Four. **16**

a) What do you understand by non-conventional sources of power generation? What is the scope of these sources in India?

b) Discuss the merits and demerits of Hydropower plants.

c) What are the various objectives of planning for water power development?

d) Common load shared by two stations base load plant with $60\ \text{MW}$ capacity and other beuing standby plant with $60\ \text{MW}$ capacity. The yearly out put for base load station is $250 \times 10^6\ \text{KWh}$, and for standby station is $24 \times 10^6\ \text{KWh}$. The peak load taken by standby station is $20\ \text{MW}$ which works for $2200\ \text{hrs}$ during the year. The base load station takes peak load as $35\ \text{MW}$. Calculate annual load factor, plant use factor, and capacity factor for both the stations.

e) What do you understand by base load and peak load power plants?

Q.3 Solve Any Two. **12**

a) What do you understand by Run of river plants? What are the parts and arrangement of such plants? Draw a neat sketch.

b) A penstock, with an internal diameter 1.20 m. supplies water at a head equivalent to 17.0 kg/cm^2. There is a possibility of 20% in the pressure due to transient conditions. The design stress and the efficiency of the joint may be assumed to be 1000 kg/cm^{2}and 85% resp. Find the wall thickness of penstock.

c) Enlist the different types of Draft tubes. Sketch any two and write advantages of them.

Section – II

Q.4 Solve Any Four. **16**

a) What are the advantages of reaction turbine over the pelton wheel turbine in respect of efficiency, size, cost and maintenance?

b) Explain the function of Anchor block and enlist the forces acting on it.

c) A power canal, bed width 15m, may be assumed to be rectangular in shape with a steady state of flow of 3m. The canal supplies water to a power house with three turbines, each turbine rated at a discharge of $30m^3$ /s. If the in the power house is suddenly thrown off so that two of the turbines have to be shut down, what would be the height of the surge in the canal.

d) A closed cycle p-s plant, with gross head of 400 m, has a head race tunnel 4.5 m diameter and 800m long. The flow velocity is 7.0 m/sec and friction factor f=0.02, if the overall efficiencies of pumping and generation are 86% and 90% resp. calculate the plant efficiency.

e) What do you understand by 'pump storage plant? What are the advantages and disadvantages of this power plant?

Q.5 Solve Any Two. **12**

a) What topographical features are in favour of adopting underground power plant? What are its types? Draw neat layout.

b) Write short note on

i) Peak and base load power plant

ii) Geothermal power plant

c) Describe how ocean tides one generated? also state the limitations of tidal power generation.

SLR-GF-94

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Repairs and Rehabilitation of Structures (197042806)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The repair and rehabilitation of damaged or spalled concrete is done by removing the _____.
a) Loose concrete b) Collapsing
c) Breakage d) Bonding

2) The pH value of fresh concrete is around _____.
a) 10 b) 9
c) 8 d) 12.5

3) Mortar or concrete conveyed through pressure hose and applied pneumatically at high velocity on to a surface is called _____.
a) guniting b) grouting
c) sealing d) spraying

4) _____ is the main reason for crack generation in concrete.
a) Movement of humidity b) Sleep
c) Difference in temperature d) All of the above

5) _____ is not used in the underpinning work.
a) Heating method b) Frizzing method
c) Pit method d) All of the above

6) _____ type of plaster defect generates a series of hair cracks inside the plaster.
a) Crazing b) Blistering
c) Flaking d) Popping

7) _____ metal is used for making a foamed concrete.
a) Aluminum b) Zinc
c) a & b both d) None of the above

8) One of the testing equipment used for inspection of structural element is ____.
a) Strain Gauge b) Measuring Jar
c) Test Tubes d) None of these

9) The corrosion of reinforcement due to extreme exposure is common for structure located in _____.
a) Dry conditions b) Costal zones
c) Regional zones d) Hot condition

10) _____ is a similar phenomenon to explosion but the pieces collapse into the center of the object instead of being expelled.
a) Explosion b) An implosion
c) Both a and b d) None of the above

11) _____ is main purpose of test blasting.
a) To decide effectiveness of explosion
b) To decide a quality of explosion
c) To decide a size of explosion
d) To decide a cost of explosion

12) Remove a whole building or part of building in control way is known as _____.
a) restoration b) demolition
c) retrofitting d) maintenance

13) _____ equipment used for starting the explosion in explosive material.
a) Detonators b) Starting cap
c) Current switch d) None of the above

14) _____ factor does not affect the quantity of the explosive material.
a) Column size b) Column shape
c) Size of demolition d) Depth of the hole

SLR-GF-94

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Repairs and Rehabilitation of Structures (197042806)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any one. **10**
- **a)** Explain the various causes for deterioration of concrete structures.
- **b)** Explain assessment procedures for inspection and evaluating a damaged structure.

Q.3 Solve any two. **18**
- **a)** Explain with sketches Shoring and Underpinning.
- **b)** Discuss in detail maintenance of structure.
- **c)** Discuss Shotcrete and Guniting as repair techniques.
- **d)** Explain vacuum concrete and bacterial concrete.

Section – II

Q.4 Solve any one. **10**
- **a)** Explain with sketches retrofitting and jacketing method used in repairs of beams and columns.
- **b)** Explain in detail structural health monitoring.

Q.5 Solve any two. **18**
- **a)** Repairs for leakages in R.C slab.
- **b)** Repairs of marine structures.
- **c)** Demolition techniques used for dilapidated buildings.
- **d)** Repair techniques used in corroded slab.

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Repairs and Rehabilitation of Structures (197042806)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) One of the testing equipment used for inspection of structural element is ____.
a) Strain Gauge b) Measuring Jar
c) Test Tubes d) None of these

2) The corrosion of reinforcement due to extreme exposure is common for structure located in _____.
a) Dry conditions b) Costal zones
c) Regional zones d) Hot condition

3) _____ is a similar phenomenon to explosion but the pieces collapse into the center of the object instead of being expelled.
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4) _____ is main purpose of test blasting.
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c) retrofitting d) maintenance

6) _____ equipment used for starting the explosion in explosive material.
a) Detonators b) Starting cap
c) Current switch d) None of the above

7) _____ factor does not affect the quantity of the explosive material.
a) Column size b) Column shape
c) Size of demolition d) Depth of the hole

8) The repair and rehabilitation of damaged or spalled concrete is done by removing the _____.
a) Loose concrete b) Collapsing
c) Breakage d) Bonding

9) The pH value of fresh concrete is around _____.
a) 10 b) 9
c) 8 d) 12.5

10) Mortar or concrete conveyed through pressure hose and applied pneumatically at high velocity on to a surface is called _____.

a) guniting b) grouting
c) sealing d) spraying

11) _____ is the main reason for crack generation in concrete.

a) Movement of humidity b) Sleep
c) Difference in temperature d) All of the above

12) _____ is not used in the underpinning work.

a) Heating method b) Frizzing method
c) Pit method d) All of the above

13) _____ type of plaster defect generates a series of hair cracks inside the plaster.

a) Crazing b) Blistering
c) Flaking d) Popping

14) _____ metal is used for making a foamed concrete.

a) Aluminum b) Zinc
c) a & b both d) None of the above

SLR-GF-94

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Repairs and Rehabilitation of Structures (197042806)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any one. **10**

a) Explain the various causes for deterioration of concrete structures.
b) Explain assessment procedures for inspection and evaluating a damaged structure.

Q.3 Solve any two. **18**

a) Explain with sketches Shoring and Underpinning.
b) Discuss in detail maintenance of structure.
c) Discuss Shotcrete and Guniting as repair techniques.
d) Explain vacuum concrete and bacterial concrete.

Section – II

Q.4 Solve any one. **10**

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b) Explain in detail structural health monitoring.

Q.5 Solve any two. **18**

a) Repairs for leakages in R.C slab.
b) Repairs of marine structures.
c) Demolition techniques used for dilapidated buildings.
d) Repair techniques used in corroded slab.

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Repairs and Rehabilitation of Structures (197042806)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ is main purpose of test blasting.
a) To decide effectiveness of explosion
b) To decide a quality of explosion
c) To decide a size of explosion
d) To decide a cost of explosion

2) Remove a whole building or part of building in control way is known as _____.
a) restoration b) demolition
c) retrofitting d) maintenance

3) _____ equipment used for starting the explosion in explosive material.
a) Detonators b) Starting cap
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4) _____ factor does not affect the quantity of the explosive material.
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12) One of the testing equipment used for inspection of structural element is ____.
a) Strain Gauge b) Measuring Jar
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13) The corrosion of reinforcement due to extreme exposure is common for structure located in _____.
a) Dry conditions b) Costal zones
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14) _____ is a similar phenomenon to explosion but the pieces collapse into the center of the object instead of being expelled.
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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Repairs and Rehabilitation of Structures (197042806)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any one. **10**
- **a)** Explain the various causes for deterioration of concrete structures.
- **b)** Explain assessment procedures for inspection and evaluating a damaged structure.

Q.3 Solve any two. **18**
- **a)** Explain with sketches Shoring and Underpinning.
- **b)** Discuss in detail maintenance of structure.
- **c)** Discuss Shotcrete and Guniting as repair techniques.
- **d)** Explain vacuum concrete and bacterial concrete.

Section – II

Q.4 Solve any one. **10**
- **a)** Explain with sketches retrofitting and jacketing method used in repairs of beams and columns.
- **b)** Explain in detail structural health monitoring.

Q.5 Solve any two. **18**
- **a)** Repairs for leakages in R.C slab.
- **b)** Repairs of marine structures.
- **c)** Demolition techniques used for dilapidated buildings.
- **d)** Repair techniques used in corroded slab.

SLR-GF-94

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Repairs and Rehabilitation of Structures (197042806)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ type of plaster defect generates a series of hair cracks inside the plaster.
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13) _____ is the main reason for crack generation in concrete.
a) Movement of humidity b) Sleep
c) Difference in temperature d) All of the above

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c) Pit method d) All of the above

SLR-GF-94

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Repairs and Rehabilitation of Structures (197042806)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any one. **10**
- **a)** Explain the various causes for deterioration of concrete structures.
- **b)** Explain assessment procedures for inspection and evaluating a damaged structure.

Q.3 Solve any two. **18**
- **a)** Explain with sketches Shoring and Underpinning.
- **b)** Discuss in detail maintenance of structure.
- **c)** Discuss Shotcrete and Guniting as repair techniques.
- **d)** Explain vacuum concrete and bacterial concrete.

Section – II

Q.4 Solve any one. **10**
- **a)** Explain with sketches retrofitting and jacketing method used in repairs of beams and columns.
- **b)** Explain in detail structural health monitoring.

Q.5 Solve any two. **18**
- **a)** Repairs for leakages in R.C slab.
- **b)** Repairs of marine structures.
- **c)** Demolition techniques used for dilapidated buildings.
- **d)** Repair techniques used in corroded slab.

SLR-GF-97

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Air & Noise Pollution and Control (197042813)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The prime factors in order to minimize air pollution problems by site selection are _____.
a) Potential effects of surrounding area
b) Clean air available
c) Meteorological factors and climate
d) Topographical features

2) Cyclone Separator works on the principle of _____.
a) Gravity Force b) Inertia Force
c) Centrifugal Force d) None of these

3) Acid Rain is caused by Oxides of _____.
a) Phosphorus and Carbon b) Sulphur and Nitrogen
c) Sulphur and Phosphorus d) Nitrogen and Carbon

4) _____ removes both gaseous and Particulate Contaminants.
a) Cyclone b) Gravitational settling Chamber
c) Electrostatic Precipitator d) Wet Scrubber

5) The _____ of a sound wave is the measure of the height of the wave.
a) Frequency b) Amplitude
c) Period d) Intensity

6) Noise pollution can be measured in _____.
a) Pa b) dB
c) Hz d) Hb

7) According to Noise Pollution Rule 2000, the night time noise for educational institute is _____.
a) 55 dB b) 45 dB
c) 60 dB d) None of these

8) Which gas is mainly produced due to incomplete burning of wood?
a) CO b) SO_2
c) NO_2 d) NO_3

9) The chimney is emitting particulate matter. Which of the following is the correct expression of the height of the chimney? Here 'Kp' represents the emission of particulate matter.

a) $\mathrm{HC} = 74\ \mathrm{K_p}^{0.27}$ b) $\mathrm{HC} = 14\ \mathrm{K_p}^{0.27}$

c) $\mathrm{HC} = 14\ \mathrm{K_p}^{0.47}$ d) $\mathrm{HC} = 74\ \mathrm{K_p}^{0.33}$

10) The major photochemical smog is _____.

a) Hydrogen peroxide b) Chlorofluorocarbon

c) Peroxyacetyl nitrate d) All of the above

11) Hb present in blood has 200 times more affinity towards _____ than O_2.

a) CO_2 b) CO

c) SO_3 d) O_3

12) The change of air temperature with height influence the upward lift of air pollutant discharge into atmosphere is also known as _____.

a) Subsidence inversion b) Sub adiabatic lapse rate

c) Adiabatic lapse rate d) Temperature gradient

13) The _____ of atmosphere influences the corrosive action of air pollutants and also indicates fog formation.

a) Moisture content b) Visibility

c) Solar Radiation d) Photo Chemical Smog

14) _____type of plume is emitted under extreme inversion condition.

a) Coning b) Fanning

c) Looping d) Lofting

SLR-GF-97

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Air & Noise Pollution and Control (197042813)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain Common Air Pollutants and its sources in a tabular form. **05**

b) What are different zones of atmosphere? Explain with the help of neat graph. **05**

Q.3 **a)** Determine the effective stack height given by the following data. **05**

- Physical stack height = 200 m
- Inside diameter of stack = 1.02 m
- Air temperature = 12°C
- Barometric pressure = 1000 mbar
- Stack gas velocity = 8.75 m/sec
- Stack gas temperature = 139°C
- Wind speed = 4.5 m/sec

b) Write a short note on Kyoto Protocol and Montreal Protocol. **04**

Q.4 **a)** Explain meteorological factors influencing air pollution. **05**

b) Explain Gaussian Plume model with neat sketch. **04**

Q.5 **Write short notes on. (Any Three)** **09**

a) Green House Gas Effect
b) Global Warming
c) Air Pollution Indices
d) Photochemical Smog

Section – II

Q.6 **a)** Explain with neat sketch, principle and working operation of electrostatic Precipitator. **05**

b) Two air pollution equipment's (Gravity settling Chamber and Cyclone Separator) are connected in series. Efficiencies of Gravity settling Chamber and Cyclone Separator is 80% and 75% respectively. Determine overall efficiency of the system. **05**

Q.7	**a)**	Describe the sources and control of Noise Pollution.	**05**
	b)	Explain the basic concepts of acoustics of sound.	**04**
Q.8	**a)**	Explain the advantages and disadvantages of Cyclone Separator.	**05**
	b)	Explain the characteristics and its standards with respect to noise.	**04**

Q.9 Write short notes on (Any Three) **09**

a) Sound Pressure Level (SPL)
b) Noise pollution Indices
c) Write a short note on 'Packed Towers' with the help of neat diagram
d) Effects of Noise pollution

SLR-GF-97

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Air & Noise Pollution and Control (197042813)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which gas is mainly produced due to incomplete burning of wood?
a) CO b) SO_2
c) NO_2 d) NO_3

2) The chimney is emitting particulate matter. Which of the following is the correct expression of the height of the chimney? Here 'Kp' represents the emission of particulate matter.
a) $\mathrm{HC} = 74\ \mathrm{K_p}^{0.27}$ b) $\mathrm{HC} = 14\ \mathrm{K_p}^{0.27}$
c) $\mathrm{HC} = 14\ \mathrm{K_p}^{0.47}$ d) $\mathrm{HC} = 74\ \mathrm{K_p}^{0.33}$

3) The major photochemical smog is _____.
a) Hydrogen peroxide b) Chlorofluorocarbon
c) Peroxyacetyl nitrate d) All of the above

4) Hb present in blood has 200 times more affinity towards _____ than O_2.
a) CO_2 b) CO
c) SO_3 d) O_3

5) The change of air temperature with height influence the upward lift of air pollutant discharge into atmosphere is also known as _____.
a) Subsidence inversion b) Sub adiabatic lapse rate
c) Adiabatic lapse rate d) Temperature gradient

6) The _____ of atmosphere influences the corrosive action of air pollutants and also indicates fog formation.
a) Moisture content b) Visibility
c) Solar Radiation d) Photo Chemical Smog

7) _____type of plume is emitted under extreme inversion condition.
a) Coning b) Fanning
c) Looping d) Lofting

8) The prime factors in order to minimize air pollution problems by site selection are _____.
a) Potential effects of surrounding area
b) Clean air available
c) Meteorological factors and climate
d) Topographical features

9) Cyclone Separator works on the principle of _____.
a) Gravity Force b) Inertia Force
c) Centrifugal Force d) None of these

10) Acid Rain is caused by Oxides of _____.
a) Phosphorus and Carbon b) Sulphur and Nitrogen
c) Sulphur and Phosphorus d) Nitrogen and Carbon

11) _____ removes both gaseous and Particulate Contaminants.
a) Cyclone b) Gravitational settling Chamber
c) Electrostatic Precipitator d) Wet Scrubber

12) The _____ of a sound wave is the measure of the height of the wave.
a) Frequency b) Amplitude
c) Period d) Intensity

13) Noise pollution can be measured in _____.
a) Pa b) dB
c) Hz d) Hb

14) According to Noise Pollution Rule 2000, the night time noise for educational institute is _____.
a) 55 dB b) 45 dB
c) 60 dB d) None of these

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Air & Noise Pollution and Control (197042813)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
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4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain Common Air Pollutants and its sources in a tabular form. **05**

b) What are different zones of atmosphere? Explain with the help of neat graph. **05**

Q.3 **a)** Determine the effective stack height given by the following data. **05**

- Physical stack height = 200 m
- Inside diameter of stack = 1.02 m
- Air temperature = 12°C
- Barometric pressure = 1000 mbar
- Stack gas velocity = 8.75 m/sec
- Stack gas temperature = 139°C
- Wind speed = 4.5 m/sec

b) Write a short note on Kyoto Protocol and Montreal Protocol. **04**

Q.4 **a)** Explain meteorological factors influencing air pollution. **05**

b) Explain Gaussian Plume model with neat sketch. **04**

Q.5 **Write short notes on. (Any Three)** **09**

a) Green House Gas Effect
b) Global Warming
c) Air Pollution Indices
d) Photochemical Smog

Section – II

Q.6 **a)** Explain with neat sketch, principle and working operation of electrostatic Precipitator. **05**

b) Two air pollution equipment's (Gravity settling Chamber and Cyclone Separator) are connected in series. Efficiencies of Gravity settling Chamber and Cyclone Separator is 80% and 75% respectively. Determine overall efficiency of the system. **05**

Q.7	**a)**	Describe the sources and control of Noise Pollution.	**05**
	b)	Explain the basic concepts of acoustics of sound.	**04**
Q.8	**a)**	Explain the advantages and disadvantages of Cyclone Separator.	**05**
	b)	Explain the characteristics and its standards with respect to noise.	**04**

Q.9 Write short notes on (Any Three) **09**

a) Sound Pressure Level (SPL)
b) Noise pollution Indices
c) Write a short note on 'Packed Towers' with the help of neat diagram
d) Effects of Noise pollution

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Air & Noise Pollution and Control (197042813)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Hb present in blood has 200 times more affinity towards _____ than O_2.
a) CO_2 b) CO
c) SO_3 d) O_3

2) The change of air temperature with height influence the upward lift of air pollutant discharge into atmosphere is also known as _____.
a) Subsidence inversion b) Sub adiabatic lapse rate
c) Adiabatic lapse rate d) Temperature gradient

3) The _____ of atmosphere influences the corrosive action of air pollutants and also indicates fog formation.
a) Moisture content b) Visibility
c) Solar Radiation d) Photo Chemical Smog

4) _____type of plume is emitted under extreme inversion condition.
a) Coning b) Fanning
c) Looping d) Lofting

5) The prime factors in order to minimize air pollution problems by site selection are _____.
a) Potential effects of surrounding area
b) Clean air available
c) Meteorological factors and climate
d) Topographical features

6) Cyclone Separator works on the principle of _____.
a) Gravity Force b) Inertia Force
c) Centrifugal Force d) None of these

7) Acid Rain is caused by Oxides of _____.
a) Phosphorus and Carbon b) Sulphur and Nitrogen
c) Sulphur and Phosphorus d) Nitrogen and Carbon

8) _____ removes both gaseous and Particulate Contaminants.
a) Cyclone b) Gravitational settling Chamber
c) Electrostatic Precipitator d) Wet Scrubber

9) The _____ of a sound wave is the measure of the height of the wave.
a) Frequency b) Amplitude
c) Period d) Intensity

10) Noise pollution can be measured in _____.
a) Pa b) dB
c) Hz d) Hb

11) According to Noise Pollution Rule 2000, the night time noise for educational institute is _____.
a) 55 dB b) 45 dB
c) 60 dB d) None of these

12) Which gas is mainly produced due to incomplete burning of wood?
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13) The chimney is emitting particulate matter. Which of the following is the correct expression of the height of the chimney? Here 'Kp' represents the emission of particulate matter.
a) $\mathrm{HC} = 74\ \mathrm{K_p}^{0.27}$ b) $\mathrm{HC} = 14\ \mathrm{K_p}^{0.27}$
c) $\mathrm{HC} = 14\ \mathrm{K_p}^{0.47}$ d) $\mathrm{HC} = 74\ \mathrm{K_p}^{0.33}$

14) The major photochemical smog is _____.
a) Hydrogen peroxide b) Chlorofluorocarbon
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Set R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Air & Noise Pollution and Control (197042813)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
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Section – I

Q.2 **a)** Explain Common Air Pollutants and its sources in a tabular form. **05**

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Q.3 **a)** Determine the effective stack height given by the following data. **05**

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b) Write a short note on Kyoto Protocol and Montreal Protocol. **04**

Q.4 **a)** Explain meteorological factors influencing air pollution. **05**

b) Explain Gaussian Plume model with neat sketch. **04**

Q.5 **Write short notes on. (Any Three)** **09**

a) Green House Gas Effect
b) Global Warming
c) Air Pollution Indices
d) Photochemical Smog

Section – II

Q.6 **a)** Explain with neat sketch, principle and working operation of electrostatic Precipitator. **05**

b) Two air pollution equipment's (Gravity settling Chamber and Cyclone Separator) are connected in series. Efficiencies of Gravity settling Chamber and Cyclone Separator is 80% and 75% respectively. Determine overall efficiency of the system. **05**

Q.7	**a)**	Describe the sources and control of Noise Pollution.	**05**
	b)	Explain the basic concepts of acoustics of sound.	**04**
Q.8	**a)**	Explain the advantages and disadvantages of Cyclone Separator.	**05**
	b)	Explain the characteristics and its standards with respect to noise.	**04**

Q.9 Write short notes on (Any Three) **09**

a) Sound Pressure Level (SPL)
b) Noise pollution Indices
c) Write a short note on 'Packed Towers' with the help of neat diagram
d) Effects of Noise pollution

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Air & Noise Pollution and Control (197042813)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Noise pollution can be measured in _____.
a) Pa b) dB
c) Hz d) Hb

2) According to Noise Pollution Rule 2000, the night time noise for educational institute is _____.
a) 55 dB b) 45 dB
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3) Which gas is mainly produced due to incomplete burning of wood?
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4) The chimney is emitting particulate matter. Which of the following is the correct expression of the height of the chimney? Here 'Kp' represents the emission of particulate matter.
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c) $\mathrm{HC} = 14\ \mathrm{K_p}^{0.47}$ d) $\mathrm{HC} = 74\ \mathrm{K_p}^{0.33}$

5) The major photochemical smog is _____.
a) Hydrogen peroxide b) Chlorofluorocarbon
c) Peroxyacetyl nitrate d) All of the above

6) Hb present in blood has 200 times more affinity towards _____ than O_2.
a) CO_2 b) CO
c) SO_3 d) O_3

7) The change of air temperature with height influence the upward lift of air pollutant discharge into atmosphere is also known as _____.
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c) Adiabatic lapse rate d) Temperature gradient

8) The _____ of atmosphere influences the corrosive action of air pollutants and also indicates fog formation.
a) Moisture content b) Visibility
c) Solar Radiation d) Photo Chemical Smog

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a) Coning b) Fanning
c) Looping d) Lofting

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11) Cyclone Separator works on the principle of _____.
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12) Acid Rain is caused by Oxides of _____.
a) Phosphorus and Carbon b) Sulphur and Nitrogen
c) Sulphur and Phosphorus d) Nitrogen and Carbon

13) _____ removes both gaseous and Particulate Contaminants.
a) Cyclone b) Gravitational settling Chamber
c) Electrostatic Precipitator d) Wet Scrubber

14) The _____ of a sound wave is the measure of the height of the wave.
a) Frequency b) Amplitude
c) Period d) Intensity

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Air & Noise Pollution and Control (197042813)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
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5) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain Common Air Pollutants and its sources in a tabular form. **05**
b) What are different zones of atmosphere? Explain with the help of neat graph. **05**

Q.3 **a)** Determine the effective stack height given by the following data. **05**
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- Air temperature = 12°C
- Barometric pressure = 1000 mbar
- Stack gas velocity = 8.75 m/sec
- Stack gas temperature = 139°C
- Wind speed = 4.5 m/sec

b) Write a short note on Kyoto Protocol and Montreal Protocol. **04**

Q.4 **a)** Explain meteorological factors influencing air pollution. **05**
b) Explain Gaussian Plume model with neat sketch. **04**

Q.5 **Write short notes on. (Any Three)** **09**
a) Green House Gas Effect
b) Global Warming
c) Air Pollution Indices
d) Photochemical Smog

Section – II

Q.6 **a)** Explain with neat sketch, principle and working operation of electrostatic Precipitator. **05**
b) Two air pollution equipment's (Gravity settling Chamber and Cyclone Separator) are connected in series. Efficiencies of Gravity settling Chamber and Cyclone Separator is 80% and 75% respectively. Determine overall efficiency of the system. **05**

Q.7	**a)**	Describe the sources and control of Noise Pollution.	**05**
	b)	Explain the basic concepts of acoustics of sound.	**04**
Q.8	**a)**	Explain the advantages and disadvantages of Cyclone Separator.	**05**
	b)	Explain the characteristics and its standards with respect to noise.	**04**

Q.9 Write short notes on (Any Three) **09**

a) Sound Pressure Level (SPL)
b) Noise pollution Indices
c) Write a short note on 'Packed Towers' with the help of neat diagram
d) Effects of Noise pollution

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Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (197042821)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries two marks.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Use of non-programmable calculator is allowed.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. (Two marks each) 14

1) Testing of hardened concrete can be done by _____.
a) Schmidt's Rebound Hammer b) Penetration technique
c) Dynamic Method d) All of these

2) Measurement of concrete workability is done by _____.
a) Compacting factor test b) Abrasion test
c) Soundness test d) Setting time test

3) Fineness of cement is done by the sieve _____.
a) 600μ b) 300μ
c) 150μ d) 90μ

4) Which of the following is not a composition of cement?
a) Tricalcium Silicate b) Dicalcium Silicate
c) Tricalcium Aluminate d) Dicalcium Aluminate

5) The characteristic strength of concrete is defined as the strength of the concrete below which not more than _____ of the test result are expected to fall.
a) 20% b) 10%
c) 5% d) 0%

6) The approximate value of the total shrinkage strain of concrete may be taken as _____.
a) 3.0 b) 0.3
c) 0.003 d) 0.0003

7) The workability of concrete by slump test is expressed as _____.
a) mm b) mm^2
c) mm^3 d) Unit less

Seat No.	

Set | P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (197042821)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2 Explain the mechanism of action of retarders. **10**

Q.3 How would you improve the bond of fresh concrete to hardened concrete? **09**

Q.4 What are the factors which control the performance of HPC? **09**

Q.5 What method would you adopt to place the concrete under water? Explain in detail. **09**

Section – II

Q.6 Describe wet-process shotcreting. **10**

Q.7 Discuss crack propagation in concrete. **09**

Q.8 What are the special requirements for mix proportions of concrete which is to be pumped? **09**

Q.9 What is meant by jacketing of concrete sections? Describe the different types of jacketing. **09**

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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3) Use of non-programmable calculator is allowed.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. (Two marks each) 14

1) Which of the following is not a composition of cement?
a) Tricalcium Silicate b) Dicalcium Silicate
c) Tricalcium Aluminate d) Dicalcium Aluminate

2) The characteristic strength of concrete is defined as the strength of the concrete below which not more than _____ of the test result are expected to fall.
a) 20% b) 10%
c) 5% d) 0%

3) The approximate value of the total shrinkage strain of concrete may be taken as _____.
a) 3.0 b) 0.3
c) 0.003 d) 0.0003

4) The workability of concrete by slump test is expressed as _____.
a) mm b) mm^2
c) mm^3 d) Unit less

5) Testing of hardened concrete can be done by _____.
a) Schmidt's Rebound Hammer b) Penetration technique
c) Dynamic Method d) All of these

6) Measurement of concrete workability is done by _____.
a) Compacting factor test b) Abrasion test
c) Soundness test d) Setting time test

7) Fineness of cement is done by the sieve _____.
a) 600μ b) 300μ
c) 150μ d) 90μ

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (197042821)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
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4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2 Explain the mechanism of action of retarders. **10**

Q.3 How would you improve the bond of fresh concrete to hardened concrete? **09**

Q.4 What are the factors which control the performance of HPC? **09**

Q.5 What method would you adopt to place the concrete under water? Explain in detail. **09**

Section – II

Q.6 Describe wet-process shotcreting. **10**

Q.7 Discuss crack propagation in concrete. **09**

Q.8 What are the special requirements for mix proportions of concrete which is to be pumped? **09**

Q.9 What is meant by jacketing of concrete sections? Describe the different types of jacketing. **09**

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (197042821)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
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3) Use of non-programmable calculator is allowed.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. (Two marks each) 14

1) The approximate value of the total shrinkage strain of concrete may be taken as _____.
a) 3.0 b) 0.3
c) 0.003 d) 0.0003

2) The workability of concrete by slump test is expressed as _____.
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c) mm^3 d) Unit less

3) Testing of hardened concrete can be done by _____.
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c) Dynamic Method d) All of these

4) Measurement of concrete workability is done by _____.
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5) Fineness of cement is done by the sieve _____.
a) 600μ b) 300μ
c) 150μ d) 90μ

6) Which of the following is not a composition of cement?
a) Tricalcium Silicate b) Dicalcium Silicate
c) Tricalcium Aluminate d) Dicalcium Aluminate

7) The characteristic strength of concrete is defined as the strength of the concrete below which not more than _____ of the test result are expected to fall.
a) 20% b) 10%
c) 5% d) 0%

Seat No.	

Set | R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (197042821)

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Section – I

Q.2 Explain the mechanism of action of retarders. **10**

Q.3 How would you improve the bond of fresh concrete to hardened concrete? **09**

Q.4 What are the factors which control the performance of HPC? **09**

Q.5 What method would you adopt to place the concrete under water? Explain in detail. **09**

Section – II

Q.6 Describe wet-process shotcreting. **10**

Q.7 Discuss crack propagation in concrete. **09**

Q.8 What are the special requirements for mix proportions of concrete which is to be pumped? **09**

Q.9 What is meant by jacketing of concrete sections? Describe the different types of jacketing. **09**

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Seat No.	

Set S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (197042821)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Use of non-programmable calculator is allowed.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. (Two marks each) 14

1) Measurement of concrete workability is done by _____.
a) Compacting factor test b) Abrasion test
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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Advanced Concrete Technology (197042821)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2	Explain the mechanism of action of retarders.	**10**
Q.3	How would you improve the bond of fresh concrete to hardened concrete?	**09**
Q.4	What are the factors which control the performance of HPC?	**09**
Q.5	What method would you adopt to place the concrete under water? Explain in detail.	**09**

Section – II

Q.6	Describe wet-process shotcreting.	**10**
Q.7	Discuss crack propagation in concrete.	**09**
Q.8	What are the special requirements for mix proportions of concrete which is to be pumped?	**09**
Q.9	What is meant by jacketing of concrete sections? Describe the different types of jacketing.	**09**

SLR-GF-104

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (197042816)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No. 3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The minimum width of carriage way for a two lane bridge is _____.
a) 4.25m b) 10m
c) 6m d) 7.5m

2) _____ is the minimum grade of concrete for prestressed concrete bridges.
a) M-30 b) M-20
c) M-40 d) M-25

3) The minimum width of carriage way for a single lane bridge is _____.
a) 4.25m b) 6m
c) 10m d) 7.5m

4) As per IRC-21, minimum clear cover to any reinforcement bar is _____.
a) 40mm b) 25mm
c) 50mm d) 30mm

5) As per crack control criteria of IRC-21, the spacing of main reinforced bar shall not exceed _____.
a) 100mm b) 300mm
c) 200mm d) 150mm

6) Permissible direct compressive stress for M-20 concrete is _____.
a) 3.8 MPa b) 5.0 MPa
c) 7 MPa d) 6.2 MPa

7) Courbon's theory is applicable only when the ratio of span to width is _____.
a) Greater than 2 but less than 4 b) Greater than 4
c) Greater than 4 but less than 6 d) None of these

8) T- Beam bridges are most commonly adopted in the span of _____.
a) 5-8m b) 10-25m
c) 30-50m d) None of these

9) As per crack control criteria of IRC-21, the diameter of bar in slabs shall not exceed _____.
a) 36mm b) 32mm
c) 25mm d) 40mm

10) The minimum number of cross beams in a bridge should be _____.
a) 3 b) 5
c) 6 d) None of these

11) The minimum cement content for minor bridges is _____.
a) 250 kg/mm^3 b) 360 kg/mm^3
c) 400 kg/mm^3 d) 450 kg/mm^3

12) Span is called as economical span when _____.
a) Cost of substructure should be equal to cost of superstructure
b) Cost of substructure should be greater than cost of superstructure
c) Cost of substructure should be less than cost of superstructure
d) Does not depend on cost

13) Simply supported span requires _____.
a) Fixed bearing at both ends
b) Expansion bearing at both ends
c) Fixed bearing at one end and expansion bearing at the other
d) Either a or b, both are correct

14) Continuous girder requires _____.
a) Fixed bearing on all supports
b) Expansion bearing on all supports
c) Expansion bearing on all support except at one
d) Fixed bearing on all support except at one

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (197042816)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 4 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 **a)** Enlist the various loads to be considered for the analysis of bridges? Explain any one in detail. **05**

b) Give the detail classification of Bridges. **04**

Q.3 Design a solid deck slab for Two lane bridge with following data: **09**
a) Effective span - 7 m
b) Carriage way width - 7.5 m
c) Kerb - 600 × 275 on both side
d) Live load - IRC Class A (two lane)
e) Wearing coat - 100 mm thick
f) Use M-25 concrete and Fe- 415 steel
g) Use α = 2.68

Q.4 A RCC 'T' beam type bridge having deck slab of 200 mm thick, wearing coat of 100 mm thick, four longitudinal girders and five cross girders. Design the exterior longitudinal girder. Use following additional data, **10**
a) Carriage way width - 10 m
b) Span of bridge - 16 m
c) Live Load - IRC class AA Tracked
d) Kerb - 600 mm wide, 400 mm deep
e) Web thickness for Longitudinal and cross girder - 300 mm
f) Longitudinal Girder spacing - 300 m
g) Use M-25 concrete and Fe- 415 steel

Q.5 Design a slab panel having size of 3 m × 4.5 m. Consider IRC class AA tracked loading. Use Pigeaud's chart. Consider thickness of slab as 220 mm and wearing coat thickness as 85 mm. Use M-30 concrete and Fe-415 steel. Refer Fig 1 and 2 for Pigeuad's coefficient. **09**

Section – II

Q.6 Verify the adequacy of pier for the following data: **10**
Top width of pier - 1.8 m, Height of pier upto springing level - 12 m,
C/C distance of bearing - 1.1 m, Side batter 1:14, HFL - 1.3 m below the bearing level, Span of bridge - 16 m, Self weight of the superstructure = 220 kN/m,
Live load - IRC class AA tracked, Material of pier = M20 concrete.

Q.7 Verify the suitability of abutment as shown in the fig 7.1. Use following data **09**
Density of soil - 18 kN/m^3, Friction angle of soil $(\emptyset) = 30°$.
Coefficient of friction - 0.5, Live load IRC class AA tracked

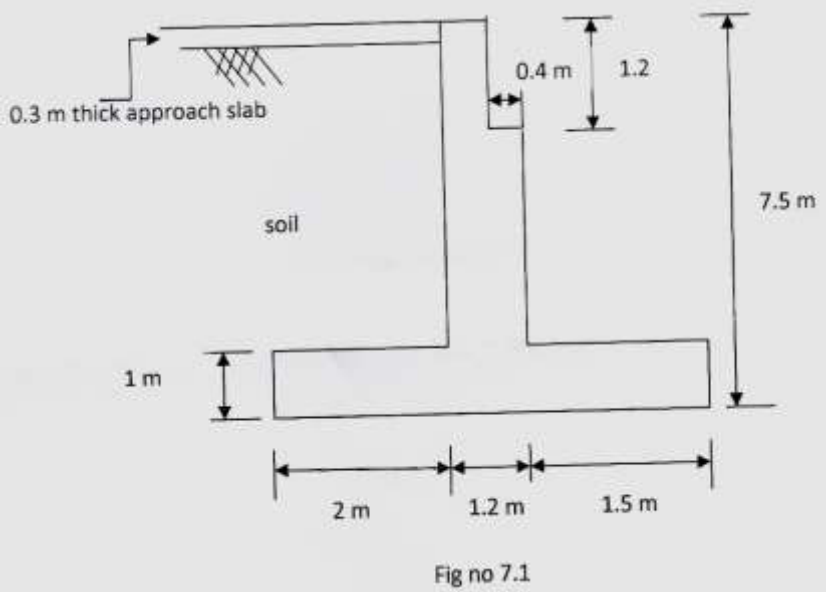

Fig no 7.1

Q.8 **a)** Design an elastomeric unreinforced bearing pad for following data **05**
Vertical load (sustained) = 170 kN,
Vertical load (dynamic) = 50 kN,
Horizontal force = 90 kN
Modulus of rigidity of elastomer - 1.1 N/mm^2
coefficient of friction = 0.4

b) Write a note on inspection bridges. **04**

Q.9 **Write a note on following (Any three)** **09**

a) Types of foundation for bridges
b) Types of bridge pier with their suitability
c) Expansion joints
d) Instruments required for bridge inspection

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (197042816)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No. 3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) T- Beam bridges are most commonly adopted in the span of _____.
a) 5-8m b) 10-25m
c) 30-50m d) None of these

2) As per crack control criteria of IRC-21, the diameter of bar in slabs shall not exceed _____.
a) 36mm b) 32mm
c) 25mm d) 40mm

3) The minimum number of cross beams in a bridge should be _____.
a) 3 b) 5
c) 6 d) None of these

4) The minimum cement content for minor bridges is _____.
a) 250 kg/mm^3 b) 360 kg/mm^3
c) 400 kg/mm^3 d) 450 kg/mm^3

5) Span is called as economical span when _____.
a) Cost of substructure should be equal to cost of superstructure
b) Cost of substructure should be greater than cost of superstructure
c) Cost of substructure should be less than cost of superstructure
d) Does not depend on cost

6) Simply supported span requires _____.
a) Fixed bearing at both ends
b) Expansion bearing at both ends
c) Fixed bearing at one end and expansion bearing at the other
d) Either a or b, both are correct

7) Continuous girder requires _____.
a) Fixed bearing on all supports
b) Expansion bearing on all supports
c) Expansion bearing on all support except at one
d) Fixed bearing on all support except at one

8) The minimum width of carriage way for a two lane bridge is _____.
a) 4.25m b) 10m
c) 6m d) 7.5m

9) _____ is the minimum grade of concrete for prestressed concrete bridges.
a) M-30 b) M-20
c) M-40 d) M-25

10) The minimum width of carriage way for a single lane bridge is _____.
a) 4.25m b) 6m
c) 10m d) 7.5m

11) As per IRC-21, minimum clear cover to any reinforcement bar is _____.
a) 40mm b) 25mm
c) 50mm d) 30mm

12) As per crack control criteria of IRC-21, the spacing of main reinforced bar shall not exceed _____.
a) 100mm b) 300mm
c) 200mm d) 150mm

13) Permissible direct compressive stress for M-20 concrete is _____.
a) 3.8 MPa b) 5.0 MPa
c) 7 MPa d) 6.2 MPa

14) Courbon's theory is applicable only when the ratio of span to width is _____.
a) Greater than 2 but less than 4 b) Greater than 4
c) Greater than 4 but less than 6 d) None of these

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (197042816)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 4 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 **a)** Enlist the various loads to be considered for the analysis of bridges? Explain any one in detail. **05**

b) Give the detail classification of Bridges. **04**

Q.3 Design a solid deck slab for Two lane bridge with following data: **09**
a) Effective span - 7 m
b) Carriage way width - 7.5 m
c) Kerb - 600 × 275 on both side
d) Live load - IRC Class A (two lane)
e) Wearing coat - 100 mm thick
f) Use M-25 concrete and Fe- 415 steel
g) Use α = 2.68

Q.4 A RCC 'T' beam type bridge having deck slab of 200 mm thick, wearing coat of 100 mm thick, four longitudinal girders and five cross girders. Design the exterior longitudinal girder. Use following additional data, **10**
a) Carriage way width - 10 m
b) Span of bridge - 16 m
c) Live Load - IRC class AA Tracked
d) Kerb - 600 mm wide, 400 mm deep
e) Web thickness for Longitudinal and cross girder - 300 mm
f) Longitudinal Girder spacing - 300 m
g) Use M-25 concrete and Fe- 415 steel

Q.5 Design a slab panel having size of 3 m × 4.5 m. Consider IRC class AA tracked loading. Use Pigeaud's chart. Consider thickness of slab as 220 mm and wearing coat thickness as 85 mm. Use M-30 concrete and Fe-415 steel. Refer Fig 1 and 2 for Pigeuad's coefficient. **09**

Section – II

Q.6 Verify the adequacy of pier for the following data: **10**
Top width of pier - 1.8 m, Height of pier upto springing level - 12 m,
C/C distance of bearing - 1.1 m, Side batter 1:14, HFL - 1.3 m below the bearing level, Span of bridge - 16 m, Self weight of the superstructure = 220 kN/m,
Live load - IRC class AA tracked, Material of pier = M20 concrete.

Q.7 Verify the suitability of abutment as shown in the fig 7.1. Use following data **09**
Density of soil - 18 kN/m^3, Friction angle of soil $(\emptyset) = 30°$.
Coefficient of friction - 0.5, Live load IRC class AA tracked

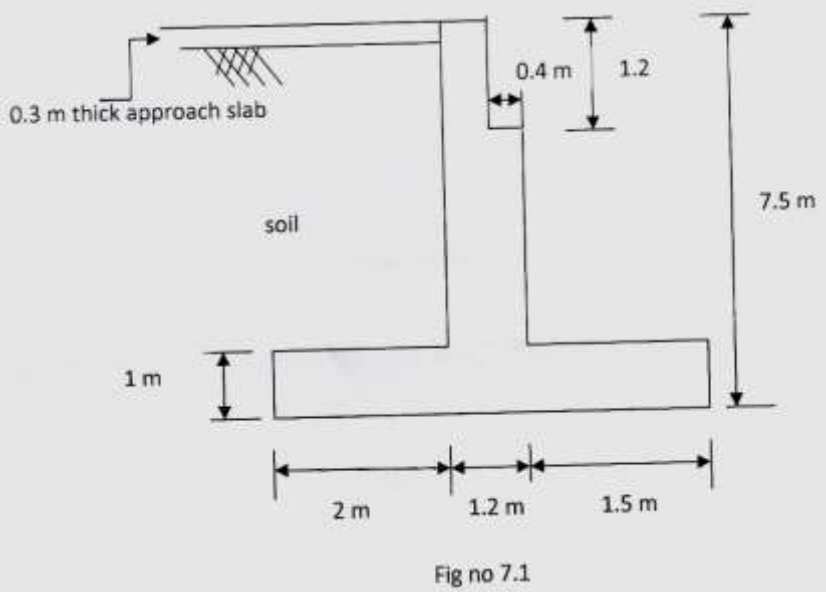

Fig no 7.1

Q.8 **a)** Design an elastomeric unreinforced bearing pad for following data **05**
Vertical load (sustained) = 170 kN,
Vertical load (dynamic) = 50 kN,
Horizontal force = 90 kN
Modulus of rigidity of elastomer - 1.1 N/mm^2
coefficient of friction = 0.4

b) Write a note on inspection bridges. **04**

Q.9 **Write a note on following (Any three)** **09**
a) Types of foundation for bridges
b) Types of bridge pier with their suitability
c) Expansion joints
d) Instruments required for bridge inspection

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (197042816)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No. 3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The minimum cement content for minor bridges is _____.
a) 250 kg/mm^3 b) 360 kg/mm^3
c) 400 kg/mm^3 d) 450 kg/mm^3

2) Span is called as economical span when _____.
a) Cost of substructure should be equal to cost of superstructure
b) Cost of substructure should be greater than cost of superstructure
c) Cost of substructure should be less than cost of superstructure
d) Does not depend on cost

3) Simply supported span requires _____.
a) Fixed bearing at both ends
b) Expansion bearing at both ends
c) Fixed bearing at one end and expansion bearing at the other
d) Either a or b, both are correct

4) Continuous girder requires _____.
a) Fixed bearing on all supports
b) Expansion bearing on all supports
c) Expansion bearing on all support except at one
d) Fixed bearing on all support except at one

5) The minimum width of carriage way for a two lane bridge is _____.
a) 4.25m b) 10m
c) 6m d) 7.5m

6) _____ is the minimum grade of concrete for prestressed concrete bridges.
a) M-30 b) M-20
c) M-40 d) M-25

7) The minimum width of carriage way for a single lane bridge is _____.
a) 4.25m b) 6m
c) 10m d) 7.5m

8) As per IRC-21, minimum clear cover to any reinforcement bar is _____.
a) 40mm b) 25mm
c) 50mm d) 30mm

9) As per crack control criteria of IRC-21, the spacing of main reinforced bar shall not exceed _____.

a) 100mm b) 300mm
c) 200mm d) 150mm

10) Permissible direct compressive stress for M-20 concrete is _____.

a) 3.8 MPa b) 5.0 MPa
c) 7 MPa d) 6.2 MPa

11) Courbon's theory is applicable only when the ratio of span to width is _____.

a) Greater than 2 but less than 4 b) Greater than 4
c) Greater than 4 but less than 6 d) None of these

12) T- Beam bridges are most commonly adopted in the span of _____.

a) 5-8m b) 10-25m
c) 30-50m d) None of these

13) As per crack control criteria of IRC-21, the diameter of bar in slabs shall not exceed _____.

a) 36mm b) 32mm
c) 25mm d) 40mm

14) The minimum number of cross beams in a bridge should be _____.

a) 3 b) 5
c) 6 d) None of these

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (197042816)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 4 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 **a)** Enlist the various loads to be considered for the analysis of bridges? Explain any one in detail. **05**

b) Give the detail classification of Bridges. **04**

Q.3 Design a solid deck slab for Two lane bridge with following data: **09**
a) Effective span - 7 m
b) Carriage way width - 7.5 m
c) Kerb - 600 × 275 on both side
d) Live load - IRC Class A (two lane)
e) Wearing coat - 100 mm thick
f) Use M-25 concrete and Fe- 415 steel
g) Use α = 2.68

Q.4 A RCC 'T' beam type bridge having deck slab of 200 mm thick, wearing coat of 100 mm thick, four longitudinal girders and five cross girders. Design the exterior longitudinal girder. Use following additional data, **10**
a) Carriage way width - 10 m
b) Span of bridge - 16 m
c) Live Load - IRC class AA Tracked
d) Kerb - 600 mm wide, 400 mm deep
e) Web thickness for Longitudinal and cross girder - 300 mm
f) Longitudinal Girder spacing - 300 m
g) Use M-25 concrete and Fe- 415 steel

Q.5 Design a slab panel having size of 3 m × 4.5 m. Consider IRC class AA tracked loading. Use Pigeaud's chart. Consider thickness of slab as 220 mm and wearing coat thickness as 85 mm. Use M-30 concrete and Fe-415 steel. Refer Fig 1 and 2 for Pigeuad's coefficient. **09**

Section – II

Q.6 Verify the adequacy of pier for the following data: **10**
Top width of pier - 1.8 m, Height of pier upto springing level - 12 m,
C/C distance of bearing - 1.1 m, Side batter 1:14, HFL - 1.3 m below the bearing level, Span of bridge - 16 m, Self weight of the superstructure = 220 kN/m,
Live load - IRC class AA tracked, Material of pier = M20 concrete.

Q.7 Verify the suitability of abutment as shown in the fig 7.1. Use following data **09**
Density of soil - 18 kN/m^3, Friction angle of soil $(\emptyset) = 30°$.
Coefficient of friction - 0.5, Live load IRC class AA tracked

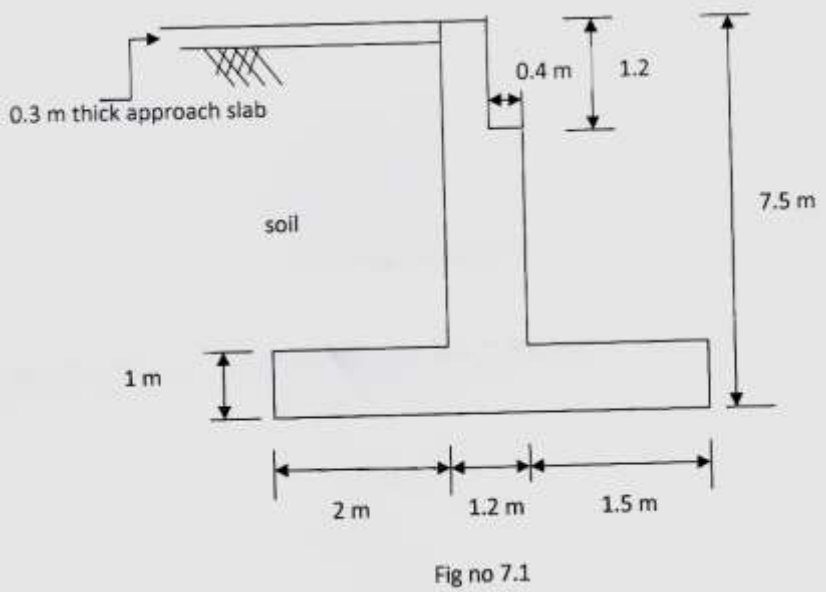

Fig no 7.1

Q.8 **a)** Design an elastomeric unreinforced bearing pad for following data **05**
Vertical load (sustained) = 170 kN,
Vertical load (dynamic) = 50 kN,
Horizontal force = 90 kN
Modulus of rigidity of elastomer - 1.1 N/mm^2
coefficient of friction = 0.4

b) Write a note on inspection bridges. **04**

Q.9 **Write a note on following (Any three)** **09**

a) Types of foundation for bridges
b) Types of bridge pier with their suitability
c) Expansion joints
d) Instruments required for bridge inspection

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (197042816)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No. 3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Permissible direct compressive stress for M-20 concrete is _____.
a) 3.8 MPa b) 5.0 MPa
c) 7 MPa d) 6.2 MPa

2) Courbon's theory is applicable only when the ratio of span to width is _____.
a) Greater than 2 but less than 4 b) Greater than 4
c) Greater than 4 but less than 6 d) None of these

3) T- Beam bridges are most commonly adopted in the span of _____.
a) 5-8m b) 10-25m
c) 30-50m d) None of these

4) As per crack control criteria of IRC-21, the diameter of bar in slabs shall not exceed _____.
a) 36mm b) 32mm
c) 25mm d) 40mm

5) The minimum number of cross beams in a bridge should be _____.
a) 3 b) 5
c) 6 d) None of these

6) The minimum cement content for minor bridges is _____.
a) 250 kg/mm^3 b) 360 kg/mm^3
c) 400 kg/mm^3 d) 450 kg/mm^3

7) Span is called as economical span when _____.
a) Cost of substructure should be equal to cost of superstructure
b) Cost of substructure should be greater than cost of superstructure
c) Cost of substructure should be less than cost of superstructure
d) Does not depend on cost

8) Simply supported span requires _____.
a) Fixed bearing at both ends
b) Expansion bearing at both ends
c) Fixed bearing at one end and expansion bearing at the other
d) Either a or b, both are correct

9) Continuous girder requires _____.
a) Fixed bearing on all supports
b) Expansion bearing on all supports
c) Expansion bearing on all support except at one
d) Fixed bearing on all support except at one

10) The minimum width of carriage way for a two lane bridge is _____.
a) 4.25m b) 10m
c) 6m d) 7.5m

11) _____ is the minimum grade of concrete for prestressed concrete bridges.
a) M-30 b) M-20
c) M-40 d) M-25

12) The minimum width of carriage way for a single lane bridge is _____.
a) 4.25m b) 6m
c) 10m d) 7.5m

13) As per IRC-21, minimum clear cover to any reinforcement bar is _____.
a) 40mm b) 25mm
c) 50mm d) 30mm

14) As per crack control criteria of IRC-21, the spacing of main reinforced bar shall not exceed _____.
a) 100mm b) 300mm
c) 200mm d) 150mm

Seat No.	

Set | S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design of Bridges (197042816)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 4 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 **a)** Enlist the various loads to be considered for the analysis of bridges? Explain any one in detail. **05**

b) Give the detail classification of Bridges. **04**

Q.3 Design a solid deck slab for Two lane bridge with following data: **09**
a) Effective span - 7 m
b) Carriage way width - 7.5 m
c) Kerb - 600 × 275 on both side
d) Live load - IRC Class A (two lane)
e) Wearing coat - 100 mm thick
f) Use M-25 concrete and Fe- 415 steel
g) Use α = 2.68

Q.4 A RCC 'T' beam type bridge having deck slab of 200 mm thick, wearing coat of 100 mm thick, four longitudinal girders and five cross girders. Design the exterior longitudinal girder. Use following additional data, **10**
a) Carriage way width - 10 m
b) Span of bridge - 16 m
c) Live Load - IRC class AA Tracked
d) Kerb - 600 mm wide, 400 mm deep
e) Web thickness for Longitudinal and cross girder - 300 mm
f) Longitudinal Girder spacing - 300 m
g) Use M-25 concrete and Fe- 415 steel

Q.5 Design a slab panel having size of 3 m × 4.5 m. Consider IRC class AA tracked loading. Use Pigeaud's chart. Consider thickness of slab as 220 mm and wearing coat thickness as 85 mm. Use M-30 concrete and Fe-415 steel. Refer Fig 1 and 2 for Pigeuad's coefficient. **09**

Section – II

Q.6 Verify the adequacy of pier for the following data: **10**
Top width of pier - 1.8 m, Height of pier upto springing level - 12 m,
C/C distance of bearing - 1.1 m, Side batter 1:14, HFL - 1.3 m below the bearing level, Span of bridge - 16 m, Self weight of the superstructure = 220 kN/m,
Live load - IRC class AA tracked, Material of pier = M20 concrete.

Q.7 Verify the suitability of abutment as shown in the fig 7.1. Use following data **09**
Density of soil - 18 kN/m^3, Friction angle of soil $(\emptyset) = 30°$.
Coefficient of friction - 0.5, Live load IRC class AA tracked

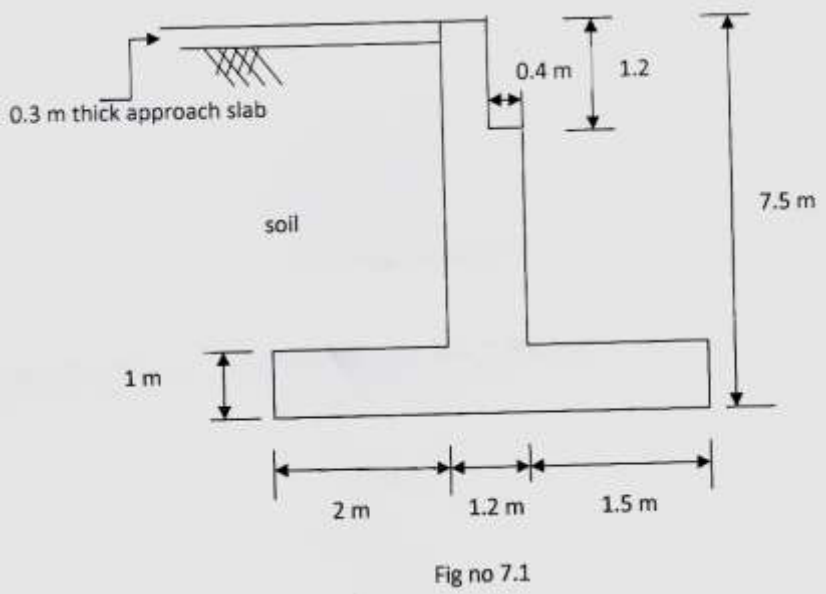

Fig no 7.1

Q.8 **a)** Design an elastomeric unreinforced bearing pad for following data **05**
Vertical load (sustained) = 170 kN,
Vertical load (dynamic) = 50 kN,
Horizontal force = 90 kN
Modulus of rigidity of elastomer - 1.1 N/mm^2
coefficient of friction = 0.4

b) Write a note on inspection bridges. **04**

Q.9 **Write a note on following (Any three)** **09**

a) Types of foundation for bridges
b) Types of bridge pier with their suitability
c) Expansion joints
d) Instruments required for bridge inspection

SLR-GF-110

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Railway & Harbour Engineering (197042801)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Once the head wore out during service, the rail could be inverted and reused. In which type of the rail this facility is available?
a) Double headed rail
b) Bull Headed rail
c) Flat footed rail
d) Both Bull headed and Double headed rails

2) For a sleeper density of (n+6), number of sleepers required for constructing a Broad Gauge (BG) railway track of length 650m is: _____
a) 975 b) 918
c) 950 d) 980

3) Bearing plates are used to fix _____.
a) Flat footed rails to the wooden sleepers
b) Double headed rails to the wooden sleepers
c) Bull headed rails to the wooden sleepers
d) Flat footed rails to the cast iron sleepers

4) The standard length of rail for Broad Gauge and Meter Gauge are respectively, _____.
a) 12m and 12m b) 13m and 12m
c) 12m and 13m d) 13m and 13m

5) Longitudinal movement of rails with respect to sleepers is called?
a) Coning of wheels b) Creep of rails
c) Wear of rails d) Tilting of rails

6) The angle between the gauge faces of the stock rail and tongue rail is called?
a) Switch angle b) Angle of crossing
c) Angle of turnout d) None of these

7) Which one of the following types of steel is used in the manufacturing of metro and mono rails?
a) Mild Steel b) Cast steel
c) Manganese Steel d) Bessemer Steel

8) Match List-I (Signals) with List-II (Function) and select the correct answer using the code given below: _____.

List – I	List – II
A. Outer signal	1. Departure signal
B. Starter Signal	2. Reception signal
C. Repeater signal	3. Shunting signal
D. Disc signal	4. Co-acting signal

Codes :

	A	B	C	D
a)	3	4	1	2
b)	2	1	4	3
c)	3	1	4	2
d)	2	4	1	3

9) In type-II Windrose Diagram covers _____.

a) Direction and duration of Wind
b) Only Duration of Wind
c) Only Direction of Wind
d) Direction, duration and intensity of wind

10) Which one of the following instance of performance of aircraft is not considered for determining basic runway length?

a) Normal Landing Case
b) Normal take-off case
c) Engine failure case
d) Emergency landing case

11) The runway length after correcting for elevation and temperature is 2845m. If the effective gradient on runway is 0.5%, then the revised runway length will be: _____.

a) 2845m
b) 2910m
c) 3030m
d) 3130m

12) The phenomenon of movement and deposition of sand in a zig-zag style due to drifting of sand in the vicinity of coast is called: _____.

a) Littoral drift
b) Sedimentation
c) Beach drift
d) Trough action

13) _____ is a structure constructed at the tip of a breakwater near the harbour entrance.

a) Dolphin
b) Wharf
c) Pier heads
d) Jetties

14) Slip is the space of water area between two _____.

a) Adjacent fenders
b) Adjacent piers
c) Adjacent jetties
d) Adjacent dolphins

Seat No.	

Set | P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Railway & Harbour Engineering (197042801)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 2 is compulsory and solve any one full question from remaining questions Q. No. 3 and 4.
2) Q. No. 5 is compulsory and solve any one full question from remaining questions Q. No. 6 and 7.
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4) Assume suitable data wherever needed & mention it clearly.

Section – I

Q.2 Answer any two questions. **10**

a) What do you understand by gauge? Mention the different gauges used on Indian Railways and its suitability.

b) Discuss the necessity and effects of coning of wheels and tilting of rails.

c) Draw a neat sketch of a left-hand-turn out and name its various components. Describe any one method of designing a turnout.

Q.3 Answer any three questions. **18**

a) Calculate the superelevation and the maximum permissible speed for a 2° BG transitioned curve on a high-speed route with a maximum sanctioned speed of 110 km/h. The speed for calculating the equilibrium superelevation as decided by the chief engineer is 80 km/h and the booked speed of goods trains is 50 km/h. Assume G= 1750mm and Radius=875m.

b) Calculate the maximum permissible load that a BG locomotive with three pairs of driving wheels bearing an axle load of 22tonne each can pull on a straight level track at a speed of 80 km/h. Also calculate the reduction in speed if the train has to run on a rising gradient of 1 in 200. Assume the coefficient of friction to be 0.2.

c) If a 8° curve track diverges from a main curve of 5° in an opposite direction in the layout of B. G. Yard, calculate the super elevation and the speed on the branch line, if the maximum speed permitted on the main line is 45 kmph. Assume any data required suitably. Use 30m arc length.

d) What is superelevation? Why is it necessary to provide superelevation on the curves of a railway track?

Q.4 Answer any three questions. **18**

a) What is meant by a crossing number and a crossing angle? How is crossing angle determined? Explain methods for the same.

b) Differentiate between the following:
1) Reception signals and departure signals
2) Semaphore signal and warner signal
3) Repeating signal and co-acting signal

c) Illustrate the working principle of key interlocking and mechanical interlocking with merits and de-merits.

d) Compare the various characteristics of steam, diesel and electric traction.

Section – II

Q.5 Answer any two questions. **10**

a) What are the imaginary surfaces? Explain any two imaginary surfaces with neat sketch.

b) What is a wind rose diagram? What are its types and explain any one with neat sketch?

c) What are the fenders? Why are they used? Describe various types of fenders with sketches.

Q.6 Answer any three questions. **18**

a) Design an exit taxiway joining a runway and a parallel main taxiway. The total angle of turn is 35° and the maximum turn-off speed is 80 kmph. Assume radius of entrance curve =731m, runway width=45m, taxiway width=22.5m. Draw a neat sketch showing all the design elements. Assume the separation clearance as 217.75m.

b) Define breakwater and list the different types of breakwaters. Explain any one with neat sketch.

c) What are dolphins? Describe their types.

d) Explain with neat sketches the limiting heights of objects in the approach and turning zone of an instrumental runway.

Q.7 Answer any three questions. **18**

a) Explain how the basic runway length is determined on the basis of the performance characteristics of jet and conventional engine aircrafts.

b) The length of a runway under standard conditions is 2100m. The airport is to be provided at elevation of 410m above the mean sea level. The airport reference temperature is 32°C. Determine the length of runway. Apply correctios for elevation and temperature as per ICAO and for gradient as per FAA specifications. The construction plan provides following data:

End to end of runway(m) 0-320	Grade (%)
0 to 320	+1.00
300 to 900	-0.50
900 to 1500	+0.50
1500 to 1800	+1.00
1800 to 2100	-0.50
2100 to 2700	-0.40
2700 to 3000	-0.10

c) Draw a neat sketch of dry dock (plan and section) and label all components, and explain the working principle of dry dock.

d) Determine the turning radius of the taxiway for a supersonic transport aircraft with a wheel base of 30m and tread of main loading gear as 7.2 m for a design turning speed of 60kmph. Assume co-efficient of friction between tyre and pavement surface as 0.13 and width of taxiway pavement as 22.50m.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Railway & Harbour Engineering (197042801)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Match List-I (Signals) with List-II (Function) and select the correct answer using the code given below: _____.

List – I	List – II
A. Outer signal	1. Departure signal
B. Starter Signal	2. Reception signal
C. Repeater signal	3. Shunting signal
D. Disc signal	4. Co-acting signal

Codes :

	A	B	C	D
a)	3	4	1	2
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2) In type-II Windrose Diagram covers _____.
a) Direction and duration of Wind
b) Only Duration of Wind
c) Only Direction of Wind
d) Direction, duration and intensity of wind

3) Which one of the following instance of performance of aircraft is not considered for determining basic runway length?
a) Normal Landing Case b) Normal take-off case
c) Engine failure case d) Emergency landing case

4) The runway length after correcting for elevation and temperature is 2845m. If the effective gradient on runway is 0.5%, then the revised runway length will be: _____.
a) 2845m b) 2910m
c) 3030m d) 3130m

5) The phenomenon of movement and deposition of sand in a zig-zag style due to drifting of sand in the vicinity of coast is called: _____.
a) Littoral drift b) Sedimentation
c) Beach drift d) Trough action

6) _____ is a structure constructed at the tip of a breakwater near the harbour entrance.
a) Dolphin b) Wharf
c) Pier heads d) Jetties

7) Slip is the space of water area between two _____.
a) Adjacent fenders b) Adjacent piers
c) Adjacent jetties d) Adjacent dolphins

8) Once the head wore out during service, the rail could be inverted and reused. In which type of the rail this facility is available?
a) Double headed rail
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c) Flat footed rail
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9) For a sleeper density of (n+6), number of sleepers required for constructing a Broad Gauge (BG) railway track of length 650m is: _____
a) 975 b) 918
c) 950 d) 980

10) Bearing plates are used to fix _____.
a) Flat footed rails to the wooden sleepers
b) Double headed rails to the wooden sleepers
c) Bull headed rails to the wooden sleepers
d) Flat footed rails to the cast iron sleepers

11) The standard length of rail for Broad Gauge and Meter Gauge are respectively, _____.
a) 12m and 12m b) 13m and 12m
c) 12m and 13m d) 13m and 13m

12) Longitudinal movement of rails with respect to sleepers is called?
a) Coning of wheels b) Creep of rails
c) Wear of rails d) Tilting of rails

13) The angle between the gauge faces of the stock rail and tongue rail is called?
a) Switch angle b) Angle of crossing
c) Angle of turnout d) None of these

14) Which one of the following types of steel is used in the manufacturing of metro and mono rails?
a) Mild Steel b) Cast steel
c) Manganese Steel d) Bessemer Steel

SLR-GF-110

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Railway & Harbour Engineering (197042801)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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Section – I

Q.2 Answer any two questions. **10**

a) What do you understand by gauge? Mention the different gauges used on Indian Railways and its suitability.

b) Discuss the necessity and effects of coning of wheels and tilting of rails.

c) Draw a neat sketch of a left-hand-turn out and name its various components. Describe any one method of designing a turnout.

Q.3 Answer any three questions. **18**

a) Calculate the superelevation and the maximum permissible speed for a 2° BG transitioned curve on a high-speed route with a maximum sanctioned speed of 110 km/h. The speed for calculating the equilibrium superelevation as decided by the chief engineer is 80 km/h and the booked speed of goods trains is 50 km/h. Assume G= 1750mm and Radius=875m.

b) Calculate the maximum permissible load that a BG locomotive with three pairs of driving wheels bearing an axle load of 22tonne each can pull on a straight level track at a speed of 80 km/h. Also calculate the reduction in speed if the train has to run on a rising gradient of 1 in 200. Assume the coefficient of friction to be 0.2.

c) If a 8° curve track diverges from a main curve of 5° in an opposite direction in the layout of B. G. Yard, calculate the super elevation and the speed on the branch line, if the maximum speed permitted on the main line is 45 kmph. Assume any data required suitably. Use 30m arc length.

d) What is superelevation? Why is it necessary to provide superelevation on the curves of a railway track?

Q.4 Answer any three questions. **18**

a) What is meant by a crossing number and a crossing angle? How is crossing angle determined? Explain methods for the same.

b) Differentiate between the following:
1) Reception signals and departure signals
2) Semaphore signal and warner signal
3) Repeating signal and co-acting signal

c) Illustrate the working principle of key interlocking and mechanical interlocking with merits and de-merits.

d) Compare the various characteristics of steam, diesel and electric traction.

Section – II

Q.5 Answer any two questions. **10**

a) What are the imaginary surfaces? Explain any two imaginary surfaces with neat sketch.

b) What is a wind rose diagram? What are its types and explain any one with neat sketch?

c) What are the fenders? Why are they used? Describe various types of fenders with sketches.

Q.6 Answer any three questions. **18**

a) Design an exit taxiway joining a runway and a parallel main taxiway. The total angle of turn is 35° and the maximum turn-off speed is 80 kmph. Assume radius of entrance curve =731m, runway width=45m, taxiway width=22.5m. Draw a neat sketch showing all the design elements. Assume the separation clearance as 217.75m.

b) Define breakwater and list the different types of breakwaters. Explain any one with neat sketch.

c) What are dolphins? Describe their types.

d) Explain with neat sketches the limiting heights of objects in the approach and turning zone of an instrumental runway.

Q.7 Answer any three questions. **18**

a) Explain how the basic runway length is determined on the basis of the performance characteristics of jet and conventional engine aircrafts.

b) The length of a runway under standard conditions is 2100m. The airport is to be provided at elevation of 410m above the mean sea level. The airport reference temperature is 32°C. Determine the length of runway. Apply correctios for elevation and temperature as per ICAO and for gradient as per FAA specifications. The construction plan provides following data:

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1500 to 1800	+1.00
1800 to 2100	-0.50
2100 to 2700	-0.40
2700 to 3000	-0.10

c) Draw a neat sketch of dry dock (plan and section) and label all components, and explain the working principle of dry dock.

d) Determine the turning radius of the taxiway for a supersonic transport aircraft with a wheel base of 30m and tread of main loading gear as 7.2 m for a design turning speed of 60kmph. Assume co-efficient of friction between tyre and pavement surface as 0.13 and width of taxiway pavement as 22.50m.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Railway & Harbour Engineering (197042801)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The runway length after correcting for elevation and temperature is 2845m. If the effective gradient on runway is 0.5%, then the revised runway length will be: _____.
a) 2845m b) 2910m
c) 3030m d) 3130m

2) The phenomenon of movement and deposition of sand in a zig-zag style due to drifting of sand in the vicinity of coast is called: _____.
a) Littoral drift b) Sedimentation
c) Beach drift d) Trough action

3) _____ is a structure constructed at the tip of a breakwater near the harbour entrance.
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4) Slip is the space of water area between two _____.
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5) Once the head wore out during service, the rail could be inverted and reused. In which type of the rail this facility is available?
a) Double headed rail
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d) Both Bull headed and Double headed rails

6) For a sleeper density of (n+6), number of sleepers required for constructing a Broad Gauge (BG) railway track of length 650m is: _____
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8) The standard length of rail for Broad Gauge and Meter Gauge are respectively, _____.
a) 12m and 12m b) 13m and 12m
c) 12m and 13m d) 13m and 13m

9) Longitudinal movement of rails with respect to sleepers is called?
a) Coning of wheels b) Creep of rails
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10) The angle between the gauge faces of the stock rail and tongue rail is called?
a) Switch angle b) Angle of crossing
c) Angle of turnout d) None of these

11) Which one of the following types of steel is used in the manufacturing of metro and mono rails?
a) Mild Steel b) Cast steel
c) Manganese Steel d) Bessemer Steel

12) Match List-I (Signals) with List-II (Function) and select the correct answer using the code given below: _____.

List – I	List – II
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Codes :

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a)	3	4	1	2
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SLR-GF-110

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Railway & Harbour Engineering (197042801)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
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Section – I

Q.2 Answer any two questions. **10**

a) What do you understand by gauge? Mention the different gauges used on Indian Railways and its suitability.

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c) Draw a neat sketch of a left-hand-turn out and name its various components. Describe any one method of designing a turnout.

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a) Calculate the superelevation and the maximum permissible speed for a 2° BG transitioned curve on a high-speed route with a maximum sanctioned speed of 110 km/h. The speed for calculating the equilibrium superelevation as decided by the chief engineer is 80 km/h and the booked speed of goods trains is 50 km/h. Assume G= 1750mm and Radius=875m.

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c) If a 8° curve track diverges from a main curve of 5° in an opposite direction in the layout of B. G. Yard, calculate the super elevation and the speed on the branch line, if the maximum speed permitted on the main line is 45 kmph. Assume any data required suitably. Use 30m arc length.

d) What is superelevation? Why is it necessary to provide superelevation on the curves of a railway track?

Q.4 Answer any three questions. **18**

a) What is meant by a crossing number and a crossing angle? How is crossing angle determined? Explain methods for the same.

b) Differentiate between the following:
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c) Illustrate the working principle of key interlocking and mechanical interlocking with merits and de-merits.

d) Compare the various characteristics of steam, diesel and electric traction.

Section – II

Q.5 Answer any two questions. **10**

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a) Explain how the basic runway length is determined on the basis of the performance characteristics of jet and conventional engine aircrafts.

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2100 to 2700	-0.40
2700 to 3000	-0.10

c) Draw a neat sketch of dry dock (plan and section) and label all components, and explain the working principle of dry dock.

d) Determine the turning radius of the taxiway for a supersonic transport aircraft with a wheel base of 30m and tread of main loading gear as 7.2 m for a design turning speed of 60kmph. Assume co-efficient of friction between tyre and pavement surface as 0.13 and width of taxiway pavement as 22.50m.

SLR-GF-110

Seat No.	

Set S

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CIVIL ENGINEERING
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The angle between the gauge faces of the stock rail and tongue rail is called?
a) Switch angle b) Angle of crossing
c) Angle of turnout d) None of these

2) Which one of the following types of steel is used in the manufacturing of metro and mono rails?
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3) Match List-I (Signals) with List-II (Function) and select the correct answer using the code given below: _____.

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6) The runway length after correcting for elevation and temperature is 2845m. If the effective gradient on runway is 0.5%, then the revised runway length will be: _____.
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7) The phenomenon of movement and deposition of sand in a zig-zag style due to drifting of sand in the vicinity of coast is called: _____.
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8) _____ is a structure constructed at the tip of a breakwater near the harbour entrance.
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10) Once the head wore out during service, the rail could be inverted and reused. In which type of the rail this facility is available?
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11) For a sleeper density of (n+6), number of sleepers required for constructing a Broad Gauge (BG) railway track of length 650m is: _____
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12) Bearing plates are used to fix _____.
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13) The standard length of rail for Broad Gauge and Meter Gauge are respectively, _____.
a) 12m and 12m b) 13m and 12m
c) 12m and 13m d) 13m and 13m

14) Longitudinal movement of rails with respect to sleepers is called?
a) Coning of wheels b) Creep of rails
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SLR-GF-110

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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2) Q. No. 5 is compulsory and solve any one full question from remaining questions Q. No. 6 and 7.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed & mention it clearly.

Section – I

Q.2 Answer any two questions. **10**

a) What do you understand by gauge? Mention the different gauges used on Indian Railways and its suitability.
b) Discuss the necessity and effects of coning of wheels and tilting of rails.
c) Draw a neat sketch of a left-hand-turn out and name its various components. Describe any one method of designing a turnout.

Q.3 Answer any three questions. **18**

a) Calculate the superelevation and the maximum permissible speed for a 2° BG transitioned curve on a high-speed route with a maximum sanctioned speed of 110 km/h. The speed for calculating the equilibrium superelevation as decided by the chief engineer is 80 km/h and the booked speed of goods trains is 50 km/h. Assume G= 1750mm and Radius=875m.
b) Calculate the maximum permissible load that a BG locomotive with three pairs of driving wheels bearing an axle load of 22tonne each can pull on a straight level track at a speed of 80 km/h. Also calculate the reduction in speed if the train has to run on a rising gradient of 1 in 200. Assume the coefficient of friction to be 0.2.
c) If a 8° curve track diverges from a main curve of 5° in an opposite direction in the layout of B. G. Yard, calculate the super elevation and the speed on the branch line, if the maximum speed permitted on the main line is 45 kmph. Assume any data required suitably. Use 30m arc length.
d) What is superelevation? Why is it necessary to provide superelevation on the curves of a railway track?

Q.4 Answer any three questions. **18**

a) What is meant by a crossing number and a crossing angle? How is crossing angle determined? Explain methods for the same.
b) Differentiate between the following:
1) Reception signals and departure signals
2) Semaphore signal and warner signal
3) Repeating signal and co-acting signal
c) Illustrate the working principle of key interlocking and mechanical interlocking with merits and de-merits.
d) Compare the various characteristics of steam, diesel and electric traction.

Section – II

Q.5 Answer any two questions. **10**

a) What are the imaginary surfaces? Explain any two imaginary surfaces with neat sketch.

b) What is a wind rose diagram? What are its types and explain any one with neat sketch?

c) What are the fenders? Why are they used? Describe various types of fenders with sketches.

Q.6 Answer any three questions. **18**

a) Design an exit taxiway joining a runway and a parallel main taxiway. The total angle of turn is 35° and the maximum turn-off speed is 80 kmph. Assume radius of entrance curve =731m, runway width=45m, taxiway width=22.5m. Draw a neat sketch showing all the design elements. Assume the separation clearance as 217.75m.

b) Define breakwater and list the different types of breakwaters. Explain any one with neat sketch.

c) What are dolphins? Describe their types.

d) Explain with neat sketches the limiting heights of objects in the approach and turning zone of an instrumental runway.

Q.7 Answer any three questions. **18**

a) Explain how the basic runway length is determined on the basis of the performance characteristics of jet and conventional engine aircrafts.

b) The length of a runway under standard conditions is 2100m. The airport is to be provided at elevation of 410m above the mean sea level. The airport reference temperature is 32°C. Determine the length of runway. Apply correctios for elevation and temperature as per ICAO and for gradient as per FAA specifications. The construction plan provides following data:

End to end of runway(m) 0-320	Grade (%)
0 to 320	+1.00
300 to 900	-0.50
900 to 1500	+0.50
1500 to 1800	+1.00
1800 to 2100	-0.50
2100 to 2700	-0.40
2700 to 3000	-0.10

c) Draw a neat sketch of dry dock (plan and section) and label all components, and explain the working principle of dry dock.

d) Determine the turning radius of the taxiway for a supersonic transport aircraft with a wheel base of 30m and tread of main loading gear as 7.2 m for a design turning speed of 60kmph. Assume co-efficient of friction between tyre and pavement surface as 0.13 and width of taxiway pavement as 22.50m.

SLR-GF-111

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Elective-III: Economic policies in India (197042802)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative: **14**

1) Which of the following statements is correct about British rule in India?
a) The literacy rate was high during the British rule in India
b) The infant mortality rate was high during the British rule in India
c) The life expectancy rate was high during the British rule in India
d) The female literacy rate was high during the British rule in India

2) Which of the following was the main interest of the zamindar during the British rule in India?
a) to produce cash crops
b) to collect rent from the farmers
c) to improve the condition of the agricultural sector
d) to produce food crops

3) Which of the following is true for Inflation?
a) The value of money increases during Inflation
b) The value of money decreases during Inflation
c) The value of money stays the same during Inflation
d) None of the above

4) The primary sector within a country for the calculation of National Income includes _____.
a) Small scale industries b) Retail trading
c) Agriculture d) All of the above

5) Which of the following activities is not included in the calculation of the national income of a country?
a) A maid working for a family on a full-time basis
b) A lawyer conducting their law practice
c) A housewife performing housework
d) A dispensary rendering medical services

6) Which of the following is not a characteristic of the Indian economy on the eve of India's independence?
a) Small and fragmented land holdings
b) Use of outdated and old technology
c) Commercial farming
d) Low level of productivity

7) The purchasing power of money varies _____.
a) Directly with the volume of employment
b) Inversely with the price level
c) Directly with the interest rate
d) Directly with the price level

8) Recent industrial development of India is largely due to _____.
a) Rationalization of raw materials
b) Availability of skilled manpower
c) Liberalization of government policies
d) Increase in market demand

9) Elasticity of demand is a tendency of demand to _____.
a) Increase or decrease on the change of price
b) Increase on the rising of price
c) Decrease on the falling on price
d) Consistency of demand on rising and falling prices

10) Shares with a fixed rate of dividend that entitle their holders to priority payment over those who hold ordinary shares of a company are called _____.
a) Preference shares
b) Bull
c) Bear
d) Shareholder

11) The poverty line has been defined in the _____.
a) Seventh Five-Year Plan
b) Sixth Five-Year Plan
c) Eighth Five-Year Plan
d) Fifth Five-Year Plan

12) Value Added Tax (VAT) is _____.
a) Indirect tax levied at each stage of production and distribution, from the primary produce to the retailer
b) Tax calculated on the selling price, but in declaring the liability to the government, the seller is allowed to deduct any tax paid by him when he bought the goods
c) Both (a) and (b)
d) None of the above

13) Planning Commission was constituted in _____.
a) June 1949
b) October 1951
c) March 1950
d) None of these

14) Which of the following sectors of the economy is state-owned and its service sector is a public enterprise?
a) Mining
b) Education
c) Transportation
d) None of these

SLR-GF-111

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Elective-III: Economic policies in India (197042802)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section - I, Q. No. 2 is compulsory and solve any TWO questions from remaining questions (Q. No. 3, 4 & 5).
2) In Section - II, Q. No. 6 is compulsory and solve any TWO questions from remaining questions (Q. No. 7,8 & 9).
3) Figures to right indicate full marks.

Section – I

Q.2 Attempt the following questions.
- **a)** Write a note on Economic condition of India after the colonial government? **04**
- **b)** Write in detail why economic policies were required to reform. **04**
- **c)** What are the features of Demography? **04**

Q.3 Attempt the following questions.
- **a)** Explain the issues related to agriculture production and market conditions in India. **04**
- **b)** Explain in detail about rural market and urban market. **04**

Q.4 Attempt the following questions.
- **a)** Explain in brief the reasons for stagnation in the Indian economy during the Colonial period. **04**
- **b)** What is mean by unemployment? What are the causes and effects of unemployment? **04**

Q.5 Attempt the following questions.
- **a)** What are the Government policies related to Poverty? Explain in details. **04**
- **b)** Write a short note on WTO and Indian agriculture. **04**

Section – II

Q.6
- **a)** What is mean by SEBI? Explain in detail. **05**
- **b)** Write short note on 12^{th} finance commission. **05**

Q.7
- **a)** Describe Parallel Economy and explain in detail. **05**
- **b)** What is money market? Explain in detail. **04**

Q.8
- **a)** Elaborate need of Foreign Direct Investment. **05**
- **b)** What are the monitory policies in India? **04**

Q.9
- **a)** What is role of Panchayat and Pressure groups in implementation of economic policies? **05**
- **b)** What is role of Bureaucracy and delivery mechanism in implementation of economic policies? **04**

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Elective-III: Economic policies in India (197042802)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative: **14**

1) Recent industrial development of India is largely due to _____.
a) Rationalization of raw materials
b) Availability of skilled manpower
c) Liberalization of government policies
d) Increase in market demand

2) Elasticity of demand is a tendency of demand to _____.
a) Increase or decrease on the change of price
b) Increase on the rising of price
c) Decrease on the falling on price
d) Consistency of demand on rising and falling prices

3) Shares with a fixed rate of dividend that entitle their holders to priority payment over those who hold ordinary shares of a company are called _____.
a) Preference shares b) Bull
c) Bear d) Shareholder

4) The poverty line has been defined in the _____.
a) Seventh Five-Year Plan b) Sixth Five-Year Plan
c) Eighth Five-Year Plan d) Fifth Five-Year Plan

5) Value Added Tax (VAT) is _____.
a) Indirect tax levied at each stage of production and distribution, from the primary produce to the retailer
b) Tax calculated on the selling price, but in declaring the liability to the government, the seller is allowed to deduct any tax paid by him when he bought the goods
c) Both (a) and (b)
d) None of the above

6) Planning Commission was constituted in _____.
a) June 1949 b) October 1951
c) March 1950 d) None of these

7) Which of the following sectors of the economy is state-owned and its service sector is a public enterprise?

a) Mining
b) Education
c) Transportation
d) None of these

8) Which of the following statements is correct about British rule in India?

a) The literacy rate was high during the British rule in India
b) The infant mortality rate was high during the British rule in India
c) The life expectancy rate was high during the British rule in India
d) The female literacy rate was high during the British rule in India

9) Which of the following was the main interest of the zamindar during the British rule in India?

a) to produce cash crops
b) to collect rent from the farmers
c) to improve the condition of the agricultural sector
d) to produce food crops

10) Which of the following is true for Inflation?

a) The value of money increases during Inflation
b) The value of money decreases during Inflation
c) The value of money stays the same during Inflation
d) None of the above

11) The primary sector within a country for the calculation of National Income includes _____.

a) Small scale industries
b) Retail trading
c) Agriculture
d) All of the above

12) Which of the following activities is not included in the calculation of the national income of a country?

a) A maid working for a family on a full-time basis
b) A lawyer conducting their law practice
c) A housewife performing housework
d) A dispensary rendering medical services

13) Which of the following is not a characteristic of the Indian economy on the eve of India's independence?

a) Small and fragmented land holdings
b) Use of outdated and old technology
c) Commercial farming
d) Low level of productivity

14) The purchasing power of money varies _____.

a) Directly with the volume of employment
b) Inversely with the price level
c) Directly with the interest rate
d) Directly with the price level

SLR-GF-111

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Elective-III: Economic policies in India (197042802)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section - I, Q. No. 2 is compulsory and solve any TWO questions from remaining questions (Q. No. 3, 4 & 5).
2) In Section - II, Q. No. 6 is compulsory and solve any TWO questions from remaining questions (Q. No. 7,8 & 9).
3) Figures to right indicate full marks.

Section – I

Q.2 Attempt the following questions.

a) Write a note on Economic condition of India after the colonial government? **04**
b) Write in detail why economic policies were required to reform. **04**
c) What are the features of Demography? **04**

Q.3 Attempt the following questions.

a) Explain the issues related to agriculture production and market conditions in India. **04**
b) Explain in detail about rural market and urban market. **04**

Q.4 Attempt the following questions.

a) Explain in brief the reasons for stagnation in the Indian economy during the Colonial period. **04**
b) What is mean by unemployment? What are the causes and effects of unemployment? **04**

Q.5 Attempt the following questions.

a) What are the Government policies related to Poverty? Explain in details. **04**
b) Write a short note on WTO and Indian agriculture. **04**

Section – II

Q.6 a) What is mean by SEBI? Explain in detail. **05**
b) Write short note on 12^{th} finance commission. **05**

Q.7 a) Describe Parallel Economy and explain in detail. **05**
b) What is money market? Explain in detail. **04**

Q.8 a) Elaborate need of Foreign Direct Investment. **05**
b) What are the monitory policies in India? **04**

Q.9 a) What is role of Panchayat and Pressure groups in implementation of economic policies? **05**
b) What is role of Bureaucracy and delivery mechanism in implementation of economic policies? **04**

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Elective-III: Economic policies in India (197042802)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative: **14**

1) The poverty line has been defined in the _____.
a) Seventh Five-Year Plan b) Sixth Five-Year Plan
c) Eighth Five-Year Plan d) Fifth Five-Year Plan

2) Value Added Tax (VAT) is _____.
a) Indirect tax levied at each stage of production and distribution, from the primary produce to the retailer
b) Tax calculated on the selling price, but in declaring the liability to the government, the seller is allowed to deduct any tax paid by him when he bought the goods
c) Both (a) and (b)
d) None of the above

3) Planning Commission was constituted in _____.
a) June 1949 b) October 1951
c) March 1950 d) None of these

4) Which of the following sectors of the economy is state-owned and its service sector is a public enterprise?
a) Mining b) Education
c) Transportation d) None of these

5) Which of the following statements is correct about British rule in India?
a) The literacy rate was high during the British rule in India
b) The infant mortality rate was high during the British rule in India
c) The life expectancy rate was high during the British rule in India
d) The female literacy rate was high during the British rule in India

6) Which of the following was the main interest of the zamindar during the British rule in India?
a) to produce cash crops
b) to collect rent from the farmers
c) to improve the condition of the agricultural sector
d) to produce food crops

7) Which of the following is true for Inflation?
a) The value of money increases during Inflation
b) The value of money decreases during Inflation
c) The value of money stays the same during Inflation
d) None of the above

8) The primary sector within a country for the calculation of National Income includes _____.
a) Small scale industries
b) Retail trading
c) Agriculture
d) All of the above

9) Which of the following activities is not included in the calculation of the national income of a country?
a) A maid working for a family on a full-time basis
b) A lawyer conducting their law practice
c) A housewife performing housework
d) A dispensary rendering medical services

10) Which of the following is not a characteristic of the Indian economy on the eve of India's independence?
a) Small and fragmented land holdings
b) Use of outdated and old technology
c) Commercial farming
d) Low level of productivity

11) The purchasing power of money varies _____.
a) Directly with the volume of employment
b) Inversely with the price level
c) Directly with the interest rate
d) Directly with the price level

12) Recent industrial development of India is largely due to _____.
a) Rationalization of raw materials
b) Availability of skilled manpower
c) Liberalization of government policies
d) Increase in market demand

13) Elasticity of demand is a tendency of demand to _____.
a) Increase or decrease on the change of price
b) Increase on the rising of price
c) Decrease on the falling on price
d) Consistency of demand on rising and falling prices

14) Shares with a fixed rate of dividend that entitle their holders to priority payment over those who hold ordinary shares of a company are called _____.
a) Preference shares
b) Bull
c) Bear
d) Shareholder

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Elective-III: Economic policies in India (197042802)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section - I, Q. No. 2 is compulsory and solve any TWO questions from remaining questions (Q. No. 3, 4 & 5).
2) In Section - II, Q. No. 6 is compulsory and solve any TWO questions from remaining questions (Q. No. 7,8 & 9).
3) Figures to right indicate full marks.

Section – I

Q.2 Attempt the following questions.

a)	Write a note on Economic condition of India after the colonial government?	**04**
b)	Write in detail why economic policies were required to reform.	**04**
c)	What are the features of Demography?	**04**

Q.3 Attempt the following questions.

a)	Explain the issues related to agriculture production and market conditions in India.	**04**
b)	Explain in detail about rural market and urban market.	**04**

Q.4 Attempt the following questions.

a)	Explain in brief the reasons for stagnation in the Indian economy during the Colonial period.	**04**
b)	What is mean by unemployment? What are the causes and effects of unemployment?	**04**

Q.5 Attempt the following questions.

a)	What are the Government policies related to Poverty? Explain in details.	**04**
b)	Write a short note on WTO and Indian agriculture.	**04**

Section – II

Q.6	**a)**	What is mean by SEBI? Explain in detail.	**05**
	b)	Write short note on 12^{th} finance commission.	**05**
Q.7	**a)**	Describe Parallel Economy and explain in detail.	**05**
	b)	What is money market? Explain in detail.	**04**
Q.8	**a)**	Elaborate need of Foreign Direct Investment.	**05**
	b)	What are the monitory policies in India?	**04**
Q.9	**a)**	What is role of Panchayat and Pressure groups in implementation of economic policies?	**05**
	b)	What is role of Bureaucracy and delivery mechanism in implementation of economic policies?	**04**

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Elective-III: Economic policies in India (197042802)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative: **14**

1) Which of the following is not a characteristic of the Indian economy on the eve of India's independence?
a) Small and fragmented land holdings
b) Use of outdated and old technology
c) Commercial farming
d) Low level of productivity

2) The purchasing power of money varies _____.
a) Directly with the volume of employment
b) Inversely with the price level
c) Directly with the interest rate
d) Directly with the price level

3) Recent industrial development of India is largely due to _____.
a) Rationalization of raw materials
b) Availability of skilled manpower
c) Liberalization of government policies
d) Increase in market demand

4) Elasticity of demand is a tendency of demand to _____.
a) Increase or decrease on the change of price
b) Increase on the rising of price
c) Decrease on the falling on price
d) Consistency of demand on rising and falling prices

5) Shares with a fixed rate of dividend that entitle their holders to priority payment over those who hold ordinary shares of a company are called _____.
a) Preference shares b) Bull
c) Bear d) Shareholder

6) The poverty line has been defined in the _____.
a) Seventh Five-Year Plan b) Sixth Five-Year Plan
c) Eighth Five-Year Plan d) Fifth Five-Year Plan

7) Value Added Tax (VAT) is _____.
a) Indirect tax levied at each stage of production and distribution, from the primary produce to the retailer
b) Tax calculated on the selling price, but in declaring the liability to the government, the seller is allowed to deduct any tax paid by him when he bought the goods
c) Both (a) and (b)
d) None of the above

8) Planning Commission was constituted in _____.
a) June 1949 b) October 1951
c) March 1950 d) None of these

9) Which of the following sectors of the economy is state-owned and its service sector is a public enterprise?
a) Mining b) Education
c) Transportation d) None of these

10) Which of the following statements is correct about British rule in India?
a) The literacy rate was high during the British rule in India
b) The infant mortality rate was high during the British rule in India
c) The life expectancy rate was high during the British rule in India
d) The female literacy rate was high during the British rule in India

11) Which of the following was the main interest of the zamindar during the British rule in India?
a) to produce cash crops
b) to collect rent from the farmers
c) to improve the condition of the agricultural sector
d) to produce food crops

12) Which of the following is true for Inflation?
a) The value of money increases during Inflation
b) The value of money decreases during Inflation
c) The value of money stays the same during Inflation
d) None of the above

13) The primary sector within a country for the calculation of National Income includes _____.
a) Small scale industries b) Retail trading
c) Agriculture d) All of the above

14) Which of the following activities is not included in the calculation of the national income of a country?
a) A maid working for a family on a full-time basis
b) A lawyer conducting their law practice
c) A housewife performing housework
d) A dispensary rendering medical services

SLR-GF-111

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Open Elective-III: Economic policies in India (197042802)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section - I, Q. No. 2 is compulsory and solve any TWO questions from remaining questions (Q. No. 3, 4 & 5).
2) In Section - II, Q. No. 6 is compulsory and solve any TWO questions from remaining questions (Q. No. 7,8 & 9).
3) Figures to right indicate full marks.

Section – I

Q.2 Attempt the following questions.
- **a)** Write a note on Economic condition of India after the colonial government? **04**
- **b)** Write in detail why economic policies were required to reform. **04**
- **c)** What are the features of Demography? **04**

Q.3 Attempt the following questions.
- **a)** Explain the issues related to agriculture production and market conditions in India. **04**
- **b)** Explain in detail about rural market and urban market. **04**

Q.4 Attempt the following questions.
- **a)** Explain in brief the reasons for stagnation in the Indian economy during the Colonial period. **04**
- **b)** What is mean by unemployment? What are the causes and effects of unemployment? **04**

Q.5 Attempt the following questions.
- **a)** What are the Government policies related to Poverty? Explain in details. **04**
- **b)** Write a short note on WTO and Indian agriculture. **04**

Section – II

Q.6
- **a)** What is mean by SEBI? Explain in detail. **05**
- **b)** Write short note on 12^{th} finance commission. **05**

Q.7
- **a)** Describe Parallel Economy and explain in detail. **05**
- **b)** What is money market? Explain in detail. **04**

Q.8
- **a)** Elaborate need of Foreign Direct Investment. **05**
- **b)** What are the monitory policies in India? **04**

Q.9
- **a)** What is role of Panchayat and Pressure groups in implementation of economic policies? **05**
- **b)** What is role of Bureaucracy and delivery mechanism in implementation of economic policies? **04**

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Practice, Law & Ethics (197042803)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Copyright law gives _____ exclusive rights to the owner of copyright.
a) 2 b) 4
c) 6 d) 3

2) Ethical Style is _____.
a) Promises only what can be delivered
b) Deals honestly with others
c) Behaves unselfishly
d) Contributes to knowledge base

3) _____ is defined as the right of a person to guide.
a) Democracy b) Freedom
c) Responsibility d) Authority

4) Patents are granted by national patent offices or by regional offices that carry out examination work for a group of countries _____.
a) True b) False

5) Rules that mandate or prohibit certain behaviour in society _____.
a) Regulation b) Law
c) Rules d) Moral ethics

6) The hardware or a process used in its manufacture may be protected by a ____.
a) Copyright b) Design registry
c) Patent d) Trade mark

7) The look of the product may be registered in the _____.
a) Copyright b) Trade mark
c) Patent d) Designs registry

8) The protection of hardware, facilities magnetic disks, and other illegally accessed, stolen, damaged or destroyed items refers to_____.
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c) Personnel security d) None of these

9) The quest to maximize profitability should be constrained by _____.

a) Ethical obligations b) Stakeholders
c) Unethical obligations d) Lack of social responsibility

10) Which of the following is not usually the objective of a code of ethics?

a) to create an ethical workplace
b) to evaluate the ethical components of the proposed actions of the employees
c) to improve the public image of the company
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11) What kinds of trademarks can be registered?

a) one or a combination of words b) letters
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12) Which of the following is not a way of protection?

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c) Personal security d) Piracy

13) Industrial acts are useful for _____.

a) Guarantee of employee welfare b) Provision of legal platform
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14) Workman's Compensation Act consists of which of following provisions of act?

a) Partial disablement b) Total disablement
c) Amount of compensation d) All of these

SLR-GF-112

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Practice, Law & Ethics (197042803)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from Section – I
2) Solve any two Questions from Section – II
3) Figures to right indicate full marks.
4) Make suitable assumptions, if required and state them clearly.

Section – I

Q.2 **a)** What is the difference between Moral and Ethics? **07**
b) Explain role of Government regulatory bodies prescribing norms to ensure safety of the citizens. **07**

Q.3 **a)** Define the terms: - **07**
i) Engineering Ethics
ii) Vigil mechanism
iii) Protected disclosures
iv) Negligence
b) Write note on: **07**
i) Conflict of Interest
ii) Gift Vs Bribery

Q.4 **a)** What are the various types of contracts and their features? **07**
b) Write note on: **07**
i) Public-Private Partnerships
ii) Wrong practices in contracting

Section – II

Q.5 **a)** What is Arbitration tribunal? Discuss the grounds for setting aside an award. **07**
b) Discuss the Dispute Resolution Boards and Lok Adalats. **07**

Q.6 **a)** Describe the rules for developers given by RERA. **07**
b) Describe Workmen's Compensation Act. **07**

Q.7 **a)** Explain process of obtaining patent. **07**
b) Explain Copyright in India including Historical evolution of Copy Rights Act, 1957. **07**

SLR-GF-112

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Practice, Law & Ethics (197042803)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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7) Workman's Compensation Act consists of which of following provisions of act?
a) Partial disablement b) Total disablement
c) Amount of compensation d) All of these

8) Copyright law gives _____ exclusive rights to the owner of copyright.
a) 2 b) 4
c) 6 d) 3

9) Ethical Style is _____.
a) Promises only what can be delivered
b) Deals honestly with others
c) Behaves unselfishly
d) Contributes to knowledge base

10) _____ is defined as the right of a person to guide.
a) Democracy b) Freedom
c) Responsibility d) Authority

11) Patents are granted by national patent offices or by regional offices that carry out examination work for a group of countries _____.
a) True b) False

12) Rules that mandate or prohibit certain behaviour in society _____.
a) Regulation b) Law
c) Rules d) Moral ethics

13) The hardware or a process used in its manufacture may be protected by a ____.
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c) Patent d) Trade mark

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SLR-GF-112

Seat No.	

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Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Professional Practice, Law & Ethics (197042803)

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ii) Wrong practices in contracting

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Q.7 **a)** Explain process of obtaining patent. **07**

b) Explain Copyright in India including Historical evolution of Copy Rights Act, 1957. **07**

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Practice, Law & Ethics (197042803)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What kinds of trademarks can be registered?
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a) Personnel security b) Physical security
c) Personal security d) Piracy

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c) Rules d) Moral ethics

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SLR-GF-112

Seat No.	

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Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Practice, Law & Ethics (197042803)

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Time: 03:00 PM To 06:00 PM

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SLR-GF-112

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Professional Practice, Law & Ethics (197042803)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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Duration: 30 Minutes Marks: 14

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1) The hardware or a process used in its manufacture may be protected by a ____.
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SLR-GF-112

Seat No.		Set	S

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CIVIL ENGINEERING
Professional Practice, Law & Ethics (197042803)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
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b) Describe Workmen's Compensation Act. **07**

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b) Explain Copyright in India including Historical evolution of Copy Rights Act, 1957. **07**

SLR-GF-113

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design of Machine Elements (BTN02501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Stress concentration occurs due to _____
a) blow holes b) keyways and splines
c) machining scratches d) any one of the above

2) The residual stresses are caused due to _____
a) manufacturing methods like forging
b) machining methods like milling or grinding
c) cold working processes like rolling and extrusion
d) any one of the above

3) The ratio of tensile stress to tensile strain within elastic limit is called ____.
a) bulk modulus b) Poisson's ratio
c) modulus of rigidity d) modulus of elasticity

4) In cyclic loading, the effect of stress concentration is more serious in case of _____.
a) components made of brittle materials
b) components made of ductile materials
c) components made of brittle as well as ductile materials
d) none of the above

5) The type of spring used in door hinges is, _____.
a) helical extension spring b) multi-leaf spring
c) spiral spring d) helical torsion spring

6) The bending stress induced in a beam is _____.
a) maximum at the farthest fiber from neutral and zero at the neutral axis
b) uniform throughout the cross-section
c) zero at the farthest fiber from neutral axis and maximum at the neutral axis
d) zero at the neutral axis and zero at the farthest fiber and maximum at the mean distance

7) A river is specified by _____.
a) shank diameter b) length of rivet
c) type of head d) material of rivet

8) Multiple threads are used for _____.
a) high efficiency
b) high mechanical advantage
c) low efficiency for self-locking
d) high load carrying capacity

9) A transmission shaft subjected to bending and torsional moments should be designed on the basis of _____.
a) Rankine theory
b) Coulomb, Tresca and Guest theory
c) Huber von Mises theory
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10) A screw is specified by _____.
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11) When the helical extension spring is subjected to axial tensile force, the type of stress induced in the spring wire is, _____.
a) tensile stress
b) compressive stress
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12) A V belt designated as B 4430 Lp has _____.
a) 4430 mm as diameter of small pulley
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14) A stud is _____.
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b) screw with circular head
c) screw with hexagonal head
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Seat No.		Set	P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design of Machine Elements (BTN02501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from both sections.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Answer the following.

a) Explain Design Procedure for Knuckle joint with neat sketch. **06**

b) Define Factor of safety. Explain factor affecting on selection of Factor of safety and its physical significance. **05**

c) Explain any two theories of failure. **03**

Q.3 Answer the following. **08**

a) Explain the following terms;
i) Endurance limit
ii) Notch Sensitivity
iii) Cyclic Stress
iv) Stress concentration factor

b) Explain the modifying factors for endurance strength. **06**

Q.4 Answer the following.

a) It is required to select a flat-belt drive for a fan running at 350 rpm which is driven by a 10 kW, 1400 rpm motor. The belt drive is open-type and space is available for a center distance of 2 m approximately. Assume belt velocity as 18 m/s. The power transmitting capacity of the belt per mm width per ply at 180° arc of contact and at a belt velocity of 5.08 m/s is 0.0118 kW. The load correction factor can be taken as 1.2. Suggest preferred diameters (consider the nearest preferred value) for motor and fan pulleys and specify the standard width of 4 ply belt. **08**
(Refer the standard table given at the end of question paper)

b) Differentiate between Flat Belt Drive and V-Belt Drive **06**

Section II

Q.5 Answer the following.

a) A rotating shaft is made of steel FeE 580 (Syt = 580 N/mm^2). It is subjected to a steady torsional moment of 275 N-m and bending moment of 1250 N-m. Calculate the diameter of the shaft using maximum shear stress theory. (use factor of safety = 3). **07**

b) Explain design procedure for muff coupling with neat sketch. **04**

c) Explain failure modes for rivet joint. **03**

Q.6 Answer the following.

a) Explain series and parallel springs for finding the Stiffness of Spring. **06**

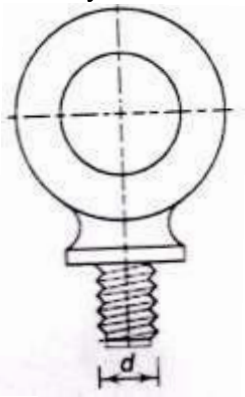
b) It is required to design helical compression spring subjected to a maximum force of 1250N. The deflection of the spring corresponding to the maximum force should be approximately 30 mm. The spring index can be taken as 6. The spring is made of patented and cold-drawn steel wire. The ultimate tensile strength and modulus of rigidity of the spring material are 1090 and 81370 N/mm^2 respectively. The permissible shear stress for the spring wire should be taken as 50% of the ultimate tensile strength. Consider the spring has square and ground end. Design the spring and calculate: **08**

i) wire diameter;
ii) mean coil diameter;
iii) number of active coils;
iv) total number of coils;
v) free length of the spring (assuming 1mm clearance between the adjacent coils);
vi) pitch of the coil.

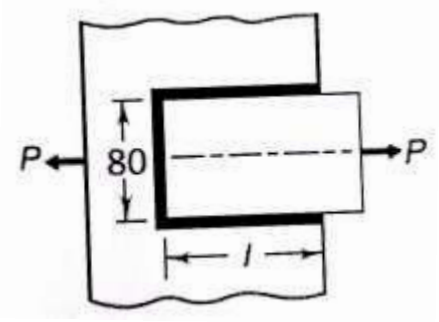
Q.7 Answer the following.

a) Derive the equation for Strength of transverse fillet welds. **04**

b) An electric motor weighing 12 kN is lifted by means of an eye bolt as shown in Fig. The eye bolt is screwed into the frame of the motor. The eye bolt has coarse threads. It is made of plain carbon steel 30C8 (Syt = 380 N/mm^2) and the factor of safety is 6. Determine the size of the bolt. **04**



c) A plate, 80 mm wide and 10 mm thick, is joined with another steel plate by means of single transverse and double parallel fillet welds, as shown in Fig. The joint is subjected to a maximum tensile force of 55 kN. The permissible tensile and shear stresses in the weld material are 75 and 50 N/mm^2 respectively. Determine the required length of each parallel fillet weld. Consider 15 mm of length for starting and stopping of the weld run. **06**



Arc *of contact factor* (F_d)

α_3 (Deg.)	120	130	140	150	160	170	180	190	200
F_d	1.33	1.26	1.19	1.13	1.08	1.04	1.00	0.97	0.94

Number of Ply	4
Standard width of belt	40,44,50,63,76,90,100,112,125,152

Preferred diameter of pullies	140,160,180,200,224,250,315,400,450, 500,560,630,710,800,900,1000,1120

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design of Machine Elements (BTN02501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Multiple threads are used for _____.
a) high efficiency b) high mechanical advantage
c) low efficiency for self-locking d) high load carrying capacity

2) A transmission shaft subjected to bending and torsional moments should be designed on the basis of _____.
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a) $\frac{k_1 k_2}{k_1 + k_2}$ b) $\frac{k_1 k_2}{k_1 - k_2}$
c) $k_1 + k_2$ d) $\frac{k_1 + k_2}{k_1 k_2}$

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c) screw with hexagonal head
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c) type of head
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Seat No.		Set	Q

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MECHANICAL ENGINEERING
Design of Machine Elements (BTN02501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Answer the following.

a) Explain Design Procedure for Knuckle joint with neat sketch. **06**

b) Define Factor of safety. Explain factor affecting on selection of Factor of safety and its physical significance. **05**

c) Explain any two theories of failure. **03**

Q.3 Answer the following. **08**

a) Explain the following terms;
i) Endurance limit
ii) Notch Sensitivity
iii) Cyclic Stress
iv) Stress concentration factor

b) Explain the modifying factors for endurance strength. **06**

Q.4 Answer the following.

a) It is required to select a flat-belt drive for a fan running at 350 rpm which is driven by a 10 kW, 1400 rpm motor. The belt drive is open-type and space is available for a center distance of 2 m approximately. Assume belt velocity as 18 m/s. The power transmitting capacity of the belt per mm width per ply at 180° arc of contact and at a belt velocity of 5.08 m/s is 0.0118 kW. The load correction factor can be taken as 1.2. Suggest preferred diameters (consider the nearest preferred value) for motor and fan pulleys and specify the standard width of 4 ply belt. **08**
(Refer the standard table given at the end of question paper)

b) Differentiate between Flat Belt Drive and V-Belt Drive **06**

Section II

Q.5 Answer the following.

a) A rotating shaft is made of steel FeE 580 (Syt = 580 N/mm^2). It is subjected to a steady torsional moment of 275 N-m and bending moment of 1250 N-m. Calculate the diameter of the shaft using maximum shear stress theory. (use factor of safety = 3). **07**

b) Explain design procedure for muff coupling with neat sketch. **04**

c) Explain failure modes for rivet joint. **03**

Q.6 Answer the following.

a) Explain series and parallel springs for finding the Stiffness of Spring. **06**

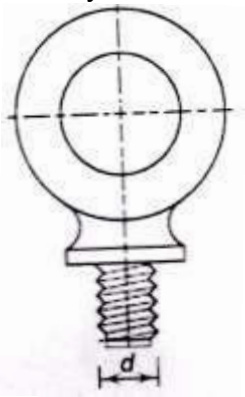
b) It is required to design helical compression spring subjected to a maximum force of 1250N. The deflection of the spring corresponding to the maximum force should be approximately 30 mm. The spring index can be taken as 6. The spring is made of patented and cold-drawn steel wire. The ultimate tensile strength and modulus of rigidity of the spring material are 1090 and 81370 N/mm^2 respectively. The permissible shear stress for the spring wire should be taken as 50% of the ultimate tensile strength. Consider the spring has square and ground end. Design the spring and calculate: **08**

i) wire diameter;
ii) mean coil diameter;
iii) number of active coils;
iv) total number of coils;
v) free length of the spring (assuming 1mm clearance between the adjacent coils);
vi) pitch of the coil.

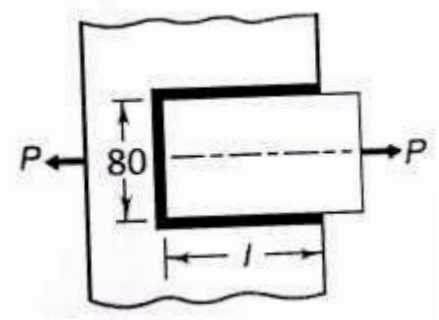
Q.7 Answer the following.

a) Derive the equation for Strength of transverse fillet welds. **04**

b) An electric motor weighing 12 kN is lifted by means of an eye bolt as shown in Fig. The eye bolt is screwed into the frame of the motor. The eye bolt has coarse threads. It is made of plain carbon steel 30C8 (Syt = 380 N/mm^2) and the factor of safety is 6. Determine the size of the bolt. **04**



c) A plate, 80 mm wide and 10 mm thick, is joined with another steel plate by means of single transverse and double parallel fillet welds, as shown in Fig. The joint is subjected to a maximum tensile force of 55 kN. The permissible tensile and shear stresses in the weld material are 75 and 50 N/mm^2 respectively. Determine the required length of each parallel fillet weld. Consider 15 mm of length for starting and stopping of the weld run. **06**



Arc *of contact factor* (F_d)

α_3 (Deg.)	120	130	140	150	160	170	180	190	200
F_d	1.33	1.26	1.19	1.13	1.08	1.04	1.00	0.97	0.94

Number of Ply	4
Standard width of belt	40,44,50,63,76,90,100,112,125,152

Preferred diameter of pullies	140,160,180,200,224,250,315,400,450, 500,560,630,710,800,900,1000,1120

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design of Machine Elements (BTN02501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) When the helical extension spring is subjected to axial tensile force, the type of stress induced in the spring wire is, _____.
a) tensile stress b) compressive stress
c) bending stress d) torsional shear stress

2) A V belt designated as B 4430 Lp has _____.
a) 4430 mm as diameter of small pulley
b) 4430 mm as nominal pitch length
c) 4430 mm as diameter of large pulley
d) 4430 mm as center distance between pulleys

3) Two springs of stiffness k_1 and k_2 are connected in series, the combined stiffness of the connection is given by _____.
a) $\frac{k_1 k_2}{k_1 + k_2}$ b) $\frac{k_1 k_2}{k_1 - k_2}$
c) $k_1 + k_2$ d) $\frac{k_1 + k_2}{k_1 k_2}$

4) A stud is _____.
a) screw with long threads
b) screw with circular head
c) screw with hexagonal head
d) headless screw with threads on both sides

5) Stress concentration occurs due to _____
a) blow holes b) keyways and splines
c) machining scratches d) any one of the above

6) The residual stresses are caused due to _____
a) manufacturing methods like forging
b) machining methods like milling or grinding
c) cold working processes like rolling and extrusion
d) any one of the above

7) The ratio of tensile stress to tensile strain within elastic limit is called ____.
a) bulk modulus b) Poisson's ratio
c) modulus of rigidity d) modulus of elasticity

8) In cyclic loading, the effect of stress concentration is more serious in case of _____.
a) components made of brittle materials
b) components made of ductile materials
c) components made of brittle as well as ductile materials
d) none of the above

9) The type of spring used in door hinges is, _____.
a) helical extension spring b) multi-leaf spring
c) spiral spring d) helical torsion spring

10) The bending stress induced in a beam is _____.
a) maximum at the farthest fiber from neutral and zero at the neutral axis
b) uniform throughout the cross-section
c) zero at the farthest fiber from neutral axis and maximum at the neutral axis
d) zero at the neutral axis and zero at the farthest fiber and maximum at the mean distance

11) A river is specified by _____.
a) shank diameter b) length of rivet
c) type of head d) material of rivet

12) Multiple threads are used for _____.
a) high efficiency b) high mechanical advantage
c) low efficiency for self-locking d) high load carrying capacity

13) A transmission shaft subjected to bending and torsional moments should be designed on the basis of _____.
a) Rankine theory
b) Coulomb, Tresca and Guest theory
c) Huber von Mises theory
d) Goodman or Soderberg diagrams

14) A screw is specified by _____.
a) major diameter b) minor diameter
c) pitch diameter d) mean diameter

Seat No.		Set	R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design of Machine Elements (BTN02501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from both sections.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Answer the following.

a) Explain Design Procedure for Knuckle joint with neat sketch. **06**

b) Define Factor of safety. Explain factor affecting on selection of Factor of safety and its physical significance. **05**

c) Explain any two theories of failure. **03**

Q.3 Answer the following. **08**

a) Explain the following terms;
i) Endurance limit
ii) Notch Sensitivity
iii) Cyclic Stress
iv) Stress concentration factor

b) Explain the modifying factors for endurance strength. **06**

Q.4 Answer the following.

a) It is required to select a flat-belt drive for a fan running at 350 rpm which is driven by a 10 kW, 1400 rpm motor. The belt drive is open-type and space is available for a center distance of 2 m approximately. Assume belt velocity as 18 m/s. The power transmitting capacity of the belt per mm width per ply at 180° arc of contact and at a belt velocity of 5.08 m/s is 0.0118 kW. The load correction factor can be taken as 1.2. Suggest preferred diameters (consider the nearest preferred value) for motor and fan pulleys and specify the standard width of 4 ply belt. **08**
(Refer the standard table given at the end of question paper)

b) Differentiate between Flat Belt Drive and V-Belt Drive **06**

Section II

Q.5 Answer the following.

a) A rotating shaft is made of steel FeE 580 (Syt = 580 N/mm^2). It is subjected to a steady torsional moment of 275 N-m and bending moment of 1250 N-m. Calculate the diameter of the shaft using maximum shear stress theory. (use factor of safety = 3). **07**

b) Explain design procedure for muff coupling with neat sketch. **04**

c) Explain failure modes for rivet joint. **03**

Q.6 Answer the following.

a) Explain series and parallel springs for finding the Stiffness of Spring. **06**

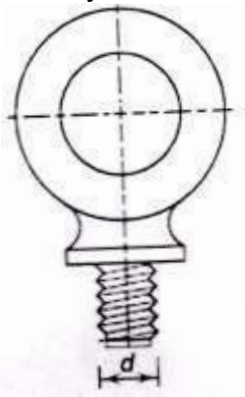
b) It is required to design helical compression spring subjected to a maximum force of 1250N. The deflection of the spring corresponding to the maximum force should be approximately 30 mm. The spring index can be taken as 6. The spring is made of patented and cold-drawn steel wire. The ultimate tensile strength and modulus of rigidity of the spring material are 1090 and 81370 N/mm^2 respectively. The permissible shear stress for the spring wire should be taken as 50% of the ultimate tensile strength. Consider the spring has square and ground end. Design the spring and calculate: **08**

i) wire diameter;
ii) mean coil diameter;
iii) number of active coils;
iv) total number of coils;
v) free length of the spring (assuming 1mm clearance between the adjacent coils);
vi) pitch of the coil.

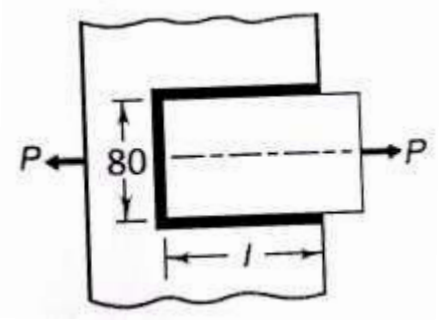
Q.7 Answer the following.

a) Derive the equation for Strength of transverse fillet welds. **04**

b) An electric motor weighing 12 kN is lifted by means of an eye bolt as shown in Fig. The eye bolt is screwed into the frame of the motor. The eye bolt has coarse threads. It is made of plain carbon steel 30C8 (Syt = 380 N/mm^2) and the factor of safety is 6. Determine the size of the bolt. **04**



c) A plate, 80 mm wide and 10 mm thick, is joined with another steel plate by means of single transverse and double parallel fillet welds, as shown in Fig. The joint is subjected to a maximum tensile force of 55 kN. The permissible tensile and shear stresses in the weld material are 75 and 50 N/mm^2 respectively. Determine the required length of each parallel fillet weld. Consider 15 mm of length for starting and stopping of the weld run. **06**



Arc *of contact factor* (F_d)

α_3 (Deg.)	120	130	140	150	160	170	180	190	200
F_d	1.33	1.26	1.19	1.13	1.08	1.04	1.00	0.97	0.94

Number of Ply	4
Standard width of belt	40,44,50,63,76,90,100,112,125,152

Preferred diameter of pullies	140,160,180,200,224,250,315,400,450, 500,560,630,710,800,900,1000,1120

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design of Machine Elements (BTN02501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The bending stress induced in a beam is _____.
a) maximum at the farthest fiber from neutral and zero at the neutral axis
b) uniform throughout the cross-section
c) zero at the farthest fiber from neutral axis and maximum at the neutral axis
d) zero at the neutral axis and zero at the farthest fiber and maximum at the mean distance

2) A river is specified by _____.
a) shank diameter b) length of rivet
c) type of head d) material of rivet

3) Multiple threads are used for _____.
a) high efficiency b) high mechanical advantage
c) low efficiency for self-locking d) high load carrying capacity

4) A transmission shaft subjected to bending and torsional moments should be designed on the basis of _____.
a) Rankine theory
b) Coulomb, Tresca and Guest theory
c) Huber von Mises theory
d) Goodman or Soderberg diagrams

5) A screw is specified by _____.
a) major diameter b) minor diameter
c) pitch diameter d) mean diameter

6) When the helical extension spring is subjected to axial tensile force, the type of stress induced in the spring wire is, _____.
a) tensile stress b) compressive stress
c) bending stress d) torsional shear stress

7) A V belt designated as B 4430 Lp has _____.
a) 4430 mm as diameter of small pulley
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d) 4430 mm as center distance between pulleys

8) Two springs of stiffness k_1 and k_2 are connected in series, the combined stiffness of the connection is given by _____.

a) $\frac{k_1 k_2}{k_1 + k_2}$ b) $\frac{k_1 k_2}{k_1 - k_2}$

c) $k_1 + k_2$ d) $\frac{k_1 + k_2}{k_1 k_2}$

9) A stud is _____.

a) screw with long threads
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Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design of Machine Elements (BTN02501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from both sections.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Answer the following.

a) Explain Design Procedure for Knuckle joint with neat sketch. **06**

b) Define Factor of safety. Explain factor affecting on selection of Factor of safety and its physical significance. **05**

c) Explain any two theories of failure. **03**

Q.3 Answer the following. **08**

a) Explain the following terms;
i) Endurance limit
ii) Notch Sensitivity
iii) Cyclic Stress
iv) Stress concentration factor

b) Explain the modifying factors for endurance strength. **06**

Q.4 Answer the following.

a) It is required to select a flat-belt drive for a fan running at 350 rpm which is driven by a 10 kW, 1400 rpm motor. The belt drive is open-type and space is available for a center distance of 2 m approximately. Assume belt velocity as 18 m/s. The power transmitting capacity of the belt per mm width per ply at 180° arc of contact and at a belt velocity of 5.08 m/s is 0.0118 kW. The load correction factor can be taken as 1.2. Suggest preferred diameters (consider the nearest preferred value) for motor and fan pulleys and specify the standard width of 4 ply belt. **08**
(Refer the standard table given at the end of question paper)

b) Differentiate between Flat Belt Drive and V-Belt Drive **06**

Section II

Q.5 Answer the following.

a) A rotating shaft is made of steel FeE 580 (Syt = 580 N/mm^2). It is subjected to a steady torsional moment of 275 N-m and bending moment of 1250 N-m. Calculate the diameter of the shaft using maximum shear stress theory. (use factor of safety = 3). **07**

b) Explain design procedure for muff coupling with neat sketch. **04**

c) Explain failure modes for rivet joint. **03**

Q.6 Answer the following.

a) Explain series and parallel springs for finding the Stiffness of Spring. **06**

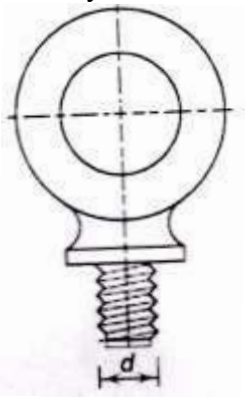
b) It is required to design helical compression spring subjected to a maximum force of 1250N. The deflection of the spring corresponding to the maximum force should be approximately 30 mm. The spring index can be taken as 6. The spring is made of patented and cold-drawn steel wire. The ultimate tensile strength and modulus of rigidity of the spring material are 1090 and 81370 N/mm^2 respectively. The permissible shear stress for the spring wire should be taken as 50% of the ultimate tensile strength. Consider the spring has square and ground end. Design the spring and calculate: **08**

i) wire diameter;
ii) mean coil diameter;
iii) number of active coils;
iv) total number of coils;
v) free length of the spring (assuming 1mm clearance between the adjacent coils);
vi) pitch of the coil.

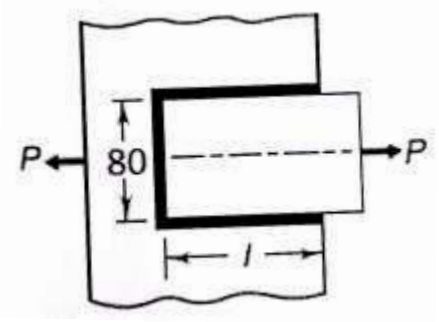
Q.7 Answer the following.

a) Derive the equation for Strength of transverse fillet welds. **04**

b) An electric motor weighing 12 kN is lifted by means of an eye bolt as shown in Fig. The eye bolt is screwed into the frame of the motor. The eye bolt has coarse threads. It is made of plain carbon steel 30C8 (Syt = 380 N/mm^2) and the factor of safety is 6. Determine the size of the bolt. **04**



c) A plate, 80 mm wide and 10 mm thick, is joined with another steel plate by means of single transverse and double parallel fillet welds, as shown in Fig. The joint is subjected to a maximum tensile force of 55 kN. The permissible tensile and shear stresses in the weld material are 75 and 50 N/mm^2 respectively. Determine the required length of each parallel fillet weld. Consider 15 mm of length for starting and stopping of the weld run. **06**



Arc *of contact factor* (F_d)

α_3 (Deg.)	120	130	140	150	160	170	180	190	200
F_d	1.33	1.26	1.19	1.13	1.08	1.04	1.00	0.97	0.94

Number of Ply	4
Standard width of belt	40,44,50,63,76,90,100,112,125,152

Preferred diameter of pullies	140,160,180,200,224,250,315,400,450, 500,560,630,710,800,900,1000,1120

SLR-GF-114

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Geometric modeling corresponds to _____.
a) Synthesis phase of CAD
b) Analysis phase of CAD
c) Synthesis and analysis phase of CAD
d) None of the above

2) Retrieval type and generative type are the types of _____.
a) FMS b) GT
c) CAPP d) CNC programming

3) Which of the following is the rapid prototyping method?
a) Stereo lithography b) Selective Laser Sintering
c) Fused Deposition Modeling d) All of these

4) In the following geometric modeling which is not 3D modeling?
a) Wireframe modeling b) Drafting
c) Surface modeling d) Solid Modeling

5) In any curve representation, the shape associated with control points is called as _____.
a) Uniform curve b) Rectangle
c) Circle d) Control polygon

6) _____ is the type of graphics standards.
a) PHIGS b) CORE
c) GKS d) All of these

7) Number of data point required to define cubic Bezier curve are _____.
a) 3 b) 4
c) 2 d) 5

8) DC Servo motors are used as drive motors in _____.
a) open loop control b) close loop control
c) both a) and b) d) none of the above

9) Which one of the following is not CNC controller?
a) SINUMERIK b) CINCINNATI
c) PEARSON d) FANUC

10) Following is the basic component of CNC machine?
a) Programme of instructions b) MCU
c) Machine tool d) All of the above

11) In numerical control systems, DNC stands for _____.
a) Dedicated Numerical Control b) Directional Numerical Control
c) Dynamic Numerical Control d) none of the above

12) NC machines used for drilling, boring, reaming, tapping is _____.
a) contouring type b) straight cut
c) point-to-point d) none of the above

13) Which type of tool magazines are generally used to handle large number of tools?
a) Drum type b) Chain type
c) Turret type d) Both a & b

14) The preparatory function used for circular clockwise interpolation function is _____.
a) G03 b) G02
c) G04 d) G01

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from in section - I.
2) Question No. 5 is compulsory and from the remaining attempt any one from Section - II.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary.
5) Use of scientific calculator is allowed.

Section – I

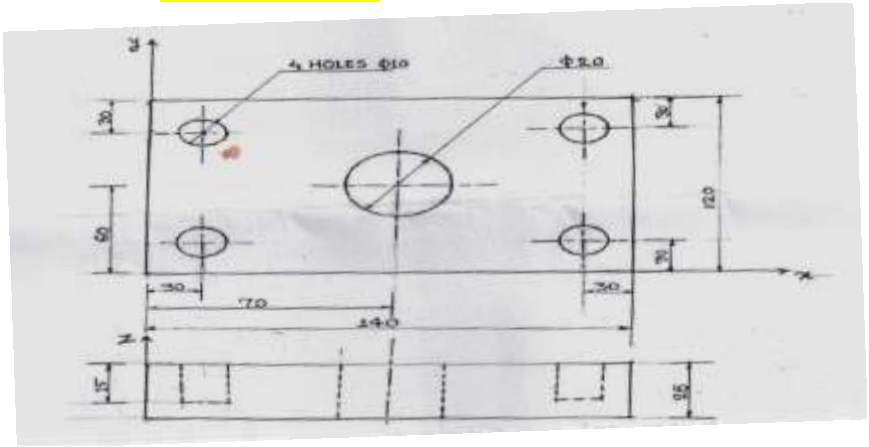
Q.2 **a)** Explain types of Geometrical modeling. **07**
b) Illustrate group technology with example. **07**

Q.3 **a)** Discuss different types of elements and nodes in Finite element method? **07**
b) Explain types of C.A.P.P with neat sketch. **07**

Q.4 **a)** Discuss Graphics workstation with neat sketch. **07**
b) Explain part classification and coding in detail. **07**

Section – II

Q.5 **a)** For following component make a part program on CNC machine. **10**
Work material: Mild steel, Tool materials: HSS,
Work size: 120 x 140 x 25.



b) Enlist G codes and M codes with its meaning. **04**

Q.6 **a)** Explain types of tool magazine with neat sketch. **07**
b) Enlist the different types of CNC machine tools and discuss any 02 with neat sketch. **07**

Q.7 **a)** Explain Canned cycle w.r.t CNC programming with example. **07**
b) Describe the elements of NC System. **07**

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) DC Servo motors are used as drive motors in _____.
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c) both a) and b) d) none of the above

2) Which one of the following is not CNC controller?
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d) None of the above

9) Retrieval type and generative type are the types of _____.
a) FMS b) GT
c) CAPP d) CNC programming

10) Which of the following is the rapid prototyping method?
a) Stereo lithography b) Selective Laser Sintering
c) Fused Deposition Modeling d) All of these

11) In the following geometric modeling which is not 3D modeling?
a) Wireframe modeling b) Drafting
c) Surface modeling d) Solid Modeling

12) In any curve representation, the shape associated with control points is called as _____.
a) Uniform curve b) Rectangle
c) Circle d) Control polygon

13) _____ is the type of graphics standards.
a) PHIGS b) CORE
c) GKS d) All of these

14) Number of data point required to define cubic Bezier curve are _____.
a) 3 b) 4
c) 2 d) 5

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from in section - I.
2) Question No. 5 is compulsory and from the remaining attempt any one from Section - II.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary.
5) Use of scientific calculator is allowed.

Section – I

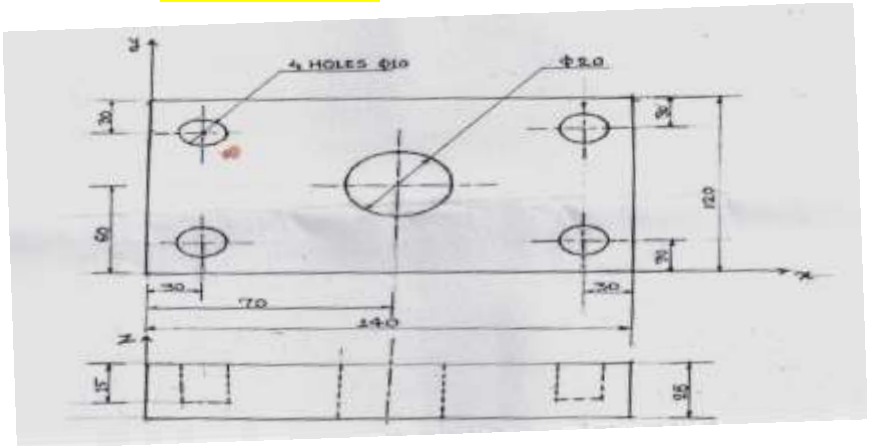
Q.2 **a)** Explain types of Geometrical modeling. **07**
b) Illustrate group technology with example. **07**

Q.3 **a)** Discuss different types of elements and nodes in Finite element method? **07**
b) Explain types of C.A.P.P with neat sketch. **07**

Q.4 **a)** Discuss Graphics workstation with neat sketch. **07**
b) Explain part classification and coding in detail. **07**

Section – II

Q.5 **a)** For following component make a part program on CNC machine. **10**
Work material: Mild steel, Tool materials: HSS,
Work size: 120 x 140 x 25.



b) Enlist G codes and M codes with its meaning. **04**

Q.6 **a)** Explain types of tool magazine with neat sketch. **07**
b) Enlist the different types of CNC machine tools and discuss any 02 with neat sketch. **07**

Q.7 **a)** Explain Canned cycle w.r.t CNC programming with example. **07**
b) Describe the elements of NC System. **07**

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) In numerical control systems, DNC stands for _____.
a) Dedicated Numerical Control b) Directional Numerical Control
c) Dynamic Numerical Control d) none of the above

2) NC machines used for drilling, boring, reaming, tapping is _____.
a) contouring type b) straight cut
c) point-to-point d) none of the above

3) Which type of tool magazines are generally used to handle large number of tools?
a) Drum type b) Chain type
c) Turret type d) Both a & b

4) The preparatory function used for circular clockwise interpolation function is _____.
a) G03 b) G02
c) G04 d) G01

5) Geometric modeling corresponds to _____.
a) Synthesis phase of CAD
b) Analysis phase of CAD
c) Synthesis and analysis phase of CAD
d) None of the above

6) Retrieval type and generative type are the types of _____.
a) FMS b) GT
c) CAPP d) CNC programming

7) Which of the following is the rapid prototyping method?
a) Stereo lithography b) Selective Laser Sintering
c) Fused Deposition Modeling d) All of these

8) In the following geometric modeling which is not 3D modeling?
a) Wireframe modeling b) Drafting
c) Surface modeling d) Solid Modeling

9) In any curve representation, the shape associated with control points is called as _____.

a) Uniform curve b) Rectangle
c) Circle d) Control polygon

10) _____ is the type of graphics standards.

a) PHIGS b) CORE
c) GKS d) All of these

11) Number of data point required to define cubic Bezier curve are _____.

a) 3 b) 4
c) 2 d) 5

12) DC Servo motors are used as drive motors in _____.

a) open loop control b) close loop control
c) both a) and b) d) none of the above

13) Which one of the following is not CNC controller?

a) SINUMERIK b) CINCINNATI
c) PEARSON d) FANUC

14) Following is the basic component of CNC machine?

a) Programme of instructions b) MCU
c) Machine tool d) All of the above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from in section - I.
2) Question No. 5 is compulsory and from the remaining attempt any one from Section - II.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary.
5) Use of scientific calculator is allowed.

Section – I

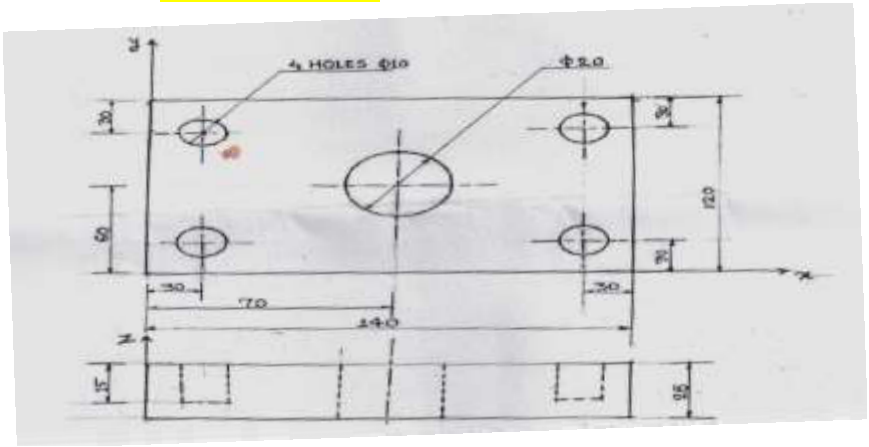
Q.2 **a)** Explain types of Geometrical modeling. **07**
b) Illustrate group technology with example. **07**

Q.3 **a)** Discuss different types of elements and nodes in Finite element method? **07**
b) Explain types of C.A.P.P with neat sketch. **07**

Q.4 **a)** Discuss Graphics workstation with neat sketch. **07**
b) Explain part classification and coding in detail. **07**

Section – II

Q.5 **a)** For following component make a part program on CNC machine. **10**
Work material: Mild steel, Tool materials: HSS,
Work size: 120 x 140 x 25.



b) Enlist G codes and M codes with its meaning. **04**

Q.6 **a)** Explain types of tool magazine with neat sketch. **07**
b) Enlist the different types of CNC machine tools and discuss any 02 with neat sketch. **07**

Q.7 **a)** Explain Canned cycle w.r.t CNC programming with example. **07**
b) Describe the elements of NC System. **07**

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) _____ is the type of graphics standards.
a) PHIGS b) CORE
c) GKS d) All of these

2) Number of data point required to define cubic Bezier curve are _____.
a) 3 b) 4
c) 2 d) 5

3) DC Servo motors are used as drive motors in _____.
a) open loop control b) close loop control
c) both a) and b) d) none of the above

4) Which one of the following is not CNC controller?
a) SINUMERIK b) CINCINNATI
c) PEARSON d) FANUC

5) Following is the basic component of CNC machine?
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c) Machine tool d) All of the above

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c) Dynamic Numerical Control d) none of the above

7) NC machines used for drilling, boring, reaming, tapping is _____.
a) contouring type b) straight cut
c) point-to-point d) none of the above

8) Which type of tool magazines are generally used to handle large number of tools?
a) Drum type b) Chain type
c) Turret type d) Both a & b

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a) G03 b) G02
c) G04 d) G01

10) Geometric modeling corresponds to _____.

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d) None of the above

11) Retrieval type and generative type are the types of _____.

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c) CAPP d) CNC programming

12) Which of the following is the rapid prototyping method?

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c) Fused Deposition Modeling d) All of these

13) In the following geometric modeling which is not 3D modeling?

a) Wireframe modeling b) Drafting
c) Surface modeling d) Solid Modeling

14) In any curve representation, the shape associated with control points is called as _____.

a) Uniform curve b) Rectangle
c) Circle d) Control polygon

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
CAD-CAM-CAE (BTN02502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

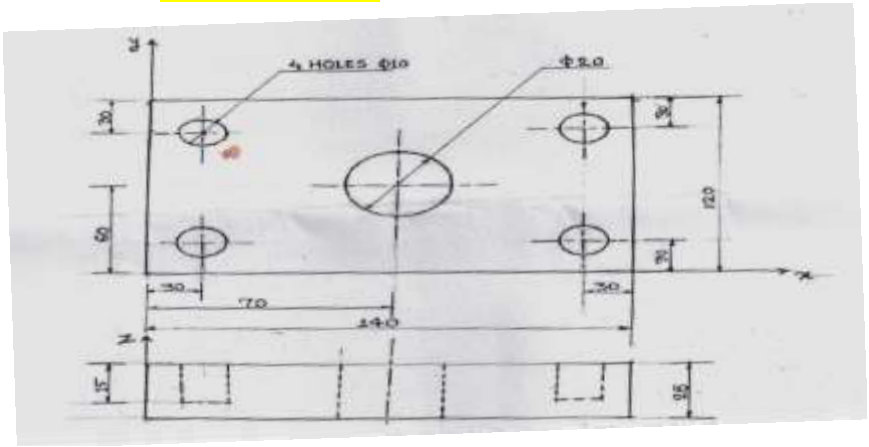
Instructions: 1) Attempt any two questions from in section - I.
2) Question No. 5 is compulsory and from the remaining attempt any one from Section - II.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary.
5) Use of scientific calculator is allowed.

Section – I

Q.2	**a)**	Explain types of Geometrical modeling.	**07**
	b)	Illustrate group technology with example.	**07**
Q.3	**a)**	Discuss different types of elements and nodes in Finite element method?	**07**
	b)	Explain types of C.A.P.P with neat sketch.	**07**
Q.4	**a)**	Discuss Graphics workstation with neat sketch.	**07**
	b)	Explain part classification and coding in detail.	**07**

Section – II

Q.5	**a)**	For following component make a part program on CNC machine. Work material: Mild steel, Tool materials: HSS, Work size: 120 x 140 x 25.	**10**



	b)	Enlist G codes and M codes with its meaning.	**04**
Q.6	**a)**	Explain types of tool magazine with neat sketch.	**07**
	b)	Enlist the different types of CNC machine tools and discuss any 02 with neat sketch.	**07**
Q.7	**a)**	Explain Canned cycle w.r.t CNC programming with example.	**07**
	b)	Describe the elements of NC System.	**07**

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov -2023
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Aluminum -Silicon alloys are given _____ treatment.
a) modification b) precipitation
c) stabilizing d) malleablising

2) Magnetic particle test can be done on _____.
a) brass b) aluminum alloys
c) all magnetic materials d) babbits

3) Retained austenite can be completely removed by _____.
a) sub zero treatment b) annealing
c) martempering d) none of these

4) Pearlite is product of _____ transformation.
a) monotectic b) eutectic
c) eutectoid d) peritectic

5) Stainless steel powder is frequently manufactured by _____ method.
a) reduction b) carbonyl
c) electro deposition d) atomization

6) Martensite is having _____ structure.
a) BCC b) FCC
c) HCP d) BCT

7) Which of the following doesn't give specification of steel?
a) AISI b) SAE
c) EN d) ASTM

8) 4.43% carbon steels undergo _____ transformation in Fe-Fe3C diagram.
a) Eutectic b) Eutectoid
c) Peritectic d) Monotectic

9) Eddy current testing is suitable to detect _____.
a) surface cracks
b) all types of cracks at any depth
c) sub surface cracks at shallow depth
d) none of these

10) Which of the following is austenite stabilizer, when added to steels?
a) silicon b) manganese
c) chromium d) cobalt

11) S-N Curve is related to _____ test.
a) creep b) fatigue
c) tensile d) impact

12) The medium used in gas nitriding is _____.
a) ammonia b) butane
c) propane d) none

13) Tin is having _____ structure.
a) BCC b) HCP
c) BCT d) FCC

14) Which of the following is mechanical method of powder manufacturing?
a) Milling b) Reduction
c) Condensation d) None

Seat No.		Set	P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume additional suitable data if necessary and state it clearly.

Section – I

Q.2 **a)** Draw Fe-Fe_3C equilibrium diagram. Label all the temperatures & constituents. **06**
b) With the help of above diagram, explain peritectic & eutectic reaction. **06**
c) Explain
1) A1 temperature **01**
2) A3 temperature **01**

Q.3 **a)** Give typical composition, properties & applications of the following. **12**
1) HSS
2) Stainless steel
3) HSLA steels
4) Spring steel
b) Explain modification treatment given to Al-Si system in brief. **02**

Q.4 **Answer the following.**
a) Compare between Gray Cast Iron & White Cast Iron **04**
b) Explain why Copper is an essential constituent of Babbitts. **03**
c) Draw neat sketch of Interstitial solid solution & Substitutional solid solution. **04**
d) What are composites? What are their applications? **03**

Section – II

Q.5 **a)** Draw a neat labeled TTT diagram for eutectoid steel. **04**
b) Compare Annealing & Normalizing. **04**
c) Explain the purposes of Tempering. **03**
d) Enlist various quenching media & their characteristics. **03**

Q.6 **a)** Compare Austempering & Martempering. **03**
b) Compare between Brinell & Rockwell hardness Tests. **04**
c) Explain why OHNS steels are subjected to subzero treatment. **03**
d) Draw the typical flow chart for manufacturing of self lubricated bearing by Powder metallurgy. **04**

Q.7	**a)**	Discuss various methods of Powder manufacturing.	**03**
	b)	Explain X-ray radiography test with neat sketch.	**04**
	c)	Explain Eddy current test with neat sketch.	**04**
	d)	Write a note on Tensile testing.	**03**

Seat No.	

Set | Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov -2023
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) 4.43% carbon steels undergo _____ transformation in Fe-Fe3C diagram.
a) Eutectic b) Eutectoid
c) Peritectic d) Monotectic

2) Eddy current testing is suitable to detect _____.
a) surface cracks
b) all types of cracks at any depth
c) sub surface cracks at shallow depth
d) none of these

3) Which of the following is austenite stabilizer, when added to steels?
a) silicon b) manganese
c) chromium d) cobalt

4) S-N Curve is related to _____ test.
a) creep b) fatigue
c) tensile d) impact

5) The medium used in gas nitriding is _____.
a) ammonia b) butane
c) propane d) none

6) Tin is having _____ structure.
a) BCC b) HCP
c) BCT d) FCC

7) Which of the following is mechanical method of powder manufacturing?
a) Milling b) Reduction
c) Condensation d) None

8) Aluminum -Silicon alloys are given _____ treatment.
a) modification b) precipitation
c) stabilizing d) malleablising

9) Magnetic particle test can be done on _____.
a) brass b) aluminum alloys
c) all magnetic materials d) babbits

10) Retained austenite can be completely removed by _____.
a) sub zero treatment b) annealing
c) martempering d) none of these

11) Pearlite is product of _____ transformation.
a) monotectic b) eutectic
c) eutectoid d) peritectic

12) Stainless steel powder is frequently manufactured by _____ method.
a) reduction b) carbonyl
c) electro deposition d) atomization

13) Martensite is having _____ structure.
a) BCC b) FCC
c) HCP d) BCT

14) Which of the following doesn't give specification of steel?
a) AISI b) SAE
c) EN d) ASTM

Seat No.	

Set | Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume additional suitable data if necessary and state it clearly.

Section – I

Q.2 **a)** Draw Fe-Fe_3C equilibrium diagram. Label all the temperatures & constituents. **06**
b) With the help of above diagram, explain peritectic & eutectic reaction. **06**
c) Explain
1) A1 temperature **01**
2) A3 temperature **01**

Q.3 **a)** Give typical composition, properties & applications of the following. **12**
1) HSS
2) Stainless steel
3) HSLA steels
4) Spring steel
b) Explain modification treatment given to Al-Si system in brief. **02**

Q.4 **Answer the following.**
a) Compare between Gray Cast Iron & White Cast Iron **04**
b) Explain why Copper is an essential constituent of Babbitts. **03**
c) Draw neat sketch of Interstitial solid solution & Substitutional solid solution. **04**
d) What are composites? What are their applications? **03**

Section – II

Q.5 **a)** Draw a neat labeled TTT diagram for eutectoid steel. **04**
b) Compare Annealing & Normalizing. **04**
c) Explain the purposes of Tempering. **03**
d) Enlist various quenching media & their characteristics. **03**

Q.6 **a)** Compare Austempering & Martempering. **03**
b) Compare between Brinell & Rockwell hardness Tests. **04**
c) Explain why OHNS steels are subjected to subzero treatment. **03**
d) Draw the typical flow chart for manufacturing of self lubricated bearing by Powder metallurgy. **04**

Q.7	**a)**	Discuss various methods of Powder manufacturing.	**03**
	b)	Explain X-ray radiography test with neat sketch.	**04**
	c)	Explain Eddy current test with neat sketch.	**04**
	d)	Write a note on Tensile testing.	**03**

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov -2023
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) S-N Curve is related to _____ test.
a) creep b) fatigue
c) tensile d) impact

2) The medium used in gas nitriding is _____.
a) ammonia b) butane
c) propane d) none

3) Tin is having _____ structure.
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4) Which of the following is mechanical method of powder manufacturing?
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6) Magnetic particle test can be done on _____.
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7) Retained austenite can be completely removed by _____.
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8) Pearlite is product of _____ transformation.
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c) eutectoid d) peritectic

9) Stainless steel powder is frequently manufactured by _____ method.
a) reduction b) carbonyl
c) electro deposition d) atomization

10) Martensite is having _____ structure.
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14) Which of the following is austenite stabilizer, when added to steels?

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Seat No.	

Set | R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
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Section – I

Q.2 **a)** Draw Fe-Fe_3C equilibrium diagram. Label all the temperatures & constituents. **06**
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Section – II

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	b)	Explain X-ray radiography test with neat sketch.	**04**
	c)	Explain Eddy current test with neat sketch.	**04**
	d)	Write a note on Tensile testing.	**03**

Seat No.	

Set | S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov -2023
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Martensite is having _____ structure.
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7) The medium used in gas nitriding is _____.
a) ammonia b) butane
c) propane d) none

8) Tin is having _____ structure.
a) BCC b) HCP
c) BCT d) FCC

9) Which of the following is mechanical method of powder manufacturing?
a) Milling b) Reduction
c) Condensation d) None

10) Aluminum -Silicon alloys are given _____ treatment.
a) modification b) precipitation
c) stabilizing d) malleablising

11) Magnetic particle test can be done on _____.
a) brass b) aluminum alloys
c) all magnetic materials d) babbits

12) Retained austenite can be completely removed by _____.
a) sub zero treatment b) annealing
c) martempering d) none of these

13) Pearlite is product of _____ transformation.
a) monotectic b) eutectic
c) eutectoid d) peritectic

14) Stainless steel powder is frequently manufactured by _____ method.
a) reduction b) carbonyl
c) electro deposition d) atomization

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Metallurgy (BTN02503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume additional suitable data if necessary and state it clearly.

Section – I

Q.2 **a)** Draw Fe-Fe_3C equilibrium diagram. Label all the temperatures & constituents. **06**
b) With the help of above diagram, explain peritectic & eutectic reaction. **06**
c) Explain
1) A1 temperature **01**
2) A3 temperature **01**

Q.3 **a)** Give typical composition, properties & applications of the following. **12**
1) HSS
2) Stainless steel
3) HSLA steels
4) Spring steel
b) Explain modification treatment given to Al-Si system in brief. **02**

Q.4 **Answer the following.**
a) Compare between Gray Cast Iron & White Cast Iron **04**
b) Explain why Copper is an essential constituent of Babbitts. **03**
c) Draw neat sketch of Interstitial solid solution & Substitutional solid solution. **04**
d) What are composites? What are their applications? **03**

Section – II

Q.5 **a)** Draw a neat labeled TTT diagram for eutectoid steel. **04**
b) Compare Annealing & Normalizing. **04**
c) Explain the purposes of Tempering. **03**
d) Enlist various quenching media & their characteristics. **03**

Q.6 **a)** Compare Austempering & Martempering. **03**
b) Compare between Brinell & Rockwell hardness Tests. **04**
c) Explain why OHNS steels are subjected to subzero treatment. **03**
d) Draw the typical flow chart for manufacturing of self lubricated bearing by Powder metallurgy. **04**

Q.7	**a)**	Discuss various methods of Powder manufacturing.	**03**
	b)	Explain X-ray radiography test with neat sketch.	**04**
	c)	Explain Eddy current test with neat sketch.	**04**
	d)	Write a note on Tensile testing.	**03**

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Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) In outline (Operation) Process chart the following symbols are used
a) Operation and inspection b) Operation and transportation
c) Operation and storage d) none of these

2) If Observed time is 20 min and performance rating is 130 then Normal time is _____.
a) 20 min b) 25 min
c) 16.5 min d) 26 min

3) Productivity can be improved by
a) Increasing the input b) Decreasing the output
c) Decreasing the input d) Both a & b

4) Space available in vertical and horizontal direction is most effectively utilized is known as principle of _____
a) Flexibility b) Minimum waste
c) Cubic space utilization d) Minimum distance

5) Delay occurs when
a) Someone stops the process
b) Product waits for next operation
c) Production is continues
d) Both a & b

6) The following subject(s) is (are) related to 'Ergonomics'
a) Anthropology b) Physiology
c) Psychology d) all of the above

7) Check list method is a type of
a) Job evaluation b) Merit rating
c) Incentive scheme d) Method study

8) Product type layout is used in
a) Ship building b) Sugar industry
c) Automobile industry d) Textile industry

9) _____ is based on film analysis

a) Flow process chart b) String diagram
c) Operation process chart d) SIMO chart

10) The following is not a job evaluation method_____

a) Factor comparison method b) Point method
c) Ranking method d) Assessment method

11) The height of the top of the work bench should be _____ the height of the elbow of the workmen.

a) Above b) Below
c) At d) All of these

12) Following technique of work measurement is based on statistics

a) Time study b) Work sampling
c) Standard data d) Analytical estimating

13) Time for tool grinding is considered in

a) Contingency allowance b) Personal allowance
c) Policy allowance d) Fatigue allowance

14) In which type of layout the machines are arranged in the sequence as required by the product?

a) Process layout b) Product layout
c) Fixed position layout d) Combination layout

Seat No.	

Set | P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Use of scientific calculator is allowed.
3) Figures to right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.

Section – I

Q.2	**a)**	What is method study? Explain the method study procedure in detail.	**07**
	b)	Define productivity? Discuss factors affecting productivity and ways to improve productivity.	**07**
Q.3	**a)**	What are different types of recording techniques? Explain operation process chart with suitable example.	**07**
	b)	Discuss ergonomical considerations at work place design and explain environmental factors in ergonomics.	**07**
Q.4	**a)**	Explain multiple activity chart	**06**
	b)	**Write short notes (Any two each 4 Marks)** i) Therbligs ii) Two handed process chart iii) Types of displays.	**08**

Section – II

Q.5	**a)**	Discuss advantages and disadvantages of facility location in urban and rural areas	**07**
	b)	What is job evaluation? List job evaluation methods and explain any one in detail.	**07**
Q.6	**a)**	Discuss the factors affecting plant location.	**07**
	b)	What is performance rating? Explain the performance rating methods	**07**
Q.7	**a)**	Explain various types of layout	**06**
	b)	**Write short note on (Any two each 4 Marks)** i) Principles and objectives of plant layout ii) Allowances iii) Merit rating	**08**

Seat No.	

Set | Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) Product type layout is used in
a) Ship building b) Sugar industry
c) Automobile industry d) Textile industry

2) _____ is based on film analysis
a) Flow process chart b) String diagram
c) Operation process chart d) SIMO chart

3) The following is not a job evaluation method_____
a) Factor comparison method b) Point method
c) Ranking method d) Assessment method

4) The height of the top of the work bench should be _____ the height of the elbow of the workmen.
a) Above b) Below
c) At d) All of these

5) Following technique of work measurement is based on statistics
a) Time study b) Work sampling
c) Standard data d) Analytical estimating

6) Time for tool grinding is considered in
a) Contingency allowance b) Personal allowance
c) Policy allowance d) Fatigue allowance

7) In which type of layout the machines are arranged in the sequence as required by the product?
a) Process layout b) Product layout
c) Fixed position layout d) Combination layout

8) In outline (Operation) Process chart the following symbols are used
a) Operation and inspection b) Operation and transportation
c) Operation and storage d) none of these

9) If Observed time is 20 min and performance rating is 130 then Normal time is _____.

a) 20 min b) 25 min
c) 16.5 min d) 26 min

10) Productivity can be improved by

a) Increasing the input b) Decreasing the output
c) Decreasing the input d) Both a & b

11) Space available in vertical and horizontal direction is most effectively utilized is known as principle of _____

a) Flexibility b) Minimum waste
c) Cubic space utilization d) Minimum distance

12) Delay occurs when

a) Someone stops the process
b) Product waits for next operation
c) Production is continues
d) Both a & b

13) The following subject(s) is (are) related to 'Ergonomics'

a) Anthropology b) Physiology
c) Psychology d) all of the above

14) Check list method is a type of

a) Job evaluation b) Merit rating
c) Incentive scheme d) Method study

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Use of scientific calculator is allowed.
3) Figures to right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.

Section – I

Q.2 **a)** What is method study? Explain the method study procedure in detail. **07**
b) Define productivity? Discuss factors affecting productivity and ways to improve productivity. **07**

Q.3 **a)** What are different types of recording techniques? Explain operation process chart with suitable example. **07**
b) Discuss ergonomical considerations at work place design and explain environmental factors in ergonomics. **07**

Q.4 **a)** Explain multiple activity chart **06**
b) **Write short notes (Any two each 4 Marks)** **08**
i) Therbligs
ii) Two handed process chart
iii) Types of displays.

Section – II

Q.5 **a)** Discuss advantages and disadvantages of facility location in urban and rural areas **07**
b) What is job evaluation? List job evaluation methods and explain any one in detail. **07**

Q.6 **a)** Discuss the factors affecting plant location. **07**
b) What is performance rating? Explain the performance rating methods **07**

Q.7 **a)** Explain various types of layout **06**
b) **Write short note on (Any two each 4 Marks)** **08**
i) Principles and objectives of plant layout
ii) Allowances
iii) Merit rating

Seat No.	

Set | R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) The height of the top of the work bench should be _____ the height of the elbow of the workmen.
a) Above b) Below
c) At d) All of these

2) Following technique of work measurement is based on statistics
a) Time study b) Work sampling
c) Standard data d) Analytical estimating

3) Time for tool grinding is considered in
a) Contingency allowance b) Personal allowance
c) Policy allowance d) Fatigue allowance

4) In which type of layout the machines are arranged in the sequence as required by the product?
a) Process layout b) Product layout
c) Fixed position layout d) Combination layout

5) In outline (Operation) Process chart the following symbols are used
a) Operation and inspection b) Operation and transportation
c) Operation and storage d) none of these

6) If Observed time is 20 min and performance rating is 130 then Normal time is _____.
a) 20 min b) 25 min
c) 16.5 min d) 26 min

7) Productivity can be improved by
a) Increasing the input b) Decreasing the output
c) Decreasing the input d) Both a & b

8) Space available in vertical and horizontal direction is most effectively utilized is known as principle of _____
a) Flexibility b) Minimum waste
c) Cubic space utilization d) Minimum distance

9) Delay occurs when
a) Someone stops the process
b) Product waits for next operation
c) Production is continues
d) Both a & b

10) The following subject(s) is (are) related to 'Ergonomics'
a) Anthropology b) Physiology
c) Psychology d) all of the above

11) Check list method is a type of
a) Job evaluation b) Merit rating
c) Incentive scheme d) Method study

12) Product type layout is used in
a) Ship building b) Sugar industry
c) Automobile industry d) Textile industry

13) _____ is based on film analysis
a) Flow process chart b) String diagram
c) Operation process chart d) SIMO chart

14) The following is not a job evaluation method_____
a) Factor comparison method b) Point method
c) Ranking method d) Assessment method

Seat No.	

Set | R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Use of scientific calculator is allowed.
3) Figures to right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.

Section – I

Q.2 **a)** What is method study? Explain the method study procedure in detail. **07**
b) Define productivity? Discuss factors affecting productivity and ways to improve productivity. **07**

Q.3 **a)** What are different types of recording techniques? Explain operation process chart with suitable example. **07**
b) Discuss ergonomical considerations at work place design and explain environmental factors in ergonomics. **07**

Q.4 **a)** Explain multiple activity chart **06**
b) **Write short notes (Any two each 4 Marks)** **08**
i) Therbligs
ii) Two handed process chart
iii) Types of displays.

Section – II

Q.5 **a)** Discuss advantages and disadvantages of facility location in urban and rural areas **07**
b) What is job evaluation? List job evaluation methods and explain any one in detail. **07**

Q.6 **a)** Discuss the factors affecting plant location. **07**
b) What is performance rating? Explain the performance rating methods **07**

Q.7 **a)** Explain various types of layout **06**
b) **Write short note on (Any two each 4 Marks)** **08**
i) Principles and objectives of plant layout
ii) Allowances
iii) Merit rating

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) The following subject(s) is (are) related to 'Ergonomics'
a) Anthropology b) Physiology
c) Psychology d) all of the above

2) Check list method is a type of
a) Job evaluation b) Merit rating
c) Incentive scheme d) Method study

3) Product type layout is used in
a) Ship building b) Sugar industry
c) Automobile industry d) Textile industry

4) _____ is based on film analysis
a) Flow process chart b) String diagram
c) Operation process chart d) SIMO chart

5) The following is not a job evaluation method_____
a) Factor comparison method b) Point method
c) Ranking method d) Assessment method

6) The height of the top of the work bench should be _____ the height of the elbow of the workmen.
a) Above b) Below
c) At d) All of these

7) Following technique of work measurement is based on statistics
a) Time study b) Work sampling
c) Standard data d) Analytical estimating

8) Time for tool grinding is considered in
a) Contingency allowance b) Personal allowance
c) Policy allowance d) Fatigue allowance

9) In which type of layout the machines are arranged in the sequence as required by the product?
a) Process layout b) Product layout
c) Fixed position layout d) Combination layout

10) In outline (Operation) Process chart the following symbols are used
a) Operation and inspection b) Operation and transportation
c) Operation and storage d) none of these

11) If Observed time is 20 min and performance rating is 130 then Normal time is _____.
a) 20 min b) 25 min
c) 16.5 min d) 26 min

12) Productivity can be improved by
a) Increasing the input b) Decreasing the output
c) Decreasing the input d) Both a & b

13) Space available in vertical and horizontal direction is most effectively utilized is known as principle of _____
a) Flexibility b) Minimum waste
c) Cubic space utilization d) Minimum distance

14) Delay occurs when
a) Someone stops the process
b) Product waits for next operation
c) Production is continues
d) Both a & b

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Engineering (BTN02504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Use of scientific calculator is allowed.
3) Figures to right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.

Section – I

Q.2	**a)**	What is method study? Explain the method study procedure in detail.	**07**
	b)	Define productivity? Discuss factors affecting productivity and ways to improve productivity.	**07**
Q.3	**a)**	What are different types of recording techniques? Explain operation process chart with suitable example.	**07**
	b)	Discuss ergonomical considerations at work place design and explain environmental factors in ergonomics.	**07**
Q.4	**a)**	Explain multiple activity chart	**06**
	b)	**Write short notes (Any two each 4 Marks)** i) Therbligs ii) Two handed process chart iii) Types of displays.	**08**

Section – II

Q.5	**a)**	Discuss advantages and disadvantages of facility location in urban and rural areas	**07**
	b)	What is job evaluation? List job evaluation methods and explain any one in detail.	**07**
Q.6	**a)**	Discuss the factors affecting plant location.	**07**
	b)	What is performance rating? Explain the performance rating methods	**07**
Q.7	**a)**	Explain various types of layout	**06**
	b)	**Write short note on (Any two each 4 Marks)** i) Principles and objectives of plant layout ii) Allowances iii) Merit rating	**08**

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tool Engineering (BTN02515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book).
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 A) Choose the correct answer: **06**

1) In metal cutting operation, maximum heat (i.e. 80-85%) is generated in ____.
   a) the shear zone b) the chip-tool interface zone
   c) the tool-work interface zone d) none of the above

2) Tool signature consists of _____ elements of geometry.
   a) Two b) Four
   c) Five d) Seven

3) EOQ it is necessary for deciding _____.
   a) B.E.P b) Economic Order
   c) Inventory carry cost d) All the above

4) A device, in which a component is held and located for a specific operation and bushes are integrated that guide the tool, is called as _____.
   a) jig b) fixture
   c) both a) and b) d) none of the above

5) Total elements in press tool _____.
   a) 7 b) 8
   c) 9 d) 10

6) For blanking operation clearance is provided on _____.
   a) Die b) Punch
   c) Die & Punch d) none of the above

B) Attempt the following multiple choice correct answer type questions. 08

7) In metal cutting while drawing merchant circle number of assumptions as follows _____.
   a) The cutting velocity remains constant
   b) Continuous chip without built up edge
   c) No constant cutting velocity
   d) Continuous chip with built up edge

8) In Jig or fixture diamond pin locater is used when _____.
   a) There is two already machined parallel holes in work piece
   b) Two or more than two parallel holes in work piece
   c) One hole is already machined in work piece
   d) No hole is exist in the work piece

9) In press tool the main purpose of punch holder _____.
   a) to guide punch
   b) to guide strip
   c) to strip out the material
   d) to hold the punch

10) In jig or fixture V locater is used for _____.
   a) Clamping round job
   b) Locate the flat job
   c) Locating round job
   d) No use of V locater

Seat No.	

Set **P**

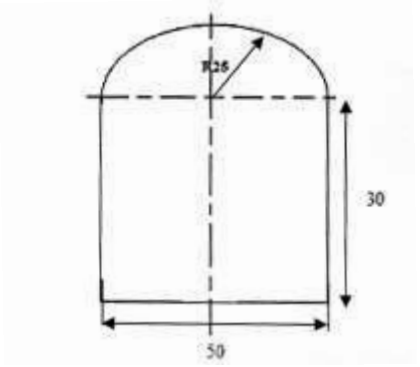
T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tool Engineering (BTN02515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2 a) Design a press tool for the component shown in fig-I giving following details. **14**
i) Cutting force
ii) Clearance between punch and die
iii) Stripping force and no of bolts and bolt size need for die clamping
iv) Strip layout and % material utilization.

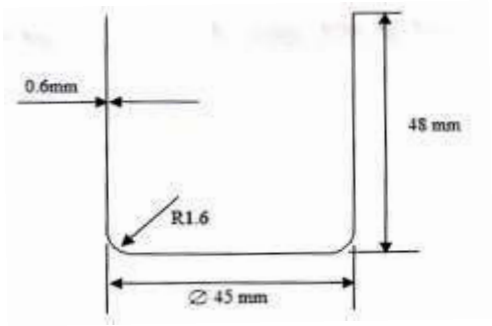


Material: - C45
Thickness = 5mm
Shear strength = 42 kg/ mm^2

Also draw one sectional view of assembly of press tool and part name.

OR

b) Design a draw tool for given component Fig-II also calculate the following (draw one sectional view of assembly)
i) Blank size
ii) No of draws
iii) draw ratio
iv) drawing force
v) Blank force
vi) die and punch clearance



Material: - CRCA
Material Thickness:- 0.6
Yield strength = 42 kg/ mm^2

Q.3 **a)** The following observations were made during on orthogonal cutting operation. **04**

i) rake angle - 20°
ii) shear angle - 29.54°
iii) cutting force - 300N
iv) feed force - 120N
v) cutting velocity = 102 m/min

Determine

i) shear strain
ii) work done in shear

b) Sketch and explain in brief about types of chips in metal cutting. **03**

Q.4 **a)** While turning die 22 mm bar at 300 rpm. With H.S.S. tool a tool life of 8 min. when same bar was Turned at 240 rpm. What will be tool life at same speed? Where n = 0.108. **03**

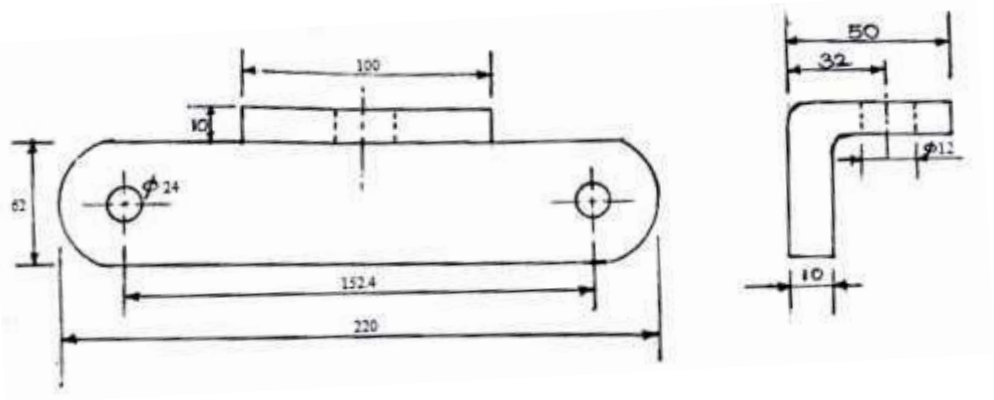
b) List types of tool materials and explain in brief any two materials. **04**

Q.5 **Writes a short note on (Any Two)** **07**

a) Press tool stripper
b) Types of coolant in metal cutting
c) Orthogonal & oblique cutting

Section – II

Q.6 **a)** Design drill jig for drilling die 12 hole draw one view of sectional assembly with parts name. **14**



OR

b) Design milling fixture for milling 100 x 10 face draw one view of sectional assembly with parts name.

Q.7 **a)** Explain in brief about break even analysis. **04**

b) Explain in brief about geometry of Drill. **03**

Q.8 **a)** With neat sketch explain in brief about any two indexing devices used in jig or fixture. **04**

b) List type of bush (drill bush) used in jig and explain in brief used of each drill bush. **03**

Q.9 **Write short notes on (Any Two)** **07**

a) Types of jig & its application

b) Effect of tool geometry on tool life

c) Setting block in fixture

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tool Engineering (BTN02515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book).
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 A) Choose the correct answer: **06**

1) A device, in which a component is held and located for a specific operation and bushes are integrated that guide the tool, is called as _____.
   a) jig b) fixture
   c) both a) and b) d) none of the above

2) Total elements in press tool _____.
   a) 7 b) 8
   c) 9 d) 10

3) For blanking operation clearance is provided on _____.
   a) Die b) Punch
   c) Die & Punch d) none of the above

4) In metal cutting operation, maximum heat (i.e. 80-85%) is generated in ____.
   a) the shear zone b) the chip-tool interface zone
   c) the tool-work interface zone d) none of the above

5) Tool signature consists of _____ elements of geometry.
   a) Two b) Four
   c) Five d) Seven

6) EOQ it is necessary for deciding _____.
   a) B.E.P b) Economic Order
   c) Inventory carry cost d) All the above

B) Attempt the following multiple choice correct answer type questions. 08

7) In Jig or fixture diamond pin locater is used when _____.
   a) There is two already machined parallel holes in work piece
   b) Two or more than two parallel holes in work piece
   c) One hole is already machined in work piece
   d) No hole is exist in the work piece

8) In press tool the main purpose of punch holder _____.
   a) to guide punch b) to guide strip
   c) to strip out the material d) to hold the punch

9) In jig or fixture V locater is used for _____.
   a) Clamping round job b) Locate the flat job
   c) Locating round job d) No use of V locater

10) In metal cutting while drawing merchant circle number of assumptions as follows _____.
   a) The cutting velocity remains constant
   b) Continuous chip without built up edge
   c) No constant cutting velocity
   d) Continuous chip with built up edge

Seat No.	

Set **Q**

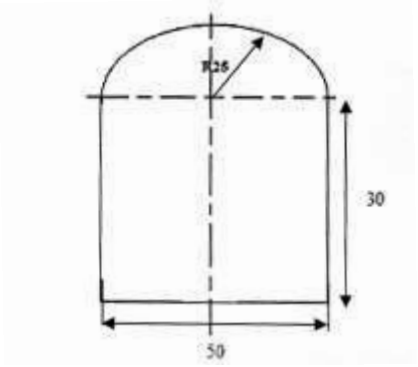
T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tool Engineering (BTN02515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2 a) Design a press tool for the component shown in fig-I giving following details. **14**
i) Cutting force
ii) Clearance between punch and die
iii) Stripping force and no of bolts and bolt size need for die clamping
iv) Strip layout and % material utilization.

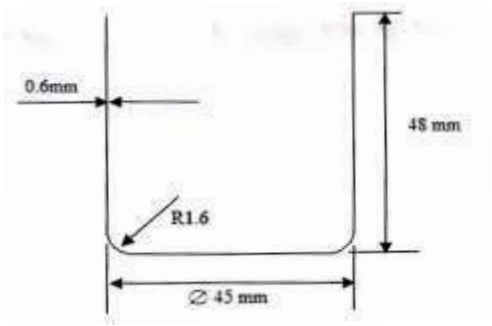


Material: - C45
Thickness = 5mm
Shear strength = 42 kg/ mm^2

Also draw one sectional view of assembly of press tool and part name.

OR

b) Design a draw tool for given component Fig-II also calculate the following (draw one sectional view of assembly)
i) Blank size
ii) No of draws
iii) draw ratio
iv) drawing force
v) Blank force
vi) die and punch clearance



Material: - CRCA
Material Thickness:- 0.6
Yield strength = 42 kg/ mm^2

Q.3 **a)** The following observations were made during on orthogonal cutting operation. **04**

i) rake angle - 20°
ii) shear angle - 29.54°
iii) cutting force - 300N
iv) feed force - 120N
v) cutting velocity = 102 m/min

Determine

i) shear strain
ii) work done in shear

b) Sketch and explain in brief about types of chips in metal cutting. **03**

Q.4 **a)** While turning die 22 mm bar at 300 rpm. With H.S.S. tool a tool life of 8 min. when same bar was Turned at 240 rpm. What will be tool life at same speed? Where n = 0.108. **03**

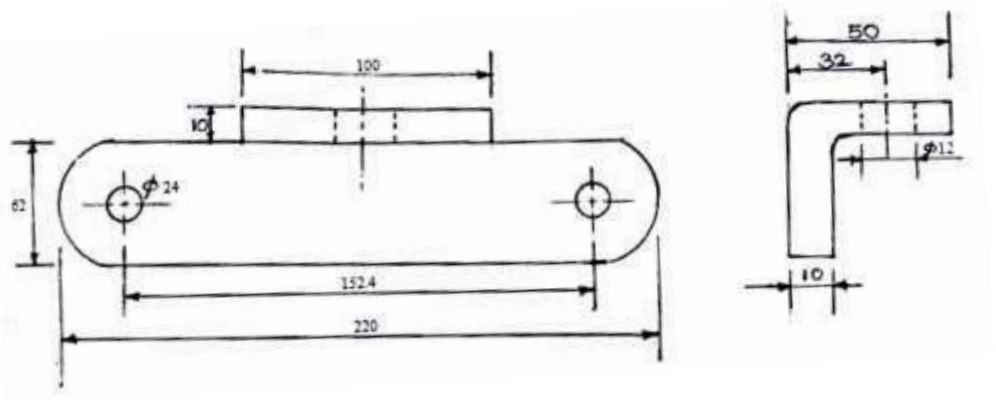
b) List types of tool materials and explain in brief any two materials. **04**

Q.5 **Writes a short note on (Any Two)** **07**

a) Press tool stripper
b) Types of coolant in metal cutting
c) Orthogonal & oblique cutting

Section – II

Q.6 **a)** Design drill jig for drilling die 12 hole draw one view of sectional assembly with parts name. **14**



OR

b) Design milling fixture for milling 100 x 10 face draw one view of sectional assembly with parts name.

Q.7 **a)** Explain in brief about break even analysis. **04**

b) Explain in brief about geometry of Drill. **03**

Q.8 **a)** With neat sketch explain in brief about any two indexing devices used in jig or fixture. **04**

b) List type of bush (drill bush) used in jig and explain in brief used of each drill bush. **03**

Q.9 **Write short notes on (Any Two)** **07**

a) Types of jig & its application

b) Effect of tool geometry on tool life

c) Setting block in fixture

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tool Engineering (BTN02515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book).
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 A) Choose the correct answer: **06**

1) Total elements in press tool _____.
   a) 7 b) 8
   c) 9 d) 10

2) For blanking operation clearance is provided on _____.
   a) Die b) Punch
   c) Die & Punch d) none of the above

3) In metal cutting operation, maximum heat (i.e. 80-85%) is generated in ____.
   a) the shear zone b) the chip-tool interface zone
   c) the tool-work interface zone d) none of the above

4) Tool signature consists of _____ elements of geometry.
   a) Two b) Four
   c) Five d) Seven

5) EOQ it is necessary for deciding _____.
   a) B.E.P b) Economic Order
   c) Inventory carry cost d) All the above

6) A device, in which a component is held and located for a specific operation and bushes are integrated that guide the tool, is called as _____.
   a) jig b) fixture
   c) both a) and b) d) none of the above

B) Attempt the following multiple choice correct answer type questions. 08

7) In press tool the main purpose of punch holder _____.
   a) to guide punch
   b) to guide strip
   c) to strip out the material
   d) to hold the punch

8) In jig or fixture V locater is used for _____.
   a) Clamping round job
   b) Locate the flat job
   c) Locating round job
   d) No use of V locater

9) In metal cutting while drawing merchant circle number of assumptions as follows _____.
   a) The cutting velocity remains constant
   b) Continuous chip without built up edge
   c) No constant cutting velocity
   d) Continuous chip with built up edge

10) In Jig or fixture diamond pin locater is used when _____.
   a) There is two already machined parallel holes in work piece
   b) Two or more than two parallel holes in work piece
   c) One hole is already machined in work piece
   d) No hole is exist in the work piece

Seat No.	

Set **R**

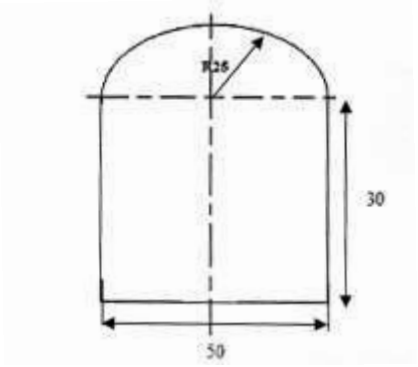
T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tool Engineering (BTN02515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2 a) Design a press tool for the component shown in fig-I giving following details. **14**
i) Cutting force
ii) Clearance between punch and die
iii) Stripping force and no of bolts and bolt size need for die clamping
iv) Strip layout and % material utilization.

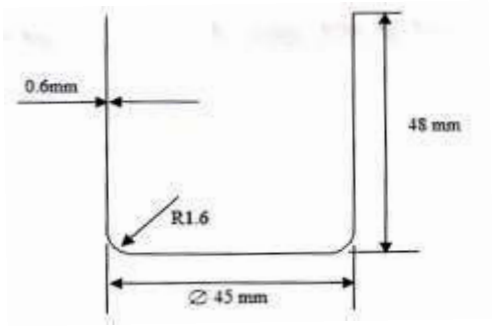


Material: - C45
Thickness = 5mm
Shear strength = 42 kg/ mm^2

Also draw one sectional view of assembly of press tool and part name.

OR

b) Design a draw tool for given component Fig-II also calculate the following (draw one sectional view of assembly)
i) Blank size
ii) No of draws
iii) draw ratio
iv) drawing force
v) Blank force
vi) die and punch clearance



Material: - CRCA
Material Thickness:- 0.6
Yield strength = 42 kg/ mm^2

Q.3 **a)** The following observations were made during on orthogonal cutting operation. **04**

i) rake angle - 20°
ii) shear angle - 29.54°
iii) cutting force - 300N
iv) feed force - 120N
v) cutting velocity = 102 m/min

Determine

i) shear strain
ii) work done in shear

b) Sketch and explain in brief about types of chips in metal cutting. **03**

Q.4 **a)** While turning die 22 mm bar at 300 rpm. With H.S.S. tool a tool life of 8 min. when same bar was Turned at 240 rpm. What will be tool life at same speed? Where n = 0.108. **03**

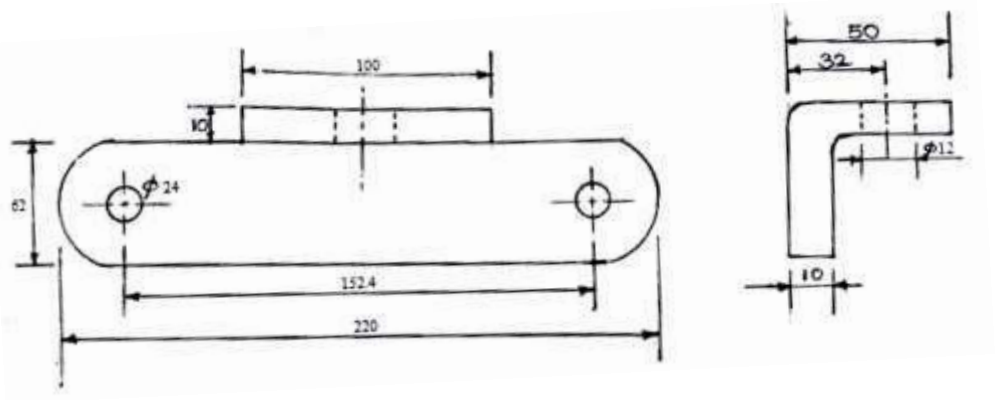
b) List types of tool materials and explain in brief any two materials. **04**

Q.5 **Writes a short note on (Any Two)** **07**

a) Press tool stripper
b) Types of coolant in metal cutting
c) Orthogonal & oblique cutting

Section – II

Q.6 **a)** Design drill jig for drilling die 12 hole draw one view of sectional assembly with parts name. **14**



OR

b) Design milling fixture for milling 100 x 10 face draw one view of sectional assembly with parts name.

Q.7 **a)** Explain in brief about break even analysis. **04**

b) Explain in brief about geometry of Drill. **03**

Q.8 **a)** With neat sketch explain in brief about any two indexing devices used in jig or fixture. **04**

b) List type of bush (drill bush) used in jig and explain in brief used of each drill bush. **03**

Q.9 **Write short notes on (Any Two)** **07**

a) Types of jig & its application

b) Effect of tool geometry on tool life

c) Setting block in fixture

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tool Engineering (BTN02515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book).
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 A) Choose the correct answer: **06**

1) For blanking operation clearance is provided on _____.
   a) Die b) Punch
   c) Die & Punch d) none of the above

2) In metal cutting operation, maximum heat (i.e. 80-85%) is generated in ____.
   a) the shear zone b) the chip-tool interface zone
   c) the tool-work interface zone d) none of the above

3) Tool signature consists of _____ elements of geometry.
   a) Two b) Four
   c) Five d) Seven

4) EOQ it is necessary for deciding _____.
   a) B.E.P b) Economic Order
   c) Inventory carry cost d) All the above

5) A device, in which a component is held and located for a specific operation and bushes are integrated that guide the tool, is called as _____.
   a) jig b) fixture
   c) both a) and b) d) none of the above

6) Total elements in press tool _____.
   a) 7 b) 8
   c) 9 d) 10

B) Attempt the following multiple choice correct answer type questions. 08

7) In jig or fixture V locater is used for _____.
   a) Clamping round job
   b) Locate the flat job
   c) Locating round job
   d) No use of V locater

8) In metal cutting while drawing merchant circle number of assumptions as follows _____.
   a) The cutting velocity remains constant
   b) Continuous chip without built up edge
   c) No constant cutting velocity
   d) Continuous chip with built up edge

9) In Jig or fixture diamond pin locater is used when _____.
   a) There is two already machined parallel holes in work piece
   b) Two or more than two parallel holes in work piece
   c) One hole is already machined in work piece
   d) No hole is exist in the work piece

10) In press tool the main purpose of punch holder _____.
   a) to guide punch
   b) to guide strip
   c) to strip out the material
   d) to hold the punch

Seat No.	

Set **S**

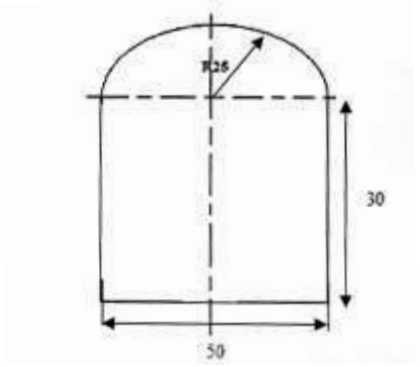
T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tool Engineering (BTN02515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2 a) Design a press tool for the component shown in fig-I giving following details. **14**
i) Cutting force
ii) Clearance between punch and die
iii) Stripping force and no of bolts and bolt size need for die clamping
iv) Strip layout and % material utilization.

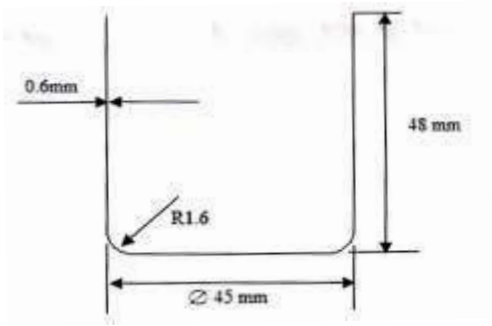


Material: - C45
Thickness = 5mm
Shear strength = 42 kg/ mm^2

Also draw one sectional view of assembly of press tool and part name.

OR

b) Design a draw tool for given component Fig-II also calculate the following (draw one sectional view of assembly)
i) Blank size
ii) No of draws
iii) draw ratio
iv) drawing force
v) Blank force
vi) die and punch clearance



Material: - CRCA
Material Thickness:- 0.6
Yield strength = 42 kg/ mm^2

Q.3 **a)** The following observations were made during on orthogonal cutting operation. **04**

i) rake angle - 20°
ii) shear angle - 29.54°
iii) cutting force - 300N
iv) feed force - 120N
v) cutting velocity = 102 m/min

Determine

i) shear strain
ii) work done in shear

b) Sketch and explain in brief about types of chips in metal cutting. **03**

Q.4 **a)** While turning die 22 mm bar at 300 rpm. With H.S.S. tool a tool life of 8 min. when same bar was Turned at 240 rpm. What will be tool life at same speed? Where n = 0.108. **03**

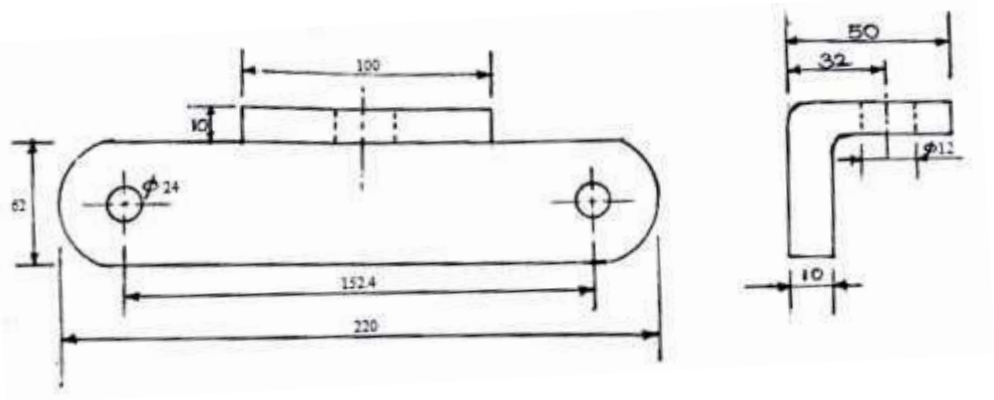
b) List types of tool materials and explain in brief any two materials. **04**

Q.5 **Writes a short note on (Any Two)** **07**

a) Press tool stripper
b) Types of coolant in metal cutting
c) Orthogonal & oblique cutting

Section – II

Q.6 **a)** Design drill jig for drilling die 12 hole draw one view of sectional assembly with parts name. **14**



OR

b) Design milling fixture for milling 100 x 10 face draw one view of sectional assembly with parts name.

Q.7 **a)** Explain in brief about break even analysis. **04**

b) Explain in brief about geometry of Drill. **03**

Q.8 **a)** With neat sketch explain in brief about any two indexing devices used in jig or fixture. **04**

b) List type of bush (drill bush) used in jig and explain in brief used of each drill bush. **03**

Q.9 **Write short notes on (Any Two)** **07**

a) Types of jig & its application

b) Effect of tool geometry on tool life

c) Setting block in fixture

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Draw suitable diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Metallic seals are suitable for _____.
a) High pressure b) High temperature
c) Extremely low temperature d) All of the given

2) Linear actuators convert _____.
a) Kinetic energy of fluid into mechanical energy
b) Mechanical energy into pressure energy
c) Kinetic energy of fluid into pressure energy
d) Pressure energy of fluid into mechanical energy

3) Which of the following is a non-positive displacement pump?
a) Gear pump b) Vane pump
c) Centrifugal pump d) Reciprocating pump

4) Weight loaded accumulator can be used in _____.
a) Horizontal position b) Vertical position
c) Inclined position d) In any position

5) Pressure relief valve is normally _____type valve.
a) Open b) Closed
c) Open or closed d) none of these

6) In case of meter-in circuit, heat generated due to throttling is fed to the _____.
a) Oil reservoir b) Actuator
c) Both Oil reservoir & Actuator d) None of these

7) In Regenerative circuit for a double acting cylinder, _____ type of direction control valve is used.
a) 3/2 b) 4/2
c) 3/3 d) None of the above

8) For air motors, input is _____.
a) Low pressure air b) High pressure air
c) Both (a) & (b) d) None of these

9) Quick exhaust valve is used for _____.
a) Single acting cylinder b) Double acting cylinder
c) Single/Double acting cylinder d) None of these

10) Time delay valve consists of _____.
a) Air chamber
b) Flow control valve with check valve
c) 3/2 Direction Control Valve
d) All of these

11) In fire hazardous area, which of the following system is preferred?
a) Electrical b) Hydraulic
c) Pneumatic d) none of these

12) Mostly FRL unit is used at _____.
a) Compressor outlet b) Compressor inlet
c) At outlet of actuator d) None of the above

13) Mostly in railways _____ brakes are used.
a) Hydraulic b) Pneumatic
c) Both d) none of these

14) For controlling speed of forward stroke of the piston of pneumatic cylinder _____ should be preferred.
a) meter in circuit b) meter out circuit
c) time delay circuit d) None of these

SLR-GF-119

Seat No.	

Set P

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve ANY 2 questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if required & state it clearly.

Section – I

Q.2	**a)**	Enlist advantages & limitations of hydraulic systems.	**05**
	b)	Explain construction & working of gear pump.	**05**
	c)	Draw & explain a hydraulic circuit containing accumulator.	**04**
Q.3	**a)**	Explain different types of seals used in hydraulic system.	**05**
	b)	Explain construction & working of 3/2 Direction Control Valve.	**05**
	c)	Draw symbols of Pressure Relief Valve & Hydraulic Motor.	**04**
Q.4	**a)**	Explain construction & working of a non-return type of flow control valve.	**05**
	b)	Explain meter out circuit with neat sketch.	**05**
	c)	Write a note on types of intensifiers.	**04**

Section – II

Q.5	**a)**	Explain pneumatic braking system.	**05**
	b)	Explain the principle of working of lubricator in pneumatic system.	**05**
	c)	Differentiate between hydraulic & pneumatic system.	**04**
Q.6	**a)**	Explain selection criterion for an air compressor.	**05**
	b)	Explain construction & working of Quick Exhaust Valve.	**05**
	c)	Write a note on pneumatic power tools.	**04**
Q.7	**a)**	Explain construction & working of pressure regulator.	**05**
	b)	Explain construction & working of 3/2 seat type direction control valve.	**05**
	c)	Draw symbols of FRL unit & air compressor.	**04**

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Draw suitable diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) For air motors, input is _____.
a) Low pressure air b) High pressure air
c) Both (a) & (b) d) None of these

2) Quick exhaust valve is used for _____.
a) Single acting cylinder b) Double acting cylinder
c) Single/Double acting cylinder d) None of these

3) Time delay valve consists of _____.
a) Air chamber
b) Flow control valve with check valve
c) 3/2 Direction Control Valve
d) All of these

4) In fire hazardous area, which of the following system is preferred?
a) Electrical b) Hydraulic
c) Pneumatic d) none of these

5) Mostly FRL unit is used at _____.
a) Compressor outlet b) Compressor inlet
c) At outlet of actuator d) None of the above

6) Mostly in railways _____ brakes are used.
a) Hydraulic b) Pneumatic
c) Both d) none of these

7) For controlling speed of forward stroke of the piston of pneumatic cylinder _____ should be preferred.
a) meter in circuit b) meter out circuit
c) time delay circuit d) None of these

8) Metallic seals are suitable for _____.
a) High pressure b) High temperature
c) Extremely low temperature d) All of the given

9) Linear actuators convert _____.
a) Kinetic energy of fluid into mechanical energy
b) Mechanical energy into pressure energy
c) Kinetic energy of fluid into pressure energy
d) Pressure energy of fluid into mechanical energy

10) Which of the following is a non-positive displacement pump?
a) Gear pump b) Vane pump
c) Centrifugal pump d) Reciprocating pump

11) Weight loaded accumulator can be used in _____.
a) Horizontal position b) Vertical position
c) Inclined position d) In any position

12) Pressure relief valve is normally _____type valve.
a) Open b) Closed
c) Open or closed d) none of these

13) In case of meter-in circuit, heat generated due to throttling is fed to the _____.
a) Oil reservoir b) Actuator
c) Both Oil reservoir & Actuator d) None of these

14) In Regenerative circuit for a double acting cylinder, _____ type of direction control valve is used.
a) 3/2 b) 4/2
c) 3/3 d) None of the above

SLR-GF-119

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve ANY 2 questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if required & state it clearly.

Section – I

Q.2	**a)**	Enlist advantages & limitations of hydraulic systems.	**05**
	b)	Explain construction & working of gear pump.	**05**
	c)	Draw & explain a hydraulic circuit containing accumulator.	**04**
Q.3	**a)**	Explain different types of seals used in hydraulic system.	**05**
	b)	Explain construction & working of 3/2 Direction Control Valve.	**05**
	c)	Draw symbols of Pressure Relief Valve & Hydraulic Motor.	**04**
Q.4	**a)**	Explain construction & working of a non-return type of flow control valve.	**05**
	b)	Explain meter out circuit with neat sketch.	**05**
	c)	Write a note on types of intensifiers.	**04**

Section – II

Q.5	**a)**	Explain pneumatic braking system.	**05**
	b)	Explain the principle of working of lubricator in pneumatic system.	**05**
	c)	Differentiate between hydraulic & pneumatic system.	**04**
Q.6	**a)**	Explain selection criterion for an air compressor.	**05**
	b)	Explain construction & working of Quick Exhaust Valve.	**05**
	c)	Write a note on pneumatic power tools.	**04**
Q.7	**a)**	Explain construction & working of pressure regulator.	**05**
	b)	Explain construction & working of 3/2 seat type direction control valve.	**05**
	c)	Draw symbols of FRL unit & air compressor.	**04**

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Draw suitable diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) In fire hazardous area, which of the following system is preferred?
a) Electrical b) Hydraulic
c) Pneumatic d) none of these

2) Mostly FRL unit is used at _____.
a) Compressor outlet b) Compressor inlet
c) At outlet of actuator d) None of the above

3) Mostly in railways _____ brakes are used.
a) Hydraulic b) Pneumatic
c) Both d) none of these

4) For controlling speed of forward stroke of the piston of pneumatic cylinder _____ should be preferred.
a) meter in circuit b) meter out circuit
c) time delay circuit d) None of these

5) Metallic seals are suitable for _____.
a) High pressure b) High temperature
c) Extremely low temperature d) All of the given

6) Linear actuators convert _____.
a) Kinetic energy of fluid into mechanical energy
b) Mechanical energy into pressure energy
c) Kinetic energy of fluid into pressure energy
d) Pressure energy of fluid into mechanical energy

7) Which of the following is a non-positive displacement pump?
a) Gear pump b) Vane pump
c) Centrifugal pump d) Reciprocating pump

8) Weight loaded accumulator can be used in _____.
a) Horizontal position b) Vertical position
c) Inclined position d) In any position

9) Pressure relief valve is normally _____type valve.
a) Open b) Closed
c) Open or closed d) none of these

10) In case of meter-in circuit, heat generated due to throttling is fed to the _____.
a) Oil reservoir b) Actuator
c) Both Oil reservoir & Actuator d) None of these

11) In Regenerative circuit for a double acting cylinder, _____ type of direction control valve is used.
a) 3/2 b) 4/2
c) 3/3 d) None of the above

12) For air motors, input is _____.
a) Low pressure air b) High pressure air
c) Both (a) & (b) d) None of these

13) Quick exhaust valve is used for _____.
a) Single acting cylinder b) Double acting cylinder
c) Single/Double acting cylinder d) None of these

14) Time delay valve consists of _____.
a) Air chamber
b) Flow control valve with check valve
c) 3/2 Direction Control Valve
d) All of these

SLR-GF-119

Seat No.	

Set R

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve ANY 2 questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if required & state it clearly.

Section – I

Q.2	**a)**	Enlist advantages & limitations of hydraulic systems.	**05**
	b)	Explain construction & working of gear pump.	**05**
	c)	Draw & explain a hydraulic circuit containing accumulator.	**04**
Q.3	**a)**	Explain different types of seals used in hydraulic system.	**05**
	b)	Explain construction & working of 3/2 Direction Control Valve.	**05**
	c)	Draw symbols of Pressure Relief Valve & Hydraulic Motor.	**04**
Q.4	**a)**	Explain construction & working of a non-return type of flow control valve.	**05**
	b)	Explain meter out circuit with neat sketch.	**05**
	c)	Write a note on types of intensifiers.	**04**

Section – II

Q.5	**a)**	Explain pneumatic braking system.	**05**
	b)	Explain the principle of working of lubricator in pneumatic system.	**05**
	c)	Differentiate between hydraulic & pneumatic system.	**04**
Q.6	**a)**	Explain selection criterion for an air compressor.	**05**
	b)	Explain construction & working of Quick Exhaust Valve.	**05**
	c)	Write a note on pneumatic power tools.	**04**
Q.7	**a)**	Explain construction & working of pressure regulator.	**05**
	b)	Explain construction & working of 3/2 seat type direction control valve.	**05**
	c)	Draw symbols of FRL unit & air compressor.	**04**

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Draw suitable diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) In case of meter-in circuit, heat generated due to throttling is fed to the _____.
a) Oil reservoir b) Actuator
c) Both Oil reservoir & Actuator d) None of these

2) In Regenerative circuit for a double acting cylinder, _____ type of direction control valve is used.
a) 3/2 b) 4/2
c) 3/3 d) None of the above

3) For air motors, input is _____.
a) Low pressure air b) High pressure air
c) Both (a) & (b) d) None of these

4) Quick exhaust valve is used for _____.
a) Single acting cylinder b) Double acting cylinder
c) Single/Double acting cylinder d) None of these

5) Time delay valve consists of _____.
a) Air chamber
b) Flow control valve with check valve
c) 3/2 Direction Control Valve
d) All of these

6) In fire hazardous area, which of the following system is preferred?
a) Electrical b) Hydraulic
c) Pneumatic d) none of these

7) Mostly FRL unit is used at _____.
a) Compressor outlet b) Compressor inlet
c) At outlet of actuator d) None of the above

8) Mostly in railways _____ brakes are used.
a) Hydraulic b) Pneumatic
c) Both d) none of these

9) For controlling speed of forward stroke of the piston of pneumatic cylinder _____ should be preferred.

a) meter in circuit
b) meter out circuit
c) time delay circuit
d) None of these

10) Metallic seals are suitable for _____.

a) High pressure
b) High temperature
c) Extremely low temperature
d) All of the given

11) Linear actuators convert _____.

a) Kinetic energy of fluid into mechanical energy
b) Mechanical energy into pressure energy
c) Kinetic energy of fluid into pressure energy
d) Pressure energy of fluid into mechanical energy

12) Which of the following is a non-positive displacement pump?

a) Gear pump
b) Vane pump
c) Centrifugal pump
d) Reciprocating pump

13) Weight loaded accumulator can be used in _____.

a) Horizontal position
b) Vertical position
c) Inclined position
d) In any position

14) Pressure relief valve is normally _____type valve.

a) Open
b) Closed
c) Open or closed
d) none of these

SLR-GF-119

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Hydraulics & Pneumatics (BTN02516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve ANY 2 questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if required & state it clearly.

Section – I

Q.2	**a)**	Enlist advantages & limitations of hydraulic systems.	**05**
	b)	Explain construction & working of gear pump.	**05**
	c)	Draw & explain a hydraulic circuit containing accumulator.	**04**
Q.3	**a)**	Explain different types of seals used in hydraulic system.	**05**
	b)	Explain construction & working of 3/2 Direction Control Valve.	**05**
	c)	Draw symbols of Pressure Relief Valve & Hydraulic Motor.	**04**
Q.4	**a)**	Explain construction & working of a non-return type of flow control valve.	**05**
	b)	Explain meter out circuit with neat sketch.	**05**
	c)	Write a note on types of intensifiers.	**04**

Section – II

Q.5	**a)**	Explain pneumatic braking system.	**05**
	b)	Explain the principle of working of lubricator in pneumatic system.	**05**
	c)	Differentiate between hydraulic & pneumatic system.	**04**
Q.6	**a)**	Explain selection criterion for an air compressor.	**05**
	b)	Explain construction & working of Quick Exhaust Valve.	**05**
	c)	Write a note on pneumatic power tools.	**04**
Q.7	**a)**	Explain construction & working of pressure regulator.	**05**
	b)	Explain construction & working of 3/2 seat type direction control valve.	**05**
	c)	Draw symbols of FRL unit & air compressor.	**04**

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Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Zero crossing of Laplacian represents location of corner in an image.
a) True b) False

2) Silhouette is obtained with front light source.
a) True b) False

3) With Harris corner detector, corner is detected when _____.
a) both eigenvalues of cross correlation matrix are zeros
b) one of the eigenvalue of cross correlation matrix is zero
c) both eigenvalues of cross correlation matrix are significant
d) none of the above

4) The process in which small part of image is compared with large image and located in large image, is called _____.
a) pattern recognition b) template matching
c) region growing d) split and merge technique

5) If path traced by end effector of robot arm is complex and continuous, then robot programming should be done by following approach _____.
a) manual lead through b) powered lead through
c) textual programming method d) none of the above

6) In the context of camera, the term CCD stands for _____.
a) Charge coupled device b) Charge creating device
c) Closed circuit device d) None of the above

7) Charge to voltage converter for Individual pixel is employed in _____.
a) CCD camera b) CMOS camera
c) Vidicon Camera d) None of the above

8) Bin picking application of robot involves _____.
a) Identification and Servoing b) Identification and inspection
c) Inspection and Servoing d) None of the above

9) Seam tracking in continuous arc welding is an example of _____.
a) Visual servoing and navigation b) Inspection
c) Identification d) Inspection and identification

10) The application in which the purpose of machine vision system is to recognize and classify an object is called _____.
a) Inspection b) Identification
c) Visual servoing and navigation d) None of the above

11) Which of the following is a robot programming language?
a) SAIL b) MAIL
c) RAIL d) TAIL

12) An image which contains two distinct intensity levels between black and white is a _____ image.
a) Colour b) Grayscale
c) Binary d) Monochrome

13) The process of _____ is a technique which relates the location of pixels in the image array to the points in the scene.
a) Camera calibration b) Camera orientation
c) Camera adaptation d) Camera adjustment

14) The acronym AGV stands for _____.
a) Automatic Guided Vehicle b) Automated Guided Vehicle
c) Automated Gliding Vehicle d) Automatic Gliding Vehicle

Seat No.		Set	P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

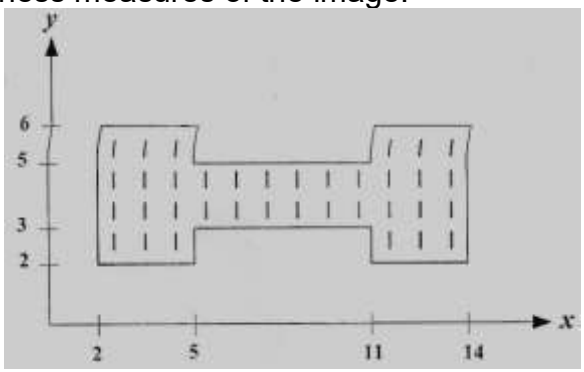
Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Draw neat sketch of block diagram of Machine Vision system. **07**
b) Explain with neat sketch flash type AD converter. **07**

Q.3 **a)** What do you understand by image segmentation? Discuss two techniques of image segmentation. **08**
b) Discuss in detail image thresholding. **06**

Q.4 **a)** Determine the area, minimum aspect ratio, the diameter, perimeter, centroid and thinness measures of the image. **10**



b) Why do we need image processing? Explain. **04**

Section – II

Q.5 **a)** Explain the working of Harris corner detector. **07**
b) Draw neat sketch of CMOS image sensor and explain its working. **07**

Q.6 **a)** Explain in detail camera calibration. **07**
b) Explain in brief offline programming, teach through method and walkthrough method. **07**

Q.7 **Write a short note on (any three)** **14**
a) Inspection application of machine vision in robotics.
b) Visual servoing and navigation application of machine vision in robotics.
c) Template matching
d) Image representation

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Bin picking application of robot involves _____.
a) Identification and Servoing b) Identification and inspection
c) Inspection and Servoing d) None of the above

2) Seam tracking in continuous arc welding is an example of _____.
a) Visual servoing and navigation b) Inspection
c) Identification d) Inspection and identification

3) The application in which the purpose of machine vision system is to recognize and classify an object is called _____.
a) Inspection b) Identification
c) Visual servoing and navigation d) None of the above

4) Which of the following is a robot programming language?
a) SAIL b) MAIL
c) RAIL d) TAIL

5) An image which contains two distinct intensity levels between black and white is a _____ image.
a) Colour b) Grayscale
c) Binary d) Monochrome

6) The process of _____ is a technique which relates the location of pixels in the image array to the points in the scene.
a) Camera calibration b) Camera orientation
c) Camera adaptation d) Camera adjustment

7) The acronym AGV stands for _____.
a) Automatic Guided Vehicle b) Automated Guided Vehicle
c) Automated Gliding Vehicle d) Automatic Gliding Vehicle

8) Zero crossing of Laplacian represents location of corner in an image.
a) True b) False

9) Silhouette is obtained with front light source.
a) True b) False

10) With Harris corner detector, corner is detected when _____.
a) both eigenvalues of cross correlation matrix are zeros
b) one of the eigenvalue of cross correlation matrix is zero
c) both eigenvalues of cross correlation matrix are significant
d) none of the above

11) The process in which small part of image is compared with large image and located in large image, is called _____.
a) pattern recognition b) template matching
c) region growing d) split and merge technique

12) If path traced by end effector of robot arm is complex and continuous, then robot programming should be done by following approach _____.
a) manual lead through b) powered lead through
c) textual programming method d) none of the above

13) In the context of camera, the term CCD stands for _____.
a) Charge coupled device b) Charge creating device
c) Closed circuit device d) None of the above

14) Charge to voltage converter for Individual pixel is employed in _____.
a) CCD camera b) CMOS camera
c) Vidicon Camera d) None of the above

Seat No.		Set	Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

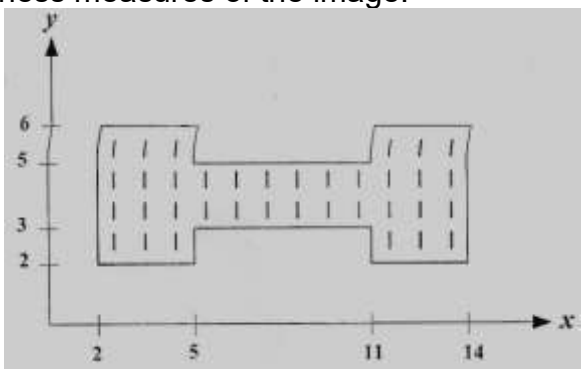
Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Draw neat sketch of block diagram of Machine Vision system. **07**
b) Explain with neat sketch flash type AD converter. **07**

Q.3 **a)** What do you understand by image segmentation? Discuss two techniques of image segmentation. **08**
b) Discuss in detail image thresholding. **06**

Q.4 **a)** Determine the area, minimum aspect ratio, the diameter, perimeter, centroid and thinness measures of the image. **10**



b) Why do we need image processing? Explain. **04**

Section – II

Q.5 **a)** Explain the working of Harris corner detector. **07**
b) Draw neat sketch of CMOS image sensor and explain its working. **07**

Q.6 **a)** Explain in detail camera calibration. **07**
b) Explain in brief offline programming, teach through method and walkthrough method. **07**

Q.7 **Write a short note on (any three)** **14**
a) Inspection application of machine vision in robotics.
b) Visual servoing and navigation application of machine vision in robotics.
c) Template matching
d) Image representation

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of the following is a robot programming language?
a) SAIL b) MAIL
c) RAIL d) TAIL

2) An image which contains two distinct intensity levels between black and white is a _____ image.
a) Colour b) Grayscale
c) Binary d) Monochrome

3) The process of _____ is a technique which relates the location of pixels in the image array to the points in the scene.
a) Camera calibration b) Camera orientation
c) Camera adaptation d) Camera adjustment

4) The acronym AGV stands for _____.
a) Automatic Guided Vehicle b) Automated Guided Vehicle
c) Automated Gliding Vehicle d) Automatic Gliding Vehicle

5) Zero crossing of Laplacian represents location of corner in an image.
a) True b) False

6) Silhouette is obtained with front light source.
a) True b) False

7) With Harris corner detector, corner is detected when _____.
a) both eigenvalues of cross correlation matrix are zeros
b) one of the eigenvalue of cross correlation matrix is zero
c) both eigenvalues of cross correlation matrix are significant
d) none of the above

8) The process in which small part of image is compared with large image and located in large image, is called _____.
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a) CCD camera b) CMOS camera
c) Vidicon Camera d) None of the above

12) Bin picking application of robot involves _____.
a) Identification and Servoing b) Identification and inspection
c) Inspection and Servoing d) None of the above

13) Seam tracking in continuous arc welding is an example of _____.
a) Visual servoing and navigation b) Inspection
c) Identification d) Inspection and identification

14) The application in which the purpose of machine vision system is to recognize and classify an object is called _____.
a) Inspection b) Identification
c) Visual servoing and navigation d) None of the above

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Draw neat sketch of block diagram of Machine Vision system. **07**
b) Explain with neat sketch flash type AD converter. **07**

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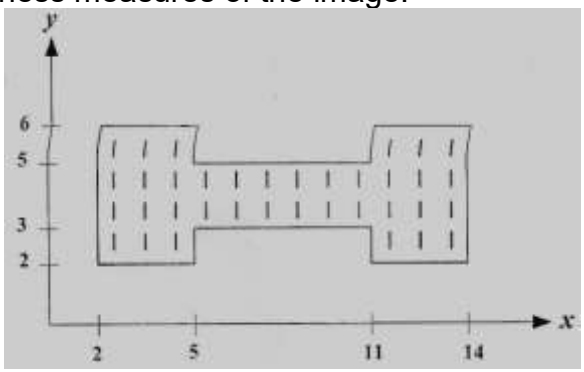

b) Why do we need image processing? Explain. **04**

Section – II

Q.5 **a)** Explain the working of Harris corner detector. **07**
b) Draw neat sketch of CMOS image sensor and explain its working. **07**

Q.6 **a)** Explain in detail camera calibration. **07**
b) Explain in brief offline programming, teach through method and walkthrough method. **07**

Q.7 **Write a short note on (any three)** **14**
a) Inspection application of machine vision in robotics.
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c) Template matching
d) Image representation

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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4) Assume suitable data if necessary.
5) Use of non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) In the context of camera, the term CCD stands for _____.
a) Charge coupled device b) Charge creating device
c) Closed circuit device d) None of the above

2) Charge to voltage converter for Individual pixel is employed in _____.
a) CCD camera b) CMOS camera
c) Vidicon Camera d) None of the above

3) Bin picking application of robot involves _____.
a) Identification and Servoing b) Identification and inspection
c) Inspection and Servoing d) None of the above

4) Seam tracking in continuous arc welding is an example of _____.
a) Visual servoing and navigation b) Inspection
c) Identification d) Inspection and identification

5) The application in which the purpose of machine vision system is to recognize and classify an object is called _____.
a) Inspection b) Identification
c) Visual servoing and navigation d) None of the above

6) Which of the following is a robot programming language?
a) SAIL b) MAIL
c) RAIL d) TAIL

7) An image which contains two distinct intensity levels between black and white is a _____ image.
a) Colour b) Grayscale
c) Binary d) Monochrome

8) The process of _____ is a technique which relates the location of pixels in the image array to the points in the scene.
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13) The process in which small part of image is compared with large image and located in large image, is called _____.
a) pattern recognition b) template matching
c) region growing d) split and merge technique

14) If path traced by end effector of robot arm is complex and continuous, then robot programming should be done by following approach _____.
a) manual lead through b) powered lead through
c) textual programming method d) none of the above

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Vision (BTN02518)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

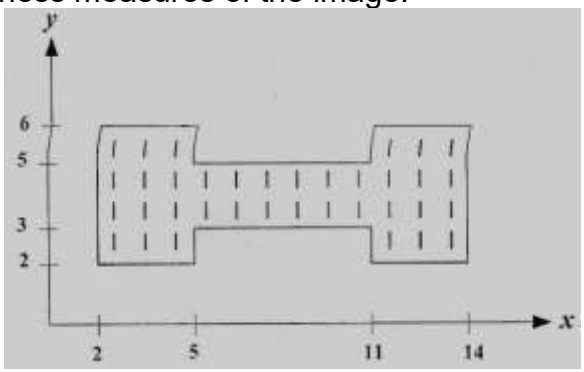
Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Draw neat sketch of block diagram of Machine Vision system. **07**
b) Explain with neat sketch flash type AD converter. **07**

Q.3 **a)** What do you understand by image segmentation? Discuss two techniques of image segmentation. **08**
b) Discuss in detail image thresholding. **06**

Q.4 **a)** Determine the area, minimum aspect ratio, the diameter, perimeter, centroid and thinness measures of the image. **10**



b) Why do we need image processing? Explain. **04**

Section – II

Q.5 **a)** Explain the working of Harris corner detector. **07**
b) Draw neat sketch of CMOS image sensor and explain its working. **07**

Q.6 **a)** Explain in detail camera calibration. **07**
b) Explain in brief offline programming, teach through method and walkthrough method. **07**

Q.7 **Write a short note on (any three)** **14**
a) Inspection application of machine vision in robotics.
b) Visual servoing and navigation application of machine vision in robotics.
c) Template matching
d) Image representation

SLR-GF-122

Seat No.		Set	P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) In the process of Selective Laser Sintering, raw material used is in the form of _____.
a) Machining Wax b) Foam Core
c) Powder d) Rubber

2) What is the first step in the design process?
a) Make a prototype
b) Identify the problem or the need
c) Market your idea
d) Test and retest

3) Choose the correct sequence to generate prototype.
a) 3D CAD data - CAD solid model - STL file - RP prototype
b) CAD solid model - 3D CAD data - RP prototype - STL file
c) STL file - 3D CAD data - CAD solid model - RP prototype
d) 3D CAD data - STL file - CAD solid model - RP prototype

4) From following, the alternative name for Rapid Prototyping is _____.
a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) all of the above

5) Process of converting STL file model in to layers is called _____ in RP.
a) chopping b) slicing
c) cutting d) trimming

6) Full form of STL is _____.
a) Straight-lithography b) Streto-lithography
c) Stereo-lithography d) Straight-lipsography

7) In the ____ process, one starts with a single block of solid material larger than the final size of the desired object and material is removed until the desired shape is reached.
a) Subtractive process b) Additive process
c) Formative process d) all of above

8) Which of the following is typically the most expensive type of 3D printer?
a) SLA b) SLM
c) FDM d) None of the above

9) Which printer melts metal?
a) SLS b) SLM
c) SLA d) FDM

10) SLA printer's package material is in a _____.
a) Chain b) Spool
c) Cartridge d) None of the above

11) What material is not used in 3D printing?
a) Nylon b) ABS
c) PLA d) PVC

12) Which file type is most commonly exported from CAD software?
a) SLDRT b) JPG
c) STL d) X3G

13) Process of forming metal powder by directing molten metal through an orifice after which it is break into small particle using high pressure fluid is known as?
a) Atomization b) Reduction
c) Crushing d) Electrolysis

14) In Fused Deposition Modelling, the raw material is used in the form of _____.
a) Wax b) Wire
c) Powder d) All of above mentioned

SLR-GF-122

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in Section - I, and Solve any two questions from the remaining (Q. No. 3, 4, & 5)
2) Question no. 6 is compulsory in Section - II, and Solve any two questions from the remaining (Q. No. 7, 8, & 9)
3) Figures to right indicate full marks.
4) Assume suitable data if required.
5) Use of scientific calculator is allowed.

Section – I

Q.2 Discuss in detail the steps in 3D Printing. **10**

Q.3 Enlist the different Composite materials used in 3D Printing? Illustrate in detail types of Composite materials with their characteristics and applications. **09**

Q.4 Compare Conventional Manufacturing Vs Additive Manufacturing. **09**

Q.5 Enlist different metal and alloy materials used in 3D Printer. Explain in detail applications and characteristics of any 03 metal and alloy materials. **09**

Section – II

Q.6 Discuss various forms of raw material used in 3D Printing. **10**

Q.7 Enlist the different techniques to generate the powder. And explain with neat sketch Gas Atomization process. **09**

Q.8 Describe different application of 3D printing in the field of Medical, Aerospace and Automobile in detail. **09**

Q.9 What is meant by Performance Requirements in 3D printing? Discuss the significance of Performance Requirements to Material Requirements in 3D printing with example. **09**

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which of the following is typically the most expensive type of 3D printer?
a) SLA b) SLM
c) FDM d) None of the above

2) Which printer melts metal?
a) SLS b) SLM
c) SLA d) FDM

3) SLA printer's package material is in a _____.
a) Chain b) Spool
c) Cartridge d) None of the above

4) What material is not used in 3D printing?
a) Nylon b) ABS
c) PLA d) PVC

5) Which file type is most commonly exported from CAD software?
a) SLDRT b) JPG
c) STL d) X3G

6) Process of forming metal powder by directing molten metal through an orifice after which it is break into small particle using high pressure fluid is known as?
a) Atomization b) Reduction
c) Crushing d) Electrolysis

7) In Fused Deposition Modelling, the raw material is used in the form of _____.
a) Wax b) Wire
c) Powder d) All of above mentioned

8) In the process of Selective Laser Sintering, raw material used is in the form of _____.
a) Machining Wax b) Foam Core
c) Powder d) Rubber

9) What is the first step in the design process?
a) Make a prototype
b) Identify the problem or the need
c) Market your idea
d) Test and retest

10) Choose the correct sequence to generate prototype.
a) 3D CAD data - CAD solid model - STL file - RP prototype
b) CAD solid model - 3D CAD data - RP prototype - STL file
c) STL file - 3D CAD data - CAD solid model - RP prototype
d) 3D CAD data - STL file - CAD solid model - RP prototype

11) From following, the alternative name for Rapid Prototyping is _____.
a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) all of the above

12) Process of converting STL file model in to layers is called _____ in RP.
a) chopping b) slicing
c) cutting d) trimming

13) Full form of STL is _____.
a) Straight-lithography b) Streto-lithography
c) Stereo-lithography d) Straight-lipsography

14) In the ____ process, one starts with a single block of solid material larger than the final size of the desired object and material is removed until the desired shape is reached.
a) Subtractive process b) Additive process
c) Formative process d) all of above

Seat No.	

Set | Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in Section - I, and Solve any two questions from the remaining (Q. No. 3, 4, & 5)
2) Question no. 6 is compulsory in Section - II, and Solve any two questions from the remaining (Q. No. 7, 8, & 9)
3) Figures to right indicate full marks.
4) Assume suitable data if required.
5) Use of scientific calculator is allowed.

Section – I

Q.2 Discuss in detail the steps in 3D Printing. **10**

Q.3 Enlist the different Composite materials used in 3D Printing? Illustrate in detail types of Composite materials with their characteristics and applications. **09**

Q.4 Compare Conventional Manufacturing Vs Additive Manufacturing. **09**

Q.5 Enlist different metal and alloy materials used in 3D Printer. Explain in detail applications and characteristics of any 03 metal and alloy materials. **09**

Section – II

Q.6 Discuss various forms of raw material used in 3D Printing. **10**

Q.7 Enlist the different techniques to generate the powder. And explain with neat sketch Gas Atomization process. **09**

Q.8 Describe different application of 3D printing in the field of Medical, Aerospace and Automobile in detail. **09**

Q.9 What is meant by Performance Requirements in 3D printing? Discuss the significance of Performance Requirements to Material Requirements in 3D printing with example. **09**

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What material is not used in 3D printing?
a) Nylon b) ABS
c) PLA d) PVC

2) Which file type is most commonly exported from CAD software?
a) SLDRT b) JPG
c) STL d) X3G

3) Process of forming metal powder by directing molten metal through an orifice after which it is break into small particle using high pressure fluid is known as?
a) Atomization b) Reduction
c) Crushing d) Electrolysis

4) In Fused Deposition Modelling, the raw material is used in the form of _____.
a) Wax b) Wire
c) Powder d) All of above mentioned

5) In the process of Selective Laser Sintering, raw material used is in the form of _____.
a) Machining Wax b) Foam Core
c) Powder d) Rubber

6) What is the first step in the design process?
a) Make a prototype
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c) Market your idea
d) Test and retest

7) Choose the correct sequence to generate prototype.
a) 3D CAD data - CAD solid model - STL file - RP prototype
b) CAD solid model - 3D CAD data - RP prototype - STL file
c) STL file - 3D CAD data - CAD solid model - RP prototype
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11) In the ____ process, one starts with a single block of solid material larger than the final size of the desired object and material is removed until the desired shape is reached.
a) Subtractive process b) Additive process
c) Formative process d) all of above

12) Which of the following is typically the most expensive type of 3D printer?
a) SLA b) SLM
c) FDM d) None of the above

13) Which printer melts metal?
a) SLS b) SLM
c) SLA d) FDM

14) SLA printer's package material is in a _____.
a) Chain b) Spool
c) Cartridge d) None of the above

Seat No.	

Set | R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in Section - I, and Solve any two questions from the remaining (Q. No. 3, 4, & 5)
2) Question no. 6 is compulsory in Section - II, and Solve any two questions from the remaining (Q. No. 7, 8, & 9)
3) Figures to right indicate full marks.
4) Assume suitable data if required.
5) Use of scientific calculator is allowed.

Section – I

Q.2 Discuss in detail the steps in 3D Printing. **10**

Q.3 Enlist the different Composite materials used in 3D Printing? Illustrate in detail types of Composite materials with their characteristics and applications. **09**

Q.4 Compare Conventional Manufacturing Vs Additive Manufacturing. **09**

Q.5 Enlist different metal and alloy materials used in 3D Printer. Explain in detail applications and characteristics of any 03 metal and alloy materials. **09**

Section – II

Q.6 Discuss various forms of raw material used in 3D Printing. **10**

Q.7 Enlist the different techniques to generate the powder. And explain with neat sketch Gas Atomization process. **09**

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SLR-GF-122

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Full form of STL is _____.
a) Straight-lithography b) Streto-lithography
c) Stereo-lithography d) Straight-lipsography

2) In the ____ process, one starts with a single block of solid material larger than the final size of the desired object and material is removed until the desired shape is reached.
a) Subtractive process b) Additive process
c) Formative process d) all of above

3) Which of the following is typically the most expensive type of 3D printer?
a) SLA b) SLM
c) FDM d) None of the above

4) Which printer melts metal?
a) SLS b) SLM
c) SLA d) FDM

5) SLA printer's package material is in a _____.
a) Chain b) Spool
c) Cartridge d) None of the above

6) What material is not used in 3D printing?
a) Nylon b) ABS
c) PLA d) PVC

7) Which file type is most commonly exported from CAD software?
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c) STL d) X3G

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c) Crushing d) Electrolysis

9) In Fused Deposition Modelling, the raw material is used in the form of _____.
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c) Powder d) All of above mentioned

10) In the process of Selective Laser Sintering, raw material used is in the form of _____.
a) Machining Wax b) Foam Core
c) Powder d) Rubber

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a) Make a prototype
b) Identify the problem or the need
c) Market your idea
d) Test and retest

12) Choose the correct sequence to generate prototype.
a) 3D CAD data - CAD solid model - STL file - RP prototype
b) CAD solid model - 3D CAD data - RP prototype - STL file
c) STL file - 3D CAD data - CAD solid model - RP prototype
d) 3D CAD data - STL file - CAD solid model - RP prototype

13) From following, the alternative name for Rapid Prototyping is _____.
a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) all of the above

14) Process of converting STL file model in to layers is called _____ in RP.
a) chopping b) slicing
c) cutting d) trimming

SLR-GF-122

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Material (BTN02519)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in Section - I, and Solve any two questions from the remaining (Q. No. 3, 4, & 5)
2) Question no. 6 is compulsory in Section - II, and Solve any two questions from the remaining (Q. No. 7, 8, & 9)
3) Figures to right indicate full marks.
4) Assume suitable data if required.
5) Use of scientific calculator is allowed.

Section – I

Q.2 Discuss in detail the steps in 3D Printing. **10**

Q.3 Enlist the different Composite materials used in 3D Printing? Illustrate in detail types of Composite materials with their characteristics and applications. **09**

Q.4 Compare Conventional Manufacturing Vs Additive Manufacturing. **09**

Q.5 Enlist different metal and alloy materials used in 3D Printer. Explain in detail applications and characteristics of any 03 metal and alloy materials. **09**

Section – II

Q.6 Discuss various forms of raw material used in 3D Printing. **10**

Q.7 Enlist the different techniques to generate the powder. And explain with neat sketch Gas Atomization process. **09**

Q.8 Describe different application of 3D printing in the field of Medical, Aerospace and Automobile in detail. **09**

Q.9 What is meant by Performance Requirements in 3D printing? Discuss the significance of Performance Requirements to Material Requirements in 3D printing with example. **09**

SLR-GF-123

Seat No.		Set	P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The aerobic digestion of sewage is used to produce _____.
a) Biomass b) Bio fuels
c) Synthetic fuels d) Metal articles

2) Furnace wall heat loss does not depend on _____.
a) Temperatures of external wall surfaces
b) Velocity of air around the furnace
c) Thermal conductivity of wall brick
d) Material of stock to be heated

3) The main objective of energy management is to _____.
a) Minimize energy cost
b) Minimum environmental effects
c) Maintain optimum energy procurement and utilization
d) Only a and b

4) Name the Act, which is proposed to bring the qualitative transformation of the electricity sector: _____.
a) Regulatory Commission Act 1998
b) Indian Electricity Act 1910
c) Supply Act 1948
d) Electricity Act 2003

5) Which of the following is a disadvantage of renewable energy?
a) High pollution b) Available only in few places
c) High running cost d) Unreliable supply

6) Which of the following energy has the greatest potential among all the sources of renewable energy?
a) Solar energy b) Wind Energy
c) Thermal energy d) Hydro-electrical energy

7) Energy management is a key component of _____.
a) Environmental management b) Carbon management
c) Nitrogen management d) Water management

8) Load factor during a period is _____.
a) Average Load / Installed Capacity
b) Average Load / Maximum Load
c) Maximum Load / Average Load
d) Maximum Load / Installed Capacity

9) Which of the following is commercial energy source?
a) Electricity b) Coal
c) Oil d) All the above

10) Major advantage of waste heat recovery in industry is _____.
a) reduction in pollution b) increase in efficiency
c) both a & b d) none of the above

11) The objective of energy management includes _____.
a) Minimizing energy costs
b) Minimizing waste
c) Minimizing environmental degradation
d) All the above

12) The monitor and control of energy management system is done by using ____.
a) MATLAB b) SCADA
c) AUTO - CAED d) All of these

13) Common energy source in Indian villages is: _____.
a) Electricity b) Coal
c) Sun d) Wood and animal dung

14) The fourth largest producer of coal and lignite in the world is _____.
a) USA b) Russia
c) India d) China

SLR-GF-123

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve:
a) Explain energy consumption pattern of India and global industry. **07**
b) Write a short note on commercial energy and non-commercial energy. **07**

Q.3 Solve:
a) Justify “Energy Audit is important for Indian Industry”. **07**
b) Why Pre-audit and Post-audit is important during Energy audit? **07**

Q.4 Answer the following questions. (Any Four) **14**
a) Principles of Energy Management
b) Discuss responsibilities of Energy Auditor.
c) Relation between Environment and Energy
d) Standard Energy Audit Report Format
e) Need of Energy Audit in India

Section – II

Q.5 Solve
a) Explain Energy Conservation opportunities in Boiler. **07**
b) Explain Energy Conservation opportunities in Steam System. **07**

Q.6 Solve
a) Write short notes on IRR (Internal Rate of Return) with formula. **07**
b) What is need of waste heat recovery? **07**

Q.7 Write short notes. (Any Four). **14**
a) Write short notes on Time Value of Money.
b) Energy saving through waste heat recovery.
c) Explain Energy performance assessment and efficiency improvement of Heat Exchanger.
d) Explain efficiency improvement of Fan and Blowers.
e) Explain Different Financial Analysis Techniques.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Load factor during a period is _____.
a) Average Load / Installed Capacity
b) Average Load / Maximum Load
c) Maximum Load / Average Load
d) Maximum Load / Installed Capacity

2) Which of the following is commercial energy source?
a) Electricity b) Coal
c) Oil d) All the above

3) Major advantage of waste heat recovery in industry is _____.
a) reduction in pollution b) increase in efficiency
c) both a & b d) none of the above

4) The objective of energy management includes _____.
a) Minimizing energy costs
b) Minimizing waste
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d) All the above

5) The monitor and control of energy management system is done by using ____.
a) MATLAB b) SCADA
c) AUTO - CAED d) All of these

6) Common energy source in Indian villages is: _____.
a) Electricity b) Coal
c) Sun d) Wood and animal dung

7) The fourth largest producer of coal and lignite in the world is _____.
a) USA b) Russia
c) India d) China

8) The aerobic digestion of sewage is used to produce _____.
a) Biomass b) Bio fuels
c) Synthetic fuels d) Metal articles

9) Furnace wall heat loss does not depend on _____.
a) Temperatures of external wall surfaces
b) Velocity of air around the furnace
c) Thermal conductivity of wall brick
d) Material of stock to be heated

10) The main objective of energy management is to _____.
a) Minimize energy cost
b) Minimum environmental effects
c) Maintain optimum energy procurement and utilization
d) Only a and b

11) Name the Act, which is proposed to bring the qualitative transformation of the electricity sector: _____.
a) Regulatory Commission Act 1998
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d) Electricity Act 2003

12) Which of the following is a disadvantage of renewable energy?
a) High pollution
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13) Which of the following energy has the greatest potential among all the sources of renewable energy?
a) Solar energy
b) Wind Energy
c) Thermal energy
d) Hydro-electrical energy

14) Energy management is a key component of _____.
a) Environmental management
b) Carbon management
c) Nitrogen management
d) Water management

SLR-GF-123

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve:
a) Explain energy consumption pattern of India and global industry. **07**
b) Write a short note on commercial energy and non-commercial energy. **07**

Q.3 Solve:
a) Justify “Energy Audit is important for Indian Industry”. **07**
b) Why Pre-audit and Post-audit is important during Energy audit? **07**

Q.4 Answer the following questions. (Any Four) **14**
a) Principles of Energy Management
b) Discuss responsibilities of Energy Auditor.
c) Relation between Environment and Energy
d) Standard Energy Audit Report Format
e) Need of Energy Audit in India

Section – II

Q.5 Solve
a) Explain Energy Conservation opportunities in Boiler. **07**
b) Explain Energy Conservation opportunities in Steam System. **07**

Q.6 Solve
a) Write short notes on IRR (Internal Rate of Return) with formula. **07**
b) What is need of waste heat recovery? **07**

Q.7 Write short notes. (Any Four). **14**
a) Write short notes on Time Value of Money.
b) Energy saving through waste heat recovery.
c) Explain Energy performance assessment and efficiency improvement of Heat Exchanger.
d) Explain efficiency improvement of Fan and Blowers.
e) Explain Different Financial Analysis Techniques.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The objective of energy management includes _____.
a) Minimizing energy costs
b) Minimizing waste
c) Minimizing environmental degradation
d) All the above

2) The monitor and control of energy management system is done by using ____.
a) MATLAB b) SCADA
c) AUTO - CAED d) All of these

3) Common energy source in Indian villages is: _____.
a) Electricity b) Coal
c) Sun d) Wood and animal dung

4) The fourth largest producer of coal and lignite in the world is _____.
a) USA b) Russia
c) India d) China

5) The aerobic digestion of sewage is used to produce _____.
a) Biomass b) Bio fuels
c) Synthetic fuels d) Metal articles

6) Furnace wall heat loss does not depend on _____.
a) Temperatures of external wall surfaces
b) Velocity of air around the furnace
c) Thermal conductivity of wall brick
d) Material of stock to be heated

7) The main objective of energy management is to _____.
a) Minimize energy cost
b) Minimum environmental effects
c) Maintain optimum energy procurement and utilization
d) Only a and b

8) Name the Act, which is proposed to bring the qualitative transformation of the electricity sector: _____.
a) Regulatory Commission Act 1998
b) Indian Electricity Act 1910
c) Supply Act 1948
d) Electricity Act 2003

9) Which of the following is a disadvantage of renewable energy?
a) High pollution b) Available only in few places
c) High running cost d) Unreliable supply

10) Which of the following energy has the greatest potential among all the sources of renewable energy?
a) Solar energy b) Wind Energy
c) Thermal energy d) Hydro-electrical energy

11) Energy management is a key component of _____.
a) Environmental management b) Carbon management
c) Nitrogen management d) Water management

12) Load factor during a period is _____.
a) Average Load / Installed Capacity
b) Average Load / Maximum Load
c) Maximum Load / Average Load
d) Maximum Load / Installed Capacity

13) Which of the following is commercial energy source?
a) Electricity b) Coal
c) Oil d) All the above

14) Major advantage of waste heat recovery in industry is _____.
a) reduction in pollution b) increase in efficiency
c) both a & b d) none of the above

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve:
a) Explain energy consumption pattern of India and global industry. **07**
b) Write a short note on commercial energy and non-commercial energy. **07**

Q.3 Solve:
a) Justify “Energy Audit is important for Indian Industry”. **07**
b) Why Pre-audit and Post-audit is important during Energy audit? **07**

Q.4 Answer the following questions. (Any Four) **14**
a) Principles of Energy Management
b) Discuss responsibilities of Energy Auditor.
c) Relation between Environment and Energy
d) Standard Energy Audit Report Format
e) Need of Energy Audit in India

Section – II

Q.5 Solve
a) Explain Energy Conservation opportunities in Boiler. **07**
b) Explain Energy Conservation opportunities in Steam System. **07**

Q.6 Solve
a) Write short notes on IRR (Internal Rate of Return) with formula. **07**
b) What is need of waste heat recovery? **07**

Q.7 Write short notes. (Any Four). **14**
a) Write short notes on Time Value of Money.
b) Energy saving through waste heat recovery.
c) Explain Energy performance assessment and efficiency improvement of Heat Exchanger.
d) Explain efficiency improvement of Fan and Blowers.
e) Explain Different Financial Analysis Techniques.

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of the following energy has the greatest potential among all the sources of renewable energy?
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c) Oil d) All the above

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d) All the above

7) The monitor and control of energy management system is done by using ____.
a) MATLAB b) SCADA
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8) Common energy source in Indian villages is: _____.
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9) The fourth largest producer of coal and lignite in the world is _____.
a) USA b) Russia
c) India d) China

10) The aerobic digestion of sewage is used to produce _____.
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c) Synthetic fuels d) Metal articles

11) Furnace wall heat loss does not depend on _____.
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b) Velocity of air around the furnace
c) Thermal conductivity of wall brick
d) Material of stock to be heated

12) The main objective of energy management is to _____.
a) Minimize energy cost
b) Minimum environmental effects
c) Maintain optimum energy procurement and utilization
d) Only a and b

13) Name the Act, which is proposed to bring the qualitative transformation of the electricity sector: _____.
a) Regulatory Commission Act 1998
b) Indian Electricity Act 1910
c) Supply Act 1948
d) Electricity Act 2003

14) Which of the following is a disadvantage of renewable energy?
a) High pollution b) Available only in few places
c) High running cost d) Unreliable supply

SLR-GF-123

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conservation, Management and Audit (BTN02520)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
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3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Solve:
a) Explain energy consumption pattern of India and global industry. **07**
b) Write a short note on commercial energy and non-commercial energy. **07**

Q.3 Solve:
a) Justify “Energy Audit is important for Indian Industry”. **07**
b) Why Pre-audit and Post-audit is important during Energy audit? **07**

Q.4 Answer the following questions. (Any Four) **14**
a) Principles of Energy Management
b) Discuss responsibilities of Energy Auditor.
c) Relation between Environment and Energy
d) Standard Energy Audit Report Format
e) Need of Energy Audit in India

Section – II

Q.5 Solve
a) Explain Energy Conservation opportunities in Boiler. **07**
b) Explain Energy Conservation opportunities in Steam System. **07**

Q.6 Solve
a) Write short notes on IRR (Internal Rate of Return) with formula. **07**
b) What is need of waste heat recovery? **07**

Q.7 Write short notes. (Any Four). **14**
a) Write short notes on Time Value of Money.
b) Energy saving through waste heat recovery.
c) Explain Energy performance assessment and efficiency improvement of Heat Exchanger.
d) Explain efficiency improvement of Fan and Blowers.
e) Explain Different Financial Analysis Techniques.

SLR-GF-124

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No. 3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) An EV only needs one of the following maintenance jobs done. Which is it?
a) Oil change b) Belt replacement
c) New spark plugs d) Brake pad inspections

2) Which sentence best describes a parallel hybrid vehicle?
a) The engine is directly connected to the transmission
b) The electric motor is directly connected to the transmission
c) Both of the above
d) None of the above

3) Select the cycle use in a Hybrid Engine.
a) Otto b) Diesel
c) Atkinson d) Isentropic

4) A _____ is a vehicle that can run on just the engine, just the batteries, or a combination of the two.
a) Mild Hybrid b) Full Hybrid
c) Fuel Cell d) Assist Hybrid

5) "The wheels are driven by both the engine and the motor"
Select the type of Hybrid System according to above description.
a) Series Hybrid b) Parallel Hybrid
c) Plug-in Hybrid d) Series-parallel Hybrid

6) A vehicle traveling at a particular speed in air encounters a force resisting its motion. This force is referred to as _____.
a) aerodynamic drag b) rolling resistance
c) grading resistance d) none of the above

7) The electric motor in a hybrid car can also act as: _____.
a) cooling fan b) fuel pump
c) generator d) compressor

8) Which of these is a purpose of the power-split device?
a) To split electrical energy into mechanical energy
b) To allow both the engine and electric motor to propel the vehicle
c) To recharge the battery while braking
d) To recharge the brakes while driving

9) The rotating part of DC Motor is called as _____.
a) Stator b) Rotor
c) Poles d) Pole Shoes

10) In regenerative braking _____.
a) The kinetic energy of the motor shaft is converted into electrical energy
b) Electrical energy is converted into kinetic energy
c) Mechanical Energy converted into Kinetic Energy
d) None of the above

11) Which of the following is an advantage of electric traction over the other methods of traction?
a) Faster acceleration b) No pollution problems
c) Better braking action d) All of the above

12) The most common and mature power sources candidates suitable for EVs are _____.
a) Batteries b) Super Capacitors
c) Fuel Cells d) All of the above

13) Which of the following is not an advantage of BLDC motor over conventional DC motor?
a) Less maintenance
b) Long life
c) No risk of explosion or possibility of RF radiation
d) Low cost

14) HEV stands for _____.
a) Hybrid Electronic Vehicle b) Hybrid Electrical vehicle
c) Hybrid Environmental Vehicle d) None of the above

SLR-GF-124

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain in short history of Electric vehicle.	**05**
	b)	Explain the concept of range Anxiety.	**05**
	c)	Explain battery cost reduction strategy.	**04**
Q.3	**a)**	Write a note on Electric Motor characteristics.	**05**
	b)	What are the environmental benefits of hybrid vehicles?	**05**
	c)	What is tractive effort and explain the tractive effort in electric vehicles?	**04**
Q.4	**a)**	Explain key components of a Plug-In Hybrid Electric Car with neat sketch.	**05**
	b)	Explain the parallel hybrid electric drive train with neat sketch.	**05**
	c)	Write a note on mass analysis and packaging.	**04**

Section – II

Q.5	**a)**	Explain the working of Synchronous Motor.	**05**
	b)	Construction and Working principle of DC Motors.	**05**
	c)	How is the speed and torque of DC motor controlled?	**04**
Q.6	**a)**	What is a Chopper Circuit? Explain its principle of operation.	**05**
	b)	Explain VFD and inverters in EV.	**05**
	c)	Write a note on regeneration efficiency.	**04**
Q.7	**a)**	What are drive cycles? How they are developed?	**05**
	b)	Write a short note on energy efficiency and standard drive cycle.	**05**
	c)	Explain construction of electric compact sedan.	**04**

Seat No.	

Set | Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No. 3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of these is a purpose of the power-split device?
a) To split electrical energy into mechanical energy
b) To allow both the engine and electric motor to propel the vehicle
c) To recharge the battery while braking
d) To recharge the brakes while driving

2) The rotating part of DC Motor is called as _____.
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c) Poles d) Pole Shoes

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a) Batteries b) Super Capacitors
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6) Which of the following is not an advantage of BLDC motor over conventional DC motor?
a) Less maintenance
b) Long life
c) No risk of explosion or possibility of RF radiation
d) Low cost

7) HEV stands for _____.
a) Hybrid Electronic Vehicle b) Hybrid Electrical vehicle
c) Hybrid Environmental Vehicle d) None of the above

8) An EV only needs one of the following maintenance jobs done. Which is it?
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b) Belt replacement
c) New spark plugs
d) Brake pad inspections

9) Which sentence best describes a parallel hybrid vehicle?
a) The engine is directly connected to the transmission
b) The electric motor is directly connected to the transmission
c) Both of the above
d) None of the above

10) Select the cycle use in a Hybrid Engine.
a) Otto
b) Diesel
c) Atkinson
d) Isentropic

11) A _____ is a vehicle that can run on just the engine, just the batteries, or a combination of the two.
a) Mild Hybrid
b) Full Hybrid
c) Fuel Cell
d) Assist Hybrid

12) "The wheels are driven by both the engine and the motor"
Select the type of Hybrid System according to above description.
a) Series Hybrid
b) Parallel Hybrid
c) Plug-in Hybrid
d) Series-parallel Hybrid

13) A vehicle traveling at a particular speed in air encounters a force resisting its motion. This force is referred to as _____.
a) aerodynamic drag
b) rolling resistance
c) grading resistance
d) none of the above

14) The electric motor in a hybrid car can also act as: _____.
a) cooling fan
b) fuel pump
c) generator
d) compressor

Seat No.	

Set | Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
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3) Assume suitable data if necessary.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain in short history of Electric vehicle.	**05**
	b)	Explain the concept of range Anxiety.	**05**
	c)	Explain battery cost reduction strategy.	**04**
Q.3	**a)**	Write a note on Electric Motor characteristics.	**05**
	b)	What are the environmental benefits of hybrid vehicles?	**05**
	c)	What is tractive effort and explain the tractive effort in electric vehicles?	**04**
Q.4	**a)**	Explain key components of a Plug-In Hybrid Electric Car with neat sketch.	**05**
	b)	Explain the parallel hybrid electric drive train with neat sketch.	**05**
	c)	Write a note on mass analysis and packaging.	**04**

Section – II

Q.5	**a)**	Explain the working of Synchronous Motor.	**05**
	b)	Construction and Working principle of DC Motors.	**05**
	c)	How is the speed and torque of DC motor controlled?	**04**
Q.6	**a)**	What is a Chopper Circuit? Explain its principle of operation.	**05**
	b)	Explain VFD and inverters in EV.	**05**
	c)	Write a note on regeneration efficiency.	**04**
Q.7	**a)**	What are drive cycles? How they are developed?	**05**
	b)	Write a short note on energy efficiency and standard drive cycle.	**05**
	c)	Explain construction of electric compact sedan.	**04**

Seat No.	

Set | R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No. 3 (starting page of the Answer Book). Each question carry one mark.
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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which of the following is an advantage of electric traction over the other methods of traction?
a) Faster acceleration b) No pollution problems
c) Better braking action d) All of the above

2) The most common and mature power sources candidates suitable for EVs are _____.
a) Batteries b) Super Capacitors
c) Fuel Cells d) All of the above

3) Which of the following is not an advantage of BLDC motor over conventional DC motor?
a) Less maintenance
b) Long life
c) No risk of explosion or possibility of RF radiation
d) Low cost

4) HEV stands for _____.
a) Hybrid Electronic Vehicle b) Hybrid Electrical vehicle
c) Hybrid Environmental Vehicle d) None of the above

5) An EV only needs one of the following maintenance jobs done. Which is it?
a) Oil change b) Belt replacement
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6) Which sentence best describes a parallel hybrid vehicle?
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b) The electric motor is directly connected to the transmission
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7) Select the cycle use in a Hybrid Engine.
a) Otto b) Diesel
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8) A _____ is a vehicle that can run on just the engine, just the batteries, or a combination of the two.
a) Mild Hybrid b) Full Hybrid
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9) "The wheels are driven by both the engine and the motor"
Select the type of Hybrid System according to above description.
a) Series Hybrid b) Parallel Hybrid
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10) A vehicle traveling at a particular speed in air encounters a force resisting its motion. This force is referred to as _____.
a) aerodynamic drag b) rolling resistance
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12) Which of these is a purpose of the power-split device?
a) To split electrical energy into mechanical energy
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13) The rotating part of DC Motor is called as _____.
a) Stator b) Rotor
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14) In regenerative braking _____.
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Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
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Section – I

Q.2	**a)**	Explain in short history of Electric vehicle.	**05**
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Section – II

Q.5	**a)**	Explain the working of Synchronous Motor.	**05**
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Seat No.	

Set | S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No. 3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) A vehicle traveling at a particular speed in air encounters a force resisting its motion. This force is referred to as _____.
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3) Which of these is a purpose of the power-split device?
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c) Atkinson
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13) A _____ is a vehicle that can run on just the engine, just the batteries, or a combination of the two.
a) Mild Hybrid
b) Full Hybrid
c) Fuel Cell
d) Assist Hybrid

14) "The wheels are driven by both the engine and the motor"
Select the type of Hybrid System according to above description.
a) Series Hybrid
b) Parallel Hybrid
c) Plug-in Hybrid
d) Series-parallel Hybrid

SLR-GF-124

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Electric and Hybrid Electric Vehicles (BTN02521)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain in short history of Electric vehicle.	**05**
	b)	Explain the concept of range Anxiety.	**05**
	c)	Explain battery cost reduction strategy.	**04**
Q.3	**a)**	Write a note on Electric Motor characteristics.	**05**
	b)	What are the environmental benefits of hybrid vehicles?	**05**
	c)	What is tractive effort and explain the tractive effort in electric vehicles?	**04**
Q.4	**a)**	Explain key components of a Plug-In Hybrid Electric Car with neat sketch.	**05**
	b)	Explain the parallel hybrid electric drive train with neat sketch.	**05**
	c)	Write a note on mass analysis and packaging.	**04**

Section – II

Q.5	**a)**	Explain the working of Synchronous Motor.	**05**
	b)	Construction and Working principle of DC Motors.	**05**
	c)	How is the speed and torque of DC motor controlled?	**04**
Q.6	**a)**	What is a Chopper Circuit? Explain its principle of operation.	**05**
	b)	Explain VFD and inverters in EV.	**05**
	c)	Write a note on regeneration efficiency.	**04**
Q.7	**a)**	What are drive cycles? How they are developed?	**05**
	b)	Write a short note on energy efficiency and standard drive cycle.	**05**
	c)	Explain construction of electric compact sedan.	**04**

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

2) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

3) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

4) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

5) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

6) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

7) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

8) Which of the following is international trade?

a) Trade between countries
b) Trade between regions
c) Trade between provinces
d) Both (b) and (c)

9) Who is the 'lender of the last resort' in the banking structure of India?

a) State Bank of India
b) Reserve Bank of India
c) EXIM Bank of India
d) Union Bank of India

10) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

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Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

2) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

3) Which of the following is international trade?
a) Trade between countries b) Trade between regions
c) Trade between provinces d) Both (b) and (c)

4) Who is the 'lender of the last resort' in the banking structure of India?
a) State Bank of India b) Reserve Bank of India
c) EXIM Bank of India d) Union Bank of India

5) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

6) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

7) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

8) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

9) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

10) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

SLR-GF-125

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Who is the 'lender of the last resort' in the banking structure of India?
a) State Bank of India b) Reserve Bank of India
c) EXIM Bank of India d) Union Bank of India

2) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

3) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

4) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

5) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

6) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

7) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

8) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

9) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

10) Which of the following is international trade?
a) Trade between countries
b) Trade between regions
c) Trade between provinces
d) Both (b) and (c)

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Seat No.	

Set | **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

2) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

3) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

4) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

5) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

6) Which of the following is international trade?
a) Trade between countries b) Trade between regions
c) Trade between provinces d) Both (b) and (c)

7) Who is the 'lender of the last resort' in the banking structure of India?
a) State Bank of India b) Reserve Bank of India
c) EXIM Bank of India d) Union Bank of India

8) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False b) True
c) Partly true d) Partly False

9) Law of demand must fail in case of _____.

a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

10) All things remain equal, if input prices increase _____.

a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

SLR-GF-125

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
MECHANICAL ENGINEERING
Economics (BTN02508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

SLR-GF-126

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) The term 'Intellectual Property Rights' covers _____.
a) Copyrights b) Know-how
c) Trade dress d) All of these

2) The following cannot be exploited by assigning or by licensing the rights to others _____.
a) Patents b) Designs
c) Trademark d) All of these

3) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

4) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

5) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

6) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

7) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

8) What is the term of Patent?

a) 35 years b) 25 years

c) 20 years d) 15 years

9) Statutory requirement of “Abstract” is provided in _____ of Indian patents act,1970 and rules 2003.

a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)

c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

10) The following can be patented _____.

a) Machine b) Process

c) Composition of matter d) All of these

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

2) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

3) What is the term of Patent?
a) 35 years b) 25 years
c) 20 years d) 15 years

4) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

5) The following can be patented _____.
a) Machine b) Process
c) Composition of matter d) All of these

6) The term 'Intellectual Property Rights' covers _____.
a) Copyrights b) Know-how
c) Trade dress d) All of these

7) The following cannot be exploited by assigning or by licensing the rights to others _____.
a) Patents b) Designs
c) Trademark d) All of these

8) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

9) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

10) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

2) The following can be patented _____.
a) Machine b) Process
c) Composition of matter d) All of these

3) The term 'Intellectual Property Rights' covers _____.
a) Copyrights b) Know-how
c) Trade dress d) All of these

4) The following cannot be exploited by assigning or by licensing the rights to others _____.
a) Patents b) Designs
c) Trademark d) All of these

5) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

6) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

7) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

8) Who fills the invention disclosure form (IDF)?

a) Inventor
b) Patent Attorney
c) Assignee
d) Patent Searcher

9) What is copyright meant for?

a) Film work
b) Books
c) Essay
d) All of these

10) What is the term of Patent?

a) 35 years
b) 25 years
c) 20 years
d) 15 years

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

2) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

3) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

4) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

5) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

6) What is the term of Patent?
a) 35 years b) 25 years
c) 20 years d) 15 years

7) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

8) The following can be patented _____.

a) Machine b) Process
c) Composition of matter d) All of these

9) The term 'Intellectual Property Rights' covers _____.

a) Copyrights b) Know-how
c) Trade dress d) All of these

10) The following cannot be exploited by assigning or by licensing the rights to others _____.

a) Patents b) Designs
c) Trademark d) All of these

SLR-GF-126

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN02509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The term sociology was coined by _____
a) Herbert Spencer b) August Comte
c) Karl Marx d) Max Weber

2) _____ and role are interrelated and inter-depended.
a) Position b) Status
c) Role d) Person

3) Rural society is _____.
a) Heterogeneous b) Homogeneous
c) Cultural d) Normative

4) Urban family is _____ unit.
a) Monogamous b) Polygamous
c) Mono-lateral d) Unilateral

5) Castes hierarchy is supposed to be _____.
a) Manual b) Formal
c) Divine d) Legal

6) The term Modernization was given by _____.
a) Ghurye b) Dr. Ambedkar
c) Shakespeare d) Srinivas

7) The two directions of social change are _____
a) uncertain - uncertain b) linear - cyclical
c) formal - informal d) negative - positive

8) _____ legalizes the sexual relation between man and woman
a) leaders b) Industry
c) Marriage d) Ideology

9) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

10) Environmental science is the study of _____.

a) nature
b) society
c) diversity
d) surroundings

SLR-GF-127

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 **Write answer on any four of the following.** **16**

a) Explain the meaning and elements of social structure.
b) Discuss on the conventional feature of marriage in India.
c) Elucidate nature and types of social institutions.
d) Explain the nature and process of social change.
e) Give and account of nature and types of social movements.
f) What is social mobility?

Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The term Modernization was given by _____.
a) Ghurye b) Dr. Ambedkar
c) Shakespeare d) Srinivas

2) The two directions of social change are _____
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a) Position b) Status
c) Role d) Person

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9) Urban family is _____ unit.
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c) Mono-lateral d) Unilateral

10) Castes hierarchy is supposed to be _____.

a) Manual b) Formal

c) Divine d) Legal

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
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a) Explain the meaning and elements of social structure.
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e) Give and account of nature and types of social movements.
f) What is social mobility?

Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

2) Environmental science is the study of _____.
a) nature b) society
c) diversity d) surroundings

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9) The two directions of social change are _____
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c) formal - informal d) negative - positive

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c) Marriage
d) Ideology

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 **Write answer on any four of the following.** **16**

a) Explain the meaning and elements of social structure.
b) Discuss on the conventional feature of marriage in India.
c) Elucidate nature and types of social institutions.
d) Explain the nature and process of social change.
e) Give and account of nature and types of social movements.
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OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Rural society is _____.
a) Heterogeneous b) Homogeneous
c) Cultural d) Normative

2) Urban family is _____ unit.
a) Monogamous b) Polygamous
c) Mono-lateral d) Unilateral

3) Castes hierarchy is supposed to be _____.
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a) leaders b) Industry
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7) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

8) Environmental science is the study of _____.
a) nature b) society
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9) The term sociology was coined by _____
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c) Karl Marx d) Max Weber

10) _____ and role are interrelated and inter-depended.

a) Position
b) Status
c) Role
d) Person

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Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Sociology (BTN02510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
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Q.2 **Write answer on any four of the following.** **16**

a) Explain the meaning and elements of social structure.
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e) Give and account of nature and types of social movements.
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Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

SLR-GF-128

Seat No.		Set	P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Which factors improve coping?
a) Social support b) Optimism
c) Perceived control d) All of the above

2) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

3) Which of the following statements is true?
a) The stress response is nonspecific
b) Different kinds of stressors produce exactly the same response
c) Different people respond to the same stressor differently
d) All of the above

4) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
b) When he expects a positive outcome
c) When he thinks he does not have control over the situation
d) When he has a good social support network

5) Aches, shallow breathing and sweating, frequent colds are _____.
a) Physical symptoms of stress
b) Behavioral symptoms of stress
c) Emotional symptoms of stress
d) Cognitive symptoms of stress

6) What thoughts come to the mind when you're under negative stress?
a) You think that you can cope with the situation
b) You think that you cannot cope with the situation
c) You think that everything will get fine eventually
d) You think that you will get help immediately

7) Which of the following are the physical symptoms of anxiety?

a) Racing heart
b) Sweaty palms
c) Flushed cheeks
d) All of the above

8) Which of the following is true about 'deep breathing relaxation technique'?

a) It can be self-taught
b) It releases tension from the body and clears your mind
c) You have to do this under-water
d) Only 'a' & 'b' are true

9) Which of the following are stress busters?

a) Trying to find something funny in a difficult situation
b) Developing a support network
c) Taking a mindful walk
d) All of the above

10) When danger or stress is perceived/experienced, this response occurs in the body _____.

a) Exhaustion
b) Adaption
c) Fight-or-flight
d) Resistance

SLR-GF-128

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

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7) Which of the following statements is true?
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d) Agitation is cognitive symptom of stress

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b) Different kinds of stressors produce exactly the same response
c) Different people respond to the same stressor differently
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9) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
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c) Emotional symptoms of stress
d) Cognitive symptoms of stress

SLR-GF-128

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
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Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

SLR-GF-128

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

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8) What thoughts come to the mind when you're under negative stress?
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10) Which of the following is true about 'deep breathing relaxation technique'?
a) It can be self-taught
b) It releases tension from the body and clears your mind
c) You have to do this under-water
d) Only 'a' & 'b' are true

SLR-GF-128

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
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Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

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d) All of the above

8) When danger or stress is perceived/experienced, this response occurs in the body _____.
a) Exhaustion
b) Adaption
c) Fight-or-flight
d) Resistance

9) Which factors improve coping?
a) Social support
b) Optimism
c) Perceived control
d) All of the above

10) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

SLR-GF-128

Seat No.	

Set S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Stress and Coping (BTN02511)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
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Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

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Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Professional Ethics & Human Value (BTN02512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

2) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

3) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

4) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

5) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

6) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

7) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

8) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

9) Human values are essential for _____.

a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

10) _____ is defined as the duty, obligation or even authority.

a) Work
b) Responsibility
c) Democracy
d) authority

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Professional Ethics & Human Value (BTN02512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Professional Ethics & Human Value (BTN02512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

2) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

3) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

4) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

5) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

6) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

7) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

8) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

9) What is Integrity?

a) Unity of thought
b) Word and deed
c) Open mindedness
d) All of these

10) Ethical issues that can affect an engineer's professional and personal life are termed as _____.

a) Macro ethics
b) Micro ethics
c) Morals
d) Rights

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Professional Ethics & Human Value (BTN02512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Professional Ethics & Human Value (BTN02512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

2) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

3) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

4) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

5) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

6) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

7) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

8) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

9) Value and skills should go hand in hand _____.

a) True b) False
c) Cannot tell d) Wrong question

10) _____ are the basic Human aspirations.

a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Professional Ethics & Human Value (BTN02512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Professional Ethics & Human Value (BTN02512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

2) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

3) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

4) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

5) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

6) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

7) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

8) _____ is defined as the duty, obligation or even authority.

a) Work b) Responsibility
c) Democracy d) authority

9) Many complex social problems exist in the _____.

a) Industry/ Business b) Society
c) Home d) None of the above

10) Ethics is the word that refers to _____.

a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

SLR-GF-129

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Professional Ethics & Human Value (BTN02512)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

SLR-GF-130

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Maximum tangential force that the tooth can transmit without bending failure _____.
a) Beam strength b) Wear Strength
c) Dynamic load d) Effective

2) Permissible bending stress for gear tooth is usually taken as _____.
a) One half of ultimate tensile strength
b) One third of surface endurance strength
c) One half of surface endurance strength
d) One third of ultimate tensile strength

3) The form factor of a spur gear tooth depends upon _____.
a) circular pitch b) pressure angle
c) number of teeth d) None of these

4) In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called _____.
a) Normal pitch b) Axial pitch
c) Diametral pitch d) Module

5) In worm gears the relationship between lead angle (λ) and helix angle (Ψ) is _____.
a) $\lambda - \Psi = 90°$ b) $\lambda + \Psi = 90°$
c) $\lambda - \Psi = 180°$ d) None of these

6) If the worm helix angle is 30°, then the worm should have at least _____ threads.
a) 5 b) 6
c) 7 d) 8

7) When bevel gears having equal teeth and equal pitch angles connect two shafts whose axes intersect at right angle, then they are known as _____.
a) angular bevel gears b) crown bevel gears
c) internal bevel gears d) Mitre bevel gears

8) If b denotes the face width and Ao denotes the cone distance, then the bevel factor is written as _____.

a) b/Ao b) 1 - (b/Ao)

c) b/2Ao d) None of these

9) The brakes commonly used on motor cars is _____.

a) shoe brake b) band brake

c) band and block brake d) internally expanding brake

10) The material used for brake lining should have _____ coefficient of friction.

a) zero b) high

c) low d) none of these

11) The device which permits the connection and disconnection of shaft is _____.

a) flywheel b) gear box

c) clutch d) none of these

12) The rolling contact bearings are known as _____.

a) Plastic bearings b) Antifriction bearings

c) Both a and b d) None of these

13) If bearing is designated as 6205, the last two digits multiplied by five indicates _____.

a) Bearing width b) Ball diameter

c) No. of balls d) Bore diameter

14) In the ball bearing, the cage is provided to _____.

a) facilitate slipping of balls b) to reduce friction

c) maintain balls at fixed distance d) none of these

Seat No.	

Set | P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 **a)** Define the following: **03**
1) Beam strength of gear tooth
2) Wear strength of gear tooth
3) Gear ratio

b) What are the various types of gear tooth failures? State their causes and remedies. **04**

c) It is required to design a pair of spur gears with 20° full depth involute teeth. The input shaft rotates at 720 rpm and receives 5 kW power through flexible coupling. The speed of the output shaft is 144 rpm. The pinion and gears are made up of steel having a S_{ut} of 410 N/mm^2. The service factor for the application is 1.25. For the preliminary calculations, assume pitch line velocity as 5 m/s and factor of safety as 2 against bending failure. The Lewis form factor Y = 0.308 for 18 teeth. Determine first preference module, if Cv = 6/(6+V). **07**

Q.3 **a)** Differentiate between the helical and the spur gears. **03**

b) For a pair of helical gears, 4 kW power at 720 rpm is supplied to pinion A through its shaft. The normal module is 5 mm and normal pressure angle is 20°. The pinion has right-handed teeth while the gear has left hand teeth. The helix angle is 25°. The number of teeth on the pinion and gear are 20 and 30, respectively. Determine the components of the tooth force. **04**

c) The following data is given for the pair of helical gears made up of steel: **07**
Normal module = 5 mm
Face Width = 50 mm
No. of teeth on the Pinion = 30
No. of teeth on the Gear = 60
Center distance = 245 mm
Normal pressure angle = 20°
Speed of Pinion = 1000 rpm
Permissible bending stress = 150 N/mm^2
Surface Hardness = 300 BHN
Determine:
1) Helix angle
2) Beam Strength
3) Wear Strength

Table 1: Lewis form factor for 20° full depth involute system.

z	Y	z	Y
30	0.358	37	0.380
31	0.364	39	0.386
33	0.367	40	0.389
35	0.373	45	0.399

Q.4 **a)** Define the following terms: **03**
1) Lead Angle
2) Helix Angle
3) Diametral Quotient

b) A worm gear box with an effective surface area of 1.5 m^2 is operating in still air with a heat transfer coefficient of 15 W/m^2°C. The temperature rise of the lubricating oil above the atmospheric temperature is limited to 50°C. The worm gears are designated as, 1/30/10/8 The worm shaft is rotating at 1440 rpm and the normal pressure angle is 20°. Calculate power transmitting capacity based on the thermal considerations. Assume $\mu = 0.024$. **05**

c) 1 kW power at 720 rpm is supplied to the worm shaft. The number of starts for threads of the worm is four with a 50 mm pitch circle diameter. The worm wheel has 30 teeth with a 5 mm module. The normal pressure angle is 20°. Take the coefficient of friction as 0.035. Calculate efficiency of the worm gear drive and the power lost in friction. **06**

Section – II

Q.5 **a)** Draw a neat sketch of Bevel Gears and show various forces acting on them. **03**

b) A pair of straight bevel gears is made up of Grey Cast Iron FG200, (E = 114000 N/mm^2). The surface endurance strength is 90 N/mm^2. The number of teeth on the pinion and gear are 30 and 40, respectively. The module and face width are 6 mm and 50 mm, respectively. The pressure angle is 20°. Determine the wear strength of the tooth. **04**

c) A pair of straight bevel gears is mounted on shafts which are intersecting at right angles. The number of teeth on the pinion and the gear are 20 & 28, respectively. The pressure angle is 20°. The pinion shaft is connected to the electric motor developing 6 kW rated power at 1440 rpm. The pinion and gear are made up of the steel (Sut = 600 N/mm^2) and heat treated to a surface hardness of 330 BHN. The module and face width are 4 mm and 20 mm respectively. Determine: **07**
1) Beam strength
2) Wear Strength and
3) Static load

Take Lewis form factor of Y = 0.320 for 20 teeth.

Q.6 **a)** Distinguish between the rolling contact bearing and the sliding contact bearing. **03**

b) Explain Hydrodynamic bearing with a neat sketch. **05**

c) A ball bearing is operating on a work cycle consisting of three parts: a radial load of 5000 N at 1400 rpm for one quarter cycle, a radial load of 6000 N at 700 rpm for one half cycle and a radial load of 3000 N at 1400 rpm. for the remaining one quarter cycle. The expected life of bearing is 12,000 Hrs. Calculate the **06**

1) Average speed
2) Equivalent load
3) Life in million revolutions and
4) Dynamic load carrying capacity of the bearing

Q.7 **a)** Explain with neat sketch single block/shoe brake. **03**

b) In a particular application, the radial load acting on a ball bearing is 6 kN and the expected life for 90% of the bearings is 9000 h. Calculate the dynamic load carrying capacity of the bearing, when the shaft rotates at 1450 rpm. **04**

c) A plate clutch having a single driving plate with contact surfaces on each side required to transmit 110 kW at 1250 rpm. The outer diameter of the contact surfaces is to be 300 mm. The coefficient of friction is 0.4. **07**

1) Assuming uniform pressure of 0.17 N/mm^2; determine the inner diameter of the friction surfaces.
2) Assuming the same dimensions and same total axial thrust, determine the maximum torque that can be transmitted and maximum intensity of pressure when uniform wear conditions have been reached.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) If b denotes the face width and Ao denotes the cone distance, then the bevel factor is written as _____.
a) b/Ao b) 1 - (b/Ao)
c) b/2Ao d) None of these

2) The brakes commonly used on motor cars is _____.
a) shoe brake b) band brake
c) band and block brake d) internally expanding brake

3) The material used for brake lining should have _____ coefficient of friction.
a) zero b) high
c) low d) none of these

4) The device which permits the connection and disconnection of shaft is _____.
a) flywheel b) gear box
c) clutch d) none of these

5) The rolling contact bearings are known as _____.
a) Plastic bearings b) Antifriction bearings
c) Both a and b d) None of these

6) If bearing is designated as 6205, the last two digits multiplied by five indicates _____.
a) Bearing width b) Ball diameter
c) No. of balls d) Bore diameter

7) In the ball bearing, the cage is provided to _____.
a) facilitate slipping of balls b) to reduce friction
c) maintain balls at fixed distance d) none of these

8) Maximum tangential force that the tooth can transmit without bending failure _____.
a) Beam strength b) Wear Strength
c) Dynamic load d) Effective

9) Permissible bending stress for gear tooth is usually taken as _____.
a) One half of ultimate tensile strength
b) One third of surface endurance strength
c) One half of surface endurance strength
d) One third of ultimate tensile strength

10) The form factor of a spur gear tooth depends upon _____.
a) circular pitch b) pressure angle
c) number of teeth d) None of these

11) In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called _____.
a) Normal pitch b) Axial pitch
c) Diametral pitch d) Module

12) In worm gears the relationship between lead angle (λ) and helix angle (Ψ) is _____.
a) $\lambda - \Psi = 90°$ b) $\lambda + \Psi = 90°$
c) $\lambda - \Psi = 180°$ d) None of these

13) If the worm helix angle is 30°, then the worm should have at least _____ threads.
a) 5 b) 6
c) 7 d) 8

14) When bevel gears having equal teeth and equal pitch angles connect two shafts whose axes intersect at right angle, then they are known as _____.
a) angular bevel gears b) crown bevel gears
c) internal bevel gears d) Mitre bevel gears

Seat No.	

Set | Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
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Section – I

Q.2 **a)** Define the following: **03**
1) Beam strength of gear tooth
2) Wear strength of gear tooth
3) Gear ratio

b) What are the various types of gear tooth failures? State their causes and remedies. **04**

c) It is required to design a pair of spur gears with 20° full depth involute teeth. The input shaft rotates at 720 rpm and receives 5 kW power through flexible coupling. The speed of the output shaft is 144 rpm. The pinion and gears are made up of steel having a S_{ut} of 410 N/mm^2. The service factor for the application is 1.25. For the preliminary calculations, assume pitch line velocity as 5 m/s and factor of safety as 2 against bending failure. The Lewis form factor Y = 0.308 for 18 teeth. Determine first preference module, if Cv = 6/(6+V). **07**

Q.3 **a)** Differentiate between the helical and the spur gears. **03**

b) For a pair of helical gears, 4 kW power at 720 rpm is supplied to pinion A through its shaft. The normal module is 5 mm and normal pressure angle is 20°. The pinion has right-handed teeth while the gear has left hand teeth. The helix angle is 25°. The number of teeth on the pinion and gear are 20 and 30, respectively. Determine the components of the tooth force. **04**

c) The following data is given for the pair of helical gears made up of steel: **07**
Normal module = 5 mm
Face Width = 50 mm
No. of teeth on the Pinion = 30
No. of teeth on the Gear = 60
Center distance = 245 mm
Normal pressure angle = 20°
Speed of Pinion = 1000 rpm
Permissible bending stress = 150 N/mm^2
Surface Hardness = 300 BHN
Determine:
1) Helix angle
2) Beam Strength
3) Wear Strength

Table 1: Lewis form factor for 20° full depth involute system.

z	Y	z	Y
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31	0.364	39	0.386
33	0.367	40	0.389
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Q.4 **a)** Define the following terms: **03**
1) Lead Angle
2) Helix Angle
3) Diametral Quotient

b) A worm gear box with an effective surface area of 1.5 m^2 is operating in still air with a heat transfer coefficient of 15 $W/m^2°C$. The temperature rise of the lubricating oil above the atmospheric temperature is limited to 50°C. The worm gears are designated as, 1/30/10/8 The worm shaft is rotating at 1440 rpm and the normal pressure angle is 20°. Calculate power transmitting capacity based on the thermal considerations. Assume $\mu = 0.024$. **05**

c) 1 kW power at 720 rpm is supplied to the worm shaft. The number of starts for threads of the worm is four with a 50 mm pitch circle diameter. The worm wheel has 30 teeth with a 5 mm module. The normal pressure angle is 20°. Take the coefficient of friction as 0.035. Calculate efficiency of the worm gear drive and the power lost in friction. **06**

Section – II

Q.5 **a)** Draw a neat sketch of Bevel Gears and show various forces acting on them. **03**

b) A pair of straight bevel gears is made up of Grey Cast Iron FG200, (E = 114000 N/mm^2). The surface endurance strength is 90 N/mm^2. The number of teeth on the pinion and gear are 30 and 40, respectively. The module and face width are 6 mm and 50 mm, respectively. The pressure angle is 20°. Determine the wear strength of the tooth. **04**

c) A pair of straight bevel gears is mounted on shafts which are intersecting at right angles. The number of teeth on the pinion and the gear are 20 & 28, respectively. The pressure angle is 20°. The pinion shaft is connected to the electric motor developing 6 kW rated power at 1440 rpm. The pinion and gear are made up of the steel (Sut = 600 N/mm^2) and heat treated to a surface hardness of 330 BHN. The module and face width are 4 mm and 20 mm respectively. Determine: **07**
1) Beam strength
2) Wear Strength and
3) Static load

Take Lewis form factor of Y = 0.320 for 20 teeth.

Q.6 **a)** Distinguish between the rolling contact bearing and the sliding contact bearing. **03**

b) Explain Hydrodynamic bearing with a neat sketch. **05**

c) A ball bearing is operating on a work cycle consisting of three parts: a radial load of 5000 N at 1400 rpm for one quarter cycle, a radial load of 6000 N at 700 rpm for one half cycle and a radial load of 3000 N at 1400 rpm. for the remaining one quarter cycle. The expected life of bearing is 12,000 Hrs. Calculate the **06**

1) Average speed
2) Equivalent load
3) Life in million revolutions and
4) Dynamic load carrying capacity of the bearing

Q.7 **a)** Explain with neat sketch single block/shoe brake. **03**

b) In a particular application, the radial load acting on a ball bearing is 6 kN and the expected life for 90% of the bearings is 9000 h. Calculate the dynamic load carrying capacity of the bearing, when the shaft rotates at 1450 rpm. **04**

c) A plate clutch having a single driving plate with contact surfaces on each side required to transmit 110 kW at 1250 rpm. The outer diameter of the contact surfaces is to be 300 mm. The coefficient of friction is 0.4. **07**

1) Assuming uniform pressure of 0.17 N/mm^2; determine the inner diameter of the friction surfaces.
2) Assuming the same dimensions and same total axial thrust, determine the maximum torque that can be transmitted and maximum intensity of pressure when uniform wear conditions have been reached.

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The device which permits the connection and disconnection of shaft is _____.
a) flywheel b) gear box
c) clutch d) none of these

2) The rolling contact bearings are known as _____.
a) Plastic bearings b) Antifriction bearings
c) Both a and b d) None of these

3) If bearing is designated as 6205, the last two digits multiplied by five indicates _____.
a) Bearing width b) Ball diameter
c) No. of balls d) Bore diameter

4) In the ball bearing, the cage is provided to _____.
a) facilitate slipping of balls b) to reduce friction
c) maintain balls at fixed distance d) none of these

5) Maximum tangential force that the tooth can transmit without bending failure _____.
a) Beam strength b) Wear Strength
c) Dynamic load d) Effective

6) Permissible bending stress for gear tooth is usually taken as _____.
a) One half of ultimate tensile strength
b) One third of surface endurance strength
c) One half of surface endurance strength
d) One third of ultimate tensile strength

7) The form factor of a spur gear tooth depends upon _____.
a) circular pitch b) pressure angle
c) number of teeth d) None of these

8) In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called _____.
a) Normal pitch b) Axial pitch
c) Diametral pitch d) Module

9) In worm gears the relationship between lead angle (λ) and helix angle (Ψ) is _____.

a) $\lambda - \Psi = 90°$ b) $\lambda + \Psi = 90°$

c) $\lambda - \Psi = 180°$ d) None of these

10) If the worm helix angle is 30°, then the worm should have at least _____ threads.

a) 5 b) 6

c) 7 d) 8

11) When bevel gears having equal teeth and equal pitch angles connect two shafts whose axes intersect at right angle, then they are known as _____.

a) angular bevel gears b) crown bevel gears

c) internal bevel gears d) Mitre bevel gears

12) If b denotes the face width and Ao denotes the cone distance, then the bevel factor is written as _____.

a) b/Ao b) 1 - (b/Ao)

c) b/2Ao d) None of these

13) The brakes commonly used on motor cars is _____.

a) shoe brake b) band brake

c) band and block brake d) internally expanding brake

14) The material used for brake lining should have _____ coefficient of friction.

a) zero b) high

c) low d) none of these

Seat No.	

Set | R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 **a)** Define the following: **03**
1) Beam strength of gear tooth
2) Wear strength of gear tooth
3) Gear ratio

b) What are the various types of gear tooth failures? State their causes and remedies. **04**

c) It is required to design a pair of spur gears with 20° full depth involute teeth. The input shaft rotates at 720 rpm and receives 5 kW power through flexible coupling. The speed of the output shaft is 144 rpm. The pinion and gears are made up of steel having a S_{ut} of 410 N/mm^2. The service factor for the application is 1.25. For the preliminary calculations, assume pitch line velocity as 5 m/s and factor of safety as 2 against bending failure. The Lewis form factor Y = 0.308 for 18 teeth. Determine first preference module, if Cv = 6/(6+V). **07**

Q.3 **a)** Differentiate between the helical and the spur gears. **03**

b) For a pair of helical gears, 4 kW power at 720 rpm is supplied to pinion A through its shaft. The normal module is 5 mm and normal pressure angle is 20°. The pinion has right-handed teeth while the gear has left hand teeth. The helix angle is 25°. The number of teeth on the pinion and gear are 20 and 30, respectively. Determine the components of the tooth force. **04**

c) The following data is given for the pair of helical gears made up of steel: **07**
Normal module = 5 mm
Face Width = 50 mm
No. of teeth on the Pinion = 30
No. of teeth on the Gear = 60
Center distance = 245 mm
Normal pressure angle = 20°
Speed of Pinion = 1000 rpm
Permissible bending stress = 150 N/mm^2
Surface Hardness = 300 BHN
Determine:
1) Helix angle
2) Beam Strength
3) Wear Strength

Table 1: Lewis form factor for 20° full depth involute system.

z	Y	z	Y
30	0.358	37	0.380
31	0.364	39	0.386
33	0.367	40	0.389
35	0.373	45	0.399

Q.4 **a)** Define the following terms: **03**
1) Lead Angle
2) Helix Angle
3) Diametral Quotient

b) A worm gear box with an effective surface area of 1.5 m^2 is operating in still air with a heat transfer coefficient of 15 W/m^2°C. The temperature rise of the lubricating oil above the atmospheric temperature is limited to 50°C. The worm gears are designated as, 1/30/10/8 The worm shaft is rotating at 1440 rpm and the normal pressure angle is 20°. Calculate power transmitting capacity based on the thermal considerations. Assume $\mu = 0.024$. **05**

c) 1 kW power at 720 rpm is supplied to the worm shaft. The number of starts for threads of the worm is four with a 50 mm pitch circle diameter. The worm wheel has 30 teeth with a 5 mm module. The normal pressure angle is 20°. Take the coefficient of friction as 0.035. Calculate efficiency of the worm gear drive and the power lost in friction. **06**

Section – II

Q.5 **a)** Draw a neat sketch of Bevel Gears and show various forces acting on them. **03**

b) A pair of straight bevel gears is made up of Grey Cast Iron FG200, (E = 114000 N/mm^2). The surface endurance strength is 90 N/mm^2. The number of teeth on the pinion and gear are 30 and 40, respectively. The module and face width are 6 mm and 50 mm, respectively. The pressure angle is 20°. Determine the wear strength of the tooth. **04**

c) A pair of straight bevel gears is mounted on shafts which are intersecting at right angles. The number of teeth on the pinion and the gear are 20 & 28, respectively. The pressure angle is 20°. The pinion shaft is connected to the electric motor developing 6 kW rated power at 1440 rpm. The pinion and gear are made up of the steel (Sut = 600 N/mm^2) and heat treated to a surface hardness of 330 BHN. The module and face width are 4 mm and 20 mm respectively. Determine: **07**
1) Beam strength
2) Wear Strength and
3) Static load

Take Lewis form factor of Y = 0.320 for 20 teeth.

Q.6 **a)** Distinguish between the rolling contact bearing and the sliding contact bearing. **03**

b) Explain Hydrodynamic bearing with a neat sketch. **05**

c) A ball bearing is operating on a work cycle consisting of three parts: a radial load of 5000 N at 1400 rpm for one quarter cycle, a radial load of 6000 N at 700 rpm for one half cycle and a radial load of 3000 N at 1400 rpm. for the remaining one quarter cycle. The expected life of bearing is 12,000 Hrs. Calculate the **06**

1) Average speed
2) Equivalent load
3) Life in million revolutions and
4) Dynamic load carrying capacity of the bearing

Q.7 **a)** Explain with neat sketch single block/shoe brake. **03**

b) In a particular application, the radial load acting on a ball bearing is 6 kN and the expected life for 90% of the bearings is 9000 h. Calculate the dynamic load carrying capacity of the bearing, when the shaft rotates at 1450 rpm. **04**

c) A plate clutch having a single driving plate with contact surfaces on each side required to transmit 110 kW at 1250 rpm. The outer diameter of the contact surfaces is to be 300 mm. The coefficient of friction is 0.4. **07**

1) Assuming uniform pressure of 0.17 N/mm^2; determine the inner diameter of the friction surfaces.
2) Assuming the same dimensions and same total axial thrust, determine the maximum torque that can be transmitted and maximum intensity of pressure when uniform wear conditions have been reached.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) If the worm helix angle is 30°, then the worm should have at least _____ threads.
a) 5 b) 6
c) 7 d) 8

2) When bevel gears having equal teeth and equal pitch angles connect two shafts whose axes intersect at right angle, then they are known as _____.
a) angular bevel gears b) crown bevel gears
c) internal bevel gears d) Mitre bevel gears

3) If b denotes the face width and Ao denotes the cone distance, then the bevel factor is written as _____.
a) b/Ao b) 1 - (b/Ao)
c) b/2Ao d) None of these

4) The brakes commonly used on motor cars is _____.
a) shoe brake b) band brake
c) band and block brake d) internally expanding brake

5) The material used for brake lining should have _____ coefficient of friction.
a) zero b) high
c) low d) none of these

6) The device which permits the connection and disconnection of shaft is _____.
a) flywheel b) gear box
c) clutch d) none of these

7) The rolling contact bearings are known as _____.
a) Plastic bearings b) Antifriction bearings
c) Both a and b d) None of these

8) If bearing is designated as 6205, the last two digits multiplied by five indicates _____.
a) Bearing width b) Ball diameter
c) No. of balls d) Bore diameter

9) In the ball bearing, the cage is provided to _____.
a) facilitate slipping of balls b) to reduce friction
c) maintain balls at fixed distance d) none of these

10) Maximum tangential force that the tooth can transmit without bending failure _____.
a) Beam strength b) Wear Strength
c) Dynamic load d) Effective

11) Permissible bending stress for gear tooth is usually taken as _____.
a) One half of ultimate tensile strength
b) One third of surface endurance strength
c) One half of surface endurance strength
d) One third of ultimate tensile strength

12) The form factor of a spur gear tooth depends upon _____.
a) circular pitch b) pressure angle
c) number of teeth d) None of these

13) In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called _____.
a) Normal pitch b) Axial pitch
c) Diametral pitch d) Module

14) In worm gears the relationship between lead angle (λ) and helix angle (Ψ) is _____.
a) $\lambda - \Psi = 90°$ b) $\lambda + \Psi = 90°$
c) $\lambda - \Psi = 180°$ d) None of these

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Transmission System Design (BTN02601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 **a)** Define the following: **03**
1) Beam strength of gear tooth
2) Wear strength of gear tooth
3) Gear ratio

b) What are the various types of gear tooth failures? State their causes and remedies. **04**

c) It is required to design a pair of spur gears with 20° full depth involute teeth. The input shaft rotates at 720 rpm and receives 5 kW power through flexible coupling. The speed of the output shaft is 144 rpm. The pinion and gears are made up of steel having a S_{ut} of 410 N/mm^2. The service factor for the application is 1.25. For the preliminary calculations, assume pitch line velocity as 5 m/s and factor of safety as 2 against bending failure. The Lewis form factor Y = 0.308 for 18 teeth. Determine first preference module, if Cv = 6/(6+V). **07**

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c) The following data is given for the pair of helical gears made up of steel: **07**
Normal module = 5 mm
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No. of teeth on the Pinion = 30
No. of teeth on the Gear = 60
Center distance = 245 mm
Normal pressure angle = 20°
Speed of Pinion = 1000 rpm
Permissible bending stress = 150 N/mm^2
Surface Hardness = 300 BHN
Determine:
1) Helix angle
2) Beam Strength
3) Wear Strength

Table 1: Lewis form factor for 20° full depth involute system.

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1) Lead Angle
2) Helix Angle
3) Diametral Quotient

b) A worm gear box with an effective surface area of 1.5 m^2 is operating in still air with a heat transfer coefficient of 15 $W/m^2°C$. The temperature rise of the lubricating oil above the atmospheric temperature is limited to 50°C. The worm gears are designated as, 1/30/10/8 The worm shaft is rotating at 1440 rpm and the normal pressure angle is 20°. Calculate power transmitting capacity based on the thermal considerations. Assume $\mu = 0.024$. **05**

c) 1 kW power at 720 rpm is supplied to the worm shaft. The number of starts for threads of the worm is four with a 50 mm pitch circle diameter. The worm wheel has 30 teeth with a 5 mm module. The normal pressure angle is 20°. Take the coefficient of friction as 0.035. Calculate efficiency of the worm gear drive and the power lost in friction. **06**

Section – II

Q.5 **a)** Draw a neat sketch of Bevel Gears and show various forces acting on them. **03**

b) A pair of straight bevel gears is made up of Grey Cast Iron FG200, (E = 114000 N/mm^2). The surface endurance strength is 90 N/mm^2. The number of teeth on the pinion and gear are 30 and 40, respectively. The module and face width are 6 mm and 50 mm, respectively. The pressure angle is 20°. Determine the wear strength of the tooth. **04**

c) A pair of straight bevel gears is mounted on shafts which are intersecting at right angles. The number of teeth on the pinion and the gear are 20 & 28, respectively. The pressure angle is 20°. The pinion shaft is connected to the electric motor developing 6 kW rated power at 1440 rpm. The pinion and gear are made up of the steel (Sut = 600 N/mm^2) and heat treated to a surface hardness of 330 BHN. The module and face width are 4 mm and 20 mm respectively. Determine: **07**
1) Beam strength
2) Wear Strength and
3) Static load

Take Lewis form factor of Y = 0.320 for 20 teeth.

Q.6 **a)** Distinguish between the rolling contact bearing and the sliding contact bearing. **03**

b) Explain Hydrodynamic bearing with a neat sketch. **05**

c) A ball bearing is operating on a work cycle consisting of three parts: a radial load of 5000 N at 1400 rpm for one quarter cycle, a radial load of 6000 N at 700 rpm for one half cycle and a radial load of 3000 N at 1400 rpm. for the remaining one quarter cycle. The expected life of bearing is 12,000 Hrs. Calculate the **06**

1) Average speed
2) Equivalent load
3) Life in million revolutions and
4) Dynamic load carrying capacity of the bearing

Q.7 **a)** Explain with neat sketch single block/shoe brake. **03**

b) In a particular application, the radial load acting on a ball bearing is 6 kN and the expected life for 90% of the bearings is 9000 h. Calculate the dynamic load carrying capacity of the bearing, when the shaft rotates at 1450 rpm. **04**

c) A plate clutch having a single driving plate with contact surfaces on each side required to transmit 110 kW at 1250 rpm. The outer diameter of the contact surfaces is to be 300 mm. The coefficient of friction is 0.4. **07**

1) Assuming uniform pressure of 0.17 N/mm^2; determine the inner diameter of the friction surfaces.
2) Assuming the same dimensions and same total axial thrust, determine the maximum torque that can be transmitted and maximum intensity of pressure when uniform wear conditions have been reached.

SLR-GF-131

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) Use of a non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The most common type of RTD is made of: _____.
a) Copper b) Nickel
c) Platinum d) Aluminum

2) The primary component of a dead weight pressure gauge is the _____.
a) Diaphragm b) Bourdon Tube
c) Pressure Transducer d) Weight and Piston Assembly

3) Which of the following temperature scale is based on the freezing point and boiling point of water at standard atmospheric pressure?
a) Centigrade and Fahrenheit b) Kelvin and Rankine
c) Thermodynamic d) International

4) An LVDT operates on the principle of _____.
a) Capacitance b) Inductance
c) Resistance d) Piezoelectricity

5) Stroboscopes work based on the principle of _____.
a) Reflection b) Refraction
c) Persistence of Vision d) Polarization

6) In a hydraulic load cell, the load is applied on _____.
a) Piston b) Diaphragm
c) Bellows d) None of the above

7) What is the primary principle of operation for a strain gauge load cell?
a) Piezoelectric effect b) Hooke's law
c) Pascal's law d) Faraday's law

8) An example of the closed-loop control system is _____.
a) Automatic washing machine b) Automatic Toaster
c) Cruise control in a car d) None of the above

9) In the block diagram reduction technique, the transfer function of series-connected blocks can be obtained by _____.
a) Adding the transfer functions
b) Subtracting the transfer functions
c) Multiplying the transfer functions
d) Dividing the transfer functions

10) The Integral (I) control mode helps to eliminate _____.
a) Steady state error
b) Transient response
c) Oscillations
d) Noise

11) The root locus plot shows the movement of the system's poles as a function of _____.
a) Time
b) Frequency
c) Gain or parameter variation
d) Damping ratio

12) If a system has 2 asymptotes, then the angle of asymptotes are _____.
a) 90° and 270°
b) 90° and 180°
c) 180° and 270°
d) 180° and 360°

13) Two poles at the origin contribute _____ to the overall phase angle plot.
a) -90°
b) +90°
c) -180°
d) +180°

14) In magnitude plot, the slope changes at _____.
a) Gain crossover frequency
b) Phase crossover frequency
c) Every corner frequency
d) Zero dB magnitude

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and state it clearly.
5) Use university graph paper and semi-log paper if required.

Section – I

Q.2 **a)** Enlist all the static characteristics of the instrument. Explain any 5 of them. **07**
b) Explain with a neat diagram, the working of LVDT. **07**

Q.3 **a)** What is a Dynamometer? Explain the working of Eddy current dynamometer. **07**
b) Discuss the working of the Turbine meter with a neat diagram. **07**

Q.4 **a)** Discuss in detail the working of the Pneumatic Load cell with a neat diagram. **07**
b) Distinguish between RTD and Thermistor. **07**

Section – II

Q.5 **a)** What is block diagram representation? Explain any four rules of block diagram algebra with diagrams for each rule. **07**
b) A feedback control system has an open-loop transfer function given by **07**

$$G(s)H(s) = \frac{K}{s(s+3)(s^2+2s+2)}$$

Sketch the root locus as K is varied from 0 to ∞ and comment on the stability of the system.

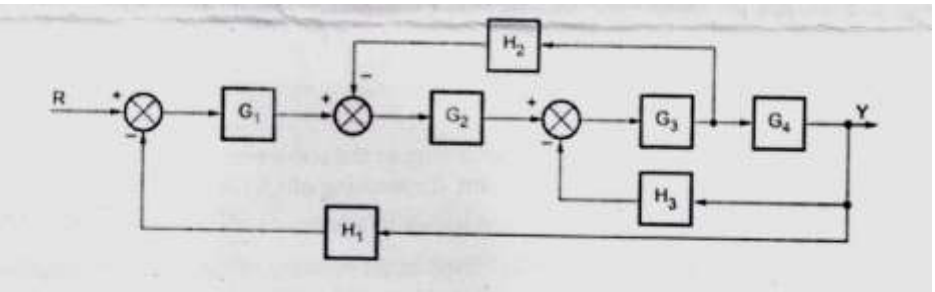
Q.6 **a)** What are the steps to construct root locus? Explain them. **07**
b) Sketch the Bode Plot for **07**

$$G(s) = \frac{10(s+10)}{s(s+2)(s+5)}$$

Determine the Gain crossover frequency and Phase crossover frequency, Gain margin and Phase margin.

Q.7 **a)** Explain the nature of Bode Plots for Poles and Zeros at the origin. **07**

b) Determine the overall transfer function of the system shown in fig. given below using block diagram reduction rules. **07**



Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume data wherever necessary.
5) Use of a non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) An example of the closed-loop control system is _____.
a) Automatic washing machine b) Automatic Toaster
c) Cruise control in a car d) None of the above

2) In the block diagram reduction technique, the transfer function of series-connected blocks can be obtained by _____.
a) Adding the transfer functions
b) Subtracting the transfer functions
c) Multiplying the transfer functions
d) Dividing the transfer functions

3) The Integral (I) control mode helps to eliminate _____.
a) Steady state error b) Transient response
c) Oscillations d) Noise

4) The root locus plot shows the movement of the system's poles as a function of _____.
a) Time b) Frequency
c) Gain or parameter variation d) Damping ratio

5) If a system has 2 asymptotes, then the angle of asymptotes are _____.
a) 90° and 270° b) 90° and 180°
c) 180° and 270° d) 180° and 360°

6) Two poles at the origin contribute _____ to the overall phase angle plot.
a) -90° b) +90°
c) -180° d) +180°

7) In magnitude plot, the slope changes at _____.
a) Gain crossover frequency b) Phase crossover frequency
c) Every corner frequency d) Zero dB magnitude

8) The most common type of RTD is made of: _____.
a) Copper b) Nickel
c) Platinum d) Aluminum

9) The primary component of a dead weight pressure gauge is the _____.
a) Diaphragm b) Bourdon Tube
c) Pressure Transducer d) Weight and Piston Assembly

10) Which of the following temperature scale is based on the freezing point and boiling point of water at standard atmospheric pressure?
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12) Stroboscopes work based on the principle of _____.
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c) Persistence of Vision d) Polarization

13) In a hydraulic load cell, the load is applied on _____.
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c) Bellows d) None of the above

14) What is the primary principle of operation for a strain gauge load cell?
a) Piezoelectric effect b) Hooke's law
c) Pascal's law d) Faraday's law

Seat No.		Set	Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
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4) Assume suitable data if necessary and state it clearly.
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Section – I

Q.2 **a)** Enlist all the static characteristics of the instrument. Explain any 5 of them. **07**
b) Explain with a neat diagram, the working of LVDT. **07**

Q.3 **a)** What is a Dynamometer? Explain the working of Eddy current dynamometer. **07**
b) Discuss the working of the Turbine meter with a neat diagram. **07**

Q.4 **a)** Discuss in detail the working of the Pneumatic Load cell with a neat diagram. **07**
b) Distinguish between RTD and Thermistor. **07**

Section – II

Q.5 **a)** What is block diagram representation? Explain any four rules of block diagram algebra with diagrams for each rule. **07**
b) A feedback control system has an open-loop transfer function given by **07**

$$G(s)H(s) = \frac{K}{s(s+3)(s^2+2s+2)}$$

Sketch the root locus as K is varied from 0 to ∞ and comment on the stability of the system.

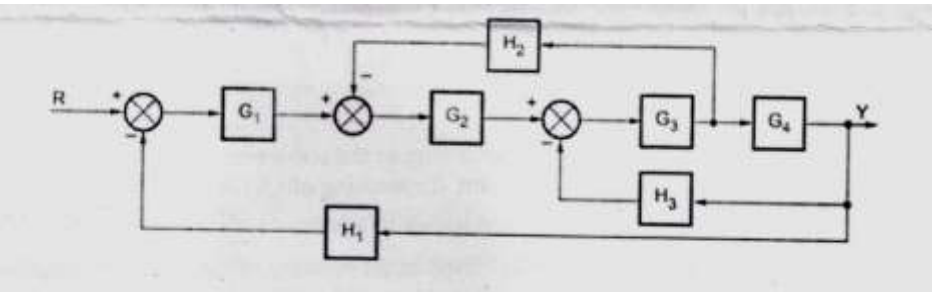
Q.6 **a)** What are the steps to construct root locus? Explain them. **07**
b) Sketch the Bode Plot for **07**

$$G(s) = \frac{10(s+10)}{s(s+2)(s+5)}$$

Determine the Gain crossover frequency and Phase crossover frequency, Gain margin and Phase margin.

Q.7 **a)** Explain the nature of Bode Plots for Poles and Zeros at the origin. **07**

b) Determine the overall transfer function of the system shown in fig. given below using block diagram reduction rules. **07**



Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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5) Use of a non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The root locus plot shows the movement of the system's poles as a function of _____.
a) Time b) Frequency
c) Gain or parameter variation d) Damping ratio

2) If a system has 2 asymptotes, then the angle of asymptotes are _____.
a) 90° and 270° b) 90° and 180°
c) 180° and 270° d) 180° and 360°

3) Two poles at the origin contribute _____ to the overall phase angle plot.
a) -90° b) +90°
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4) In magnitude plot, the slope changes at _____.
a) Gain crossover frequency b) Phase crossover frequency
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5) The most common type of RTD is made of: _____.
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6) The primary component of a dead weight pressure gauge is the _____.
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c) Pressure Transducer d) Weight and Piston Assembly

7) Which of the following temperature scale is based on the freezing point and boiling point of water at standard atmospheric pressure?
a) Centigrade and Fahrenheit b) Kelvin and Rankine
c) Thermodynamic d) International

8) An LVDT operates on the principle of _____.
a) Capacitance b) Inductance
c) Resistance d) Piezoelectricity

9) Stroboscopes work based on the principle of _____.
a) Reflection b) Refraction
c) Persistence of Vision d) Polarization

10) In a hydraulic load cell, the load is applied on _____.
a) Piston b) Diaphragm
c) Bellows d) None of the above

11) What is the primary principle of operation for a strain gauge load cell?
a) Piezoelectric effect b) Hooke's law
c) Pascal's law d) Faraday's law

12) An example of the closed-loop control system is _____.
a) Automatic washing machine b) Automatic Toaster
c) Cruise control in a car d) None of the above

13) In the block diagram reduction technique, the transfer function of series-connected blocks can be obtained by _____.
a) Adding the transfer functions
b) Subtracting the transfer functions
c) Multiplying the transfer functions
d) Dividing the transfer functions

14) The Integral (I) control mode helps to eliminate _____.
a) Steady state error b) Transient response
c) Oscillations d) Noise

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and state it clearly.
5) Use university graph paper and semi-log paper if required.

Section – I

Q.2 **a)** Enlist all the static characteristics of the instrument. Explain any 5 of them. **07**
b) Explain with a neat diagram, the working of LVDT. **07**

Q.3 **a)** What is a Dynamometer? Explain the working of Eddy current dynamometer. **07**
b) Discuss the working of the Turbine meter with a neat diagram. **07**

Q.4 **a)** Discuss in detail the working of the Pneumatic Load cell with a neat diagram. **07**
b) Distinguish between RTD and Thermistor. **07**

Section – II

Q.5 **a)** What is block diagram representation? Explain any four rules of block diagram algebra with diagrams for each rule. **07**
b) A feedback control system has an open-loop transfer function given by **07**

$$G(s)H(s) = \frac{K}{s(s+3)(s^2+2s+2)}$$

Sketch the root locus as K is varied from 0 to ∞ and comment on the stability of the system.

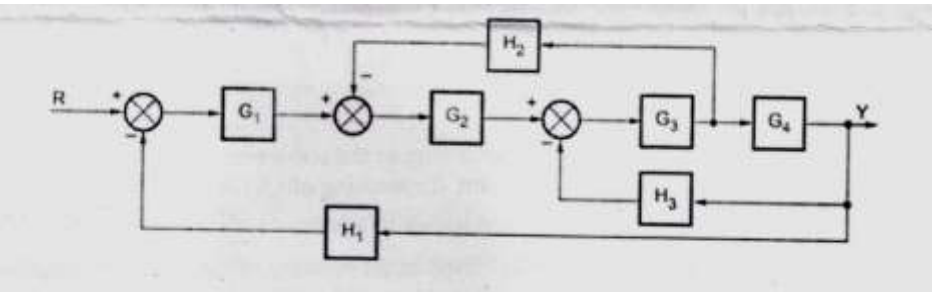
Q.6 **a)** What are the steps to construct root locus? Explain them. **07**
b) Sketch the Bode Plot for **07**

$$G(s) = \frac{10(s+10)}{s(s+2)(s+5)}$$

Determine the Gain crossover frequency and Phase crossover frequency, Gain margin and Phase margin.

Q.7 **a)** Explain the nature of Bode Plots for Poles and Zeros at the origin. **07**

b) Determine the overall transfer function of the system shown in fig. given below using block diagram reduction rules. **07**



Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) Use of a non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In a hydraulic load cell, the load is applied on _____.
a) Piston b) Diaphragm
c) Bellows d) None of the above

2) What is the primary principle of operation for a strain gauge load cell?
a) Piezoelectric effect b) Hooke's law
c) Pascal's law d) Faraday's law

3) An example of the closed-loop control system is _____.
a) Automatic washing machine b) Automatic Toaster
c) Cruise control in a car d) None of the above

4) In the block diagram reduction technique, the transfer function of series-connected blocks can be obtained by _____.
a) Adding the transfer functions
b) Subtracting the transfer functions
c) Multiplying the transfer functions
d) Dividing the transfer functions

5) The Integral (I) control mode helps to eliminate _____.
a) Steady state error b) Transient response
c) Oscillations d) Noise

6) The root locus plot shows the movement of the system's poles as a function of _____.
a) Time b) Frequency
c) Gain or parameter variation d) Damping ratio

7) If a system has 2 asymptotes, then the angle of asymptotes are _____.
a) 90° and 270° b) 90° and 180°
c) 180° and 270° d) 180° and 360°

8) Two poles at the origin contribute _____ to the overall phase angle plot.
a) -90° b) +90°
c) -180° d) +180°

9) In magnitude plot, the slope changes at _____.
a) Gain crossover frequency b) Phase crossover frequency
c) Every corner frequency d) Zero dB magnitude

10) The most common type of RTD is made of: _____.
a) Copper b) Nickel
c) Platinum d) Aluminum

11) The primary component of a dead weight pressure gauge is the _____.
a) Diaphragm b) Bourdon Tube
c) Pressure Transducer d) Weight and Piston Assembly

12) Which of the following temperature scale is based on the freezing point and boiling point of water at standard atmospheric pressure?
a) Centigrade and Fahrenheit b) Kelvin and Rankine
c) Thermodynamic d) International

13) An LVDT operates on the principle of _____.
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c) Persistence of Vision d) Polarization

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation and Control Engineering (BTN02602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
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Section – I

Q.2 **a)** Enlist all the static characteristics of the instrument. Explain any 5 of them. **07**
b) Explain with a neat diagram, the working of LVDT. **07**

Q.3 **a)** What is a Dynamometer? Explain the working of Eddy current dynamometer. **07**
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Q.4 **a)** Discuss in detail the working of the Pneumatic Load cell with a neat diagram. **07**
b) Distinguish between RTD and Thermistor. **07**

Section – II

Q.5 **a)** What is block diagram representation? Explain any four rules of block diagram algebra with diagrams for each rule. **07**
b) A feedback control system has an open-loop transfer function given by **07**

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Sketch the root locus as K is varied from 0 to ∞ and comment on the stability of the system.

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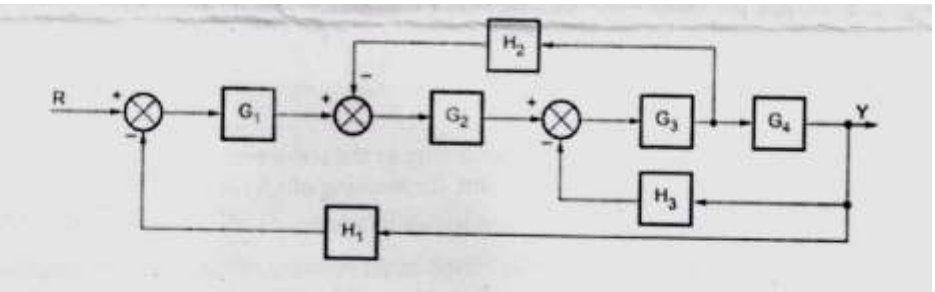
b) Sketch the Bode Plot for **07**

$$G(s) = \frac{10(s+10)}{s(s+2)(s+5)}$$

Determine the Gain crossover frequency and Phase crossover frequency, Gain margin and Phase margin.

Q.7 **a)** Explain the nature of Bode Plots for Poles and Zeros at the origin. **07**

b) Determine the overall transfer function of the system shown in fig. given below using block diagram reduction rules. **07**



Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The LMTD of a counter flow condenser as compared to that of a parallel flow condenser will be _____.
a) more b) less
c) exactly equal d) cannot be predicted

2) Thermal conductivity of nonmetals _____ with rise in temperature.
a) decreases b) increases
c) remains same d) unpredictable

3) The gray body is one for which _____.
a) emissivity is constant b) emissivity equals reflectivity
c) emissivity equals absorptivity d) emissivity equals transmissivity

4) When the thickness of insulation on a pipe exceeds the critical value _____.
a) the heat flow rate increases
b) the heat flow rate decreases
c) the heat flow rate remains constant
d) none of the above

5) The free convection heat transfer is significantly affected by _____.
a) Reynolds number b) Fourier number
c) Grashoff number d) Nusselt

6) The critical radius of a hollow cylinder having thermal conductivity k and ho as convective heat transfer coefficient of outer fluid is given by _____.
a) ho/k b) $2k/ho$
c) k/ho d) $ho/2k$

7) In a counter flow heat exchanger, the heat capacities for hot and cold fluids are equal, if NTU is equal to 0.5 then the effectiveness of heat exchanger is _____.
a) 0.2 b) 0.5
c) 0.33 d) 1.0

8) _____number gives the ratio of kinematic viscosity to thermal diffusivity.

a) Nusselt b) Fourier

c) Prandtl d) Biot

9) Dropwise condensation usually occurs on _____.

a) Glazed surface b) Smooth surface

c) Oily surface d) Coated surface

10) For a white body _____.

a) $\alpha = 1, \rho = 0, \tau = 0$ b) $\alpha = 0, \rho = 1, \tau = 0$

c) $\alpha = 0, \rho = 0, \tau = 1$ d) $\alpha = 0, \rho = 0, \tau = 0$

11) In fins parameter 'm' equals to _____.

a) $(hp/kA)^2$ b) $(kA/hp)^2$

c) $(kA/hp)^{1/2}$ d) $(hp/kA)^{1/2}$

12) The overall heat transfer co-efficient is used in case of _____.

a) Conduction b) Convection

c) Radiation d) Conduction and convection

13) Which of the following has the lowest thermal conductivity?

a) air b) water

c) brick d) copper

14) Which of the following forms of water have the highest value of thermal conductivity?

a) boiling water b) steam

c) solid ice d) melting ice

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.
5) Use of scientific calculator is allowed.

Section – I

Q.2 Attempt the following questions.

a) Derive an expression for critical radius of insulation for cylinder. **05**

b) Explain the effect of temperature on thermal conductivity of solids, liquids and gases. **04**

c) A mild steel tank of wall thickness 10 mm contains water at 90°C. A thermal conductivity of mild Steel is 50 W/m °C and heat transfer coefficient for inside and outside of the tank are 2800 W/m^2 °C and 11 W/m^2 °C respectively. If atmospheric temperature is 20°C. Calculate - **05**
1) Rate of heat loss per m^2 of the tank
2) Temperature of outside surface of tank

Q.3 Attempt the following questions.

a) Derive an expression for temperature distribution equation and heat flow rate through a fin considering uniform cross section for a fin with finite length and insulated tip. **05**

b) Derive an expression of steady state one dimensional heat conduction equation for a cylinder without heat generation. **05**

c) A person is found dead to police at 5 pm in a room whose temperature is 20°C. The temperature of body is measured to be 25°C when found and heat transfer coefficient is estimated to be 8 W/m^2 °C. Considering human body as a cylinder of 30 cm diameter and 1.75 m long calculate actual time of death of person. Take thermo physical properties of body as thermal conductivity (k) = 6.08 W/m K, density 900 Kg/m^3 specific heat (C_p) = 4000 J/Kg K. (Assume healthy person body temperature = 37°C) **04**

Q.4 Attempt the following questions.

a) Explain the following: **04**
1) Steffan Boltzmann law
2) Emissivity

b) A refractory material has emissivity 0.415 at 1460 K and it is exposed to black furnace walls at 1500 K. What is the rate of gain of heat radiation per meter square area? **05**

c) State planks law of radiation and hence derive Wien's displacement law using planks law. **05**

Section – II

Q.5 Attempt the following question.

a) Derive an expression for LMTD of parallel flow heat exchanger. **05**

b) In a counter flow double pipe heat exchanger superheated steam is used to heat water at the rate of 10500 Kg/hr. The steam enters the heat exchanger at 180°C and leaves at 130°C. The inlet and outlet temperature of water are 30°C and 80°C respectively. If overall heat transfer coefficient is 814 W/m^2 °C and Specific heat of water is C_p = 4.187 KJ/Kg K **05**

Calculate -

1) Rate of heat transfer
2) The surface area of heat exchanger

c) Explain construction, working and applications of heat pipe. **04**

Q.6 Attempt the following questions.

a) Using dimensional analysis show that $Nu = f(Re.Pr)$ for forced convection. **05**

b) A cylinder of 8 cm diameter and 15 cm length having surface temperature 50°C expressed vertically in water at 15°C. Find the heat transfer rate from cylinder. The properties of water at 32.5°C are density (ρ) = 995.7 Kg/m^3, specific heat (C_p) = 4.18 KJ/Kg °C, Thermal conductivity (k) = 0.615 W/m K, dynamic viscosity $(\mu) = 0.798 \times 10^{-3}$ Kg/ms, kinematic viscosity $(v) = 0.805 \times 10^{-6}$ m^2/sec. (Use empirical correlation as $\mathrm{Nu} = 0.13\ (\mathrm{Gr.Pr})^{1/3}$) **05**

c) Explain fouling factor in heat exchanger. **04**

Q.7 Attempt the following questions.

a) Explain with neat sketch boiling curve and its different regimes. **05**

b) Explain mechanism of convection and its types. **04**

c) Explain the classification of heat exchanger. **05**

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) _____number gives the ratio of kinematic viscosity to thermal diffusivity.
a) Nusselt b) Fourier
c) Prandtl d) Biot

2) Dropwise condensation usually occurs on _____.
a) Glazed surface b) Smooth surface
c) Oily surface d) Coated surface

3) For a white body _____.
a) $\alpha = 1, \rho = 0, \tau = 0$ b) $\alpha = 0, \rho = 1, \tau = 0$
c) $\alpha = 0, \rho = 0, \tau = 1$ d) $\alpha = 0, \rho = 0, \tau = 0$

4) In fins parameter 'm' equals to _____.
a) $(hp/kA)^2$ b) $(kA/hp)^2$
c) $(kA/hp)^{1/2}$ d) $(hp/kA)^{1/2}$

5) The overall heat transfer co-efficient is used in case of _____.
a) Conduction b) Convection
c) Radiation d) Conduction and convection

6) Which of the following has the lowest thermal conductivity?
a) air b) water
c) brick d) copper

7) Which of the following forms of water have the highest value of thermal conductivity?
a) boiling water b) steam
c) solid ice d) melting ice

8) The LMTD of a counter flow condenser as compared to that of a parallel flow condenser will be _____.
a) more b) less
c) exactly equal d) cannot be predicted

9) Thermal conductivity of nonmetals _____ with rise in temperature.
a) decreases b) increases
c) remains same d) unpredictable

10) The gray body is one for which _____.
a) emissivity is constant
b) emissivity equals reflectivity
c) emissivity equals absorptivity
d) emissivity equals transmissivity

11) When the thickness of insulation on a pipe exceeds the critical value _____.
a) the heat flow rate increases
b) the heat flow rate decreases
c) the heat flow rate remains constant
d) none of the above

12) The free convection heat transfer is significantly affected by _____.
a) Reynolds number
b) Fourier number
c) Grashoff number
d) Nusselt

13) The critical radius of a hollow cylinder having thermal conductivity k and ho as convective heat transfer coefficient of outer fluid is given by _____.
a) ho/k
b) $2k/ho$
c) k/ho
d) $ho/2k$

14) In a counter flow heat exchanger, the heat capacities for hot and cold fluids are equal, if NTU is equal to 0.5 then the effectiveness of heat exchanger is _____.
a) 0.2
b) 0.5
c) 0.33
d) 1.0

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.
5) Use of scientific calculator is allowed.

Section – I

Q.2 Attempt the following questions.

a) Derive an expression for critical radius of insulation for cylinder. **05**

b) Explain the effect of temperature on thermal conductivity of solids, liquids and gases. **04**

c) A mild steel tank of wall thickness 10 mm contains water at 90°C. A thermal conductivity of mild Steel is 50 W/m °C and heat transfer coefficient for inside and outside of the tank are 2800 W/m^2 °C and 11 W/m^2 °C respectively. If atmospheric temperature is 20°C. Calculate - **05**
1) Rate of heat loss per m^2 of the tank
2) Temperature of outside surface of tank

Q.3 Attempt the following questions.

a) Derive an expression for temperature distribution equation and heat flow rate through a fin considering uniform cross section for a fin with finite length and insulated tip. **05**

b) Derive an expression of steady state one dimensional heat conduction equation for a cylinder without heat generation. **05**

c) A person is found dead to police at 5 pm in a room whose temperature is 20°C. The temperature of body is measured to be 25°C when found and heat transfer coefficient is estimated to be 8 W/m^2 °C. Considering human body as a cylinder of 30 cm diameter and 1.75 m long calculate actual time of death of person. Take thermo physical properties of body as thermal conductivity (k) = 6.08 W/m K, density 900 Kg/m^3 specific heat (C_p) = 4000 J/Kg K. (Assume healthy person body temperature = 37°C) **04**

Q.4 Attempt the following questions.

a) Explain the following: **04**
1) Steffan Boltzmann law
2) Emissivity

b) A refractory material has emissivity 0.415 at 1460 K and it is exposed to black furnace walls at 1500 K. What is the rate of gain of heat radiation per meter square area? **05**

c) State planks law of radiation and hence derive Wien's displacement law using planks law. **05**

Section – II

Q.5 Attempt the following question.

a) Derive an expression for LMTD of parallel flow heat exchanger. **05**

b) In a counter flow double pipe heat exchanger superheated steam is used to heat water at the rate of 10500 Kg/hr. The steam enters the heat exchanger at 180°C and leaves at 130°C. The inlet and outlet temperature of water are 30°C and 80°C respectively. If overall heat transfer coefficient is 814 W/m^2 °C and Specific heat of water is C_p = 4.187 KJ/Kg K **05**

Calculate -

1) Rate of heat transfer
2) The surface area of heat exchanger

c) Explain construction, working and applications of heat pipe. **04**

Q.6 Attempt the following questions.

a) Using dimensional analysis show that $Nu = f(Re.Pr)$ for forced convection. **05**

b) A cylinder of 8 cm diameter and 15 cm length having surface temperature 50°C expressed vertically in water at 15°C. Find the heat transfer rate from cylinder. The properties of water at 32.5°C are density (ρ) = 995.7 Kg/m^3, specific heat (C_p) = 4.18 KJ/Kg °C, Thermal conductivity (k) = 0.615 W/m K, dynamic viscosity $(\mu) = 0.798 \times 10^{-3}$ Kg/ms, kinematic viscosity $(v) = 0.805 \times 10^{-6}$ m^2/sec. (Use empirical correlation as $\mathrm{Nu} = 0.13\ (\mathrm{Gr.Pr})^{1/3}$) **05**

c) Explain fouling factor in heat exchanger. **04**

Q.7 Attempt the following questions.

a) Explain with neat sketch boiling curve and its different regimes. **05**

b) Explain mechanism of convection and its types. **04**

c) Explain the classification of heat exchanger. **05**

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In fins parameter 'm' equals to _____.
a) $(hp/kA)^2$ b) $(kA/hp)^2$
c) $(kA/hp)^{1/2}$ d) $(hp/kA)^{1/2}$

2) The overall heat transfer co-efficient is used in case of _____.
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3) Which of the following has the lowest thermal conductivity?
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4) Which of the following forms of water have the highest value of thermal conductivity?
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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
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Section – I

Q.2 Attempt the following questions.

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c) A mild steel tank of wall thickness 10 mm contains water at 90°C. A thermal conductivity of mild Steel is 50 W/m °C and heat transfer coefficient for inside and outside of the tank are 2800 W/m^2 °C and 11 W/m^2 °C respectively. If atmospheric temperature is 20°C. Calculate - **05**
1) Rate of heat loss per m^2 of the tank
2) Temperature of outside surface of tank

Q.3 Attempt the following questions.

a) Derive an expression for temperature distribution equation and heat flow rate through a fin considering uniform cross section for a fin with finite length and insulated tip. **05**

b) Derive an expression of steady state one dimensional heat conduction equation for a cylinder without heat generation. **05**

c) A person is found dead to police at 5 pm in a room whose temperature is 20°C. The temperature of body is measured to be 25°C when found and heat transfer coefficient is estimated to be 8 W/m^2 °C. Considering human body as a cylinder of 30 cm diameter and 1.75 m long calculate actual time of death of person. Take thermo physical properties of body as thermal conductivity (k) = 6.08 W/m K, density 900 Kg/m^3 specific heat (C_p) = 4000 J/Kg K. (Assume healthy person body temperature = 37°C) **04**

Q.4 Attempt the following questions.

a) Explain the following: **04**
1) Steffan Boltzmann law
2) Emissivity

b) A refractory material has emissivity 0.415 at 1460 K and it is exposed to black furnace walls at 1500 K. What is the rate of gain of heat radiation per meter square area? **05**

c) State planks law of radiation and hence derive Wien's displacement law using planks law. **05**

Section – II

Q.5 Attempt the following question.

a) Derive an expression for LMTD of parallel flow heat exchanger. **05**

b) In a counter flow double pipe heat exchanger superheated steam is used to heat water at the rate of 10500 Kg/hr. The steam enters the heat exchanger at 180°C and leaves at 130°C. The inlet and outlet temperature of water are 30°C and 80°C respectively. If overall heat transfer coefficient is 814 W/m^2 °C and Specific heat of water is C_p = 4.187 KJ/Kg K **05**

Calculate -

1) Rate of heat transfer
2) The surface area of heat exchanger

c) Explain construction, working and applications of heat pipe. **04**

Q.6 Attempt the following questions.

a) Using dimensional analysis show that $Nu = f(Re.Pr)$ for forced convection. **05**

b) A cylinder of 8 cm diameter and 15 cm length having surface temperature 50°C expressed vertically in water at 15°C. Find the heat transfer rate from cylinder. The properties of water at 32.5°C are density (ρ) = 995.7 Kg/m^3, specific heat (C_p) = 4.18 KJ/Kg °C, Thermal conductivity (k) = 0.615 W/m K, dynamic viscosity $(\mu) = 0.798 \times 10^{-3}$ Kg/ms, kinematic viscosity $(v) = 0.805 \times 10^{-6}$ m^2/sec. (Use empirical correlation as $\mathrm{Nu} = 0.13\ (\mathrm{Gr.Pr})^{1/3}$) **05**

c) Explain fouling factor in heat exchanger. **04**

Q.7 Attempt the following questions.

a) Explain with neat sketch boiling curve and its different regimes. **05**

b) Explain mechanism of convection and its types. **04**

c) Explain the classification of heat exchanger. **05**

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The critical radius of a hollow cylinder having thermal conductivity k and ho as convective heat transfer coefficient of outer fluid is given by _____.
a) ho/k b) $2k/ho$
c) k/ho d) $ho/2k$

2) In a counter flow heat exchanger, the heat capacities for hot and cold fluids are equal, if NTU is equal to 0.5 then the effectiveness of heat exchanger is _____.
a) 0.2 b) 0.5
c) 0.33 d) 1.0

3) _____number gives the ratio of kinematic viscosity to thermal diffusivity.
a) Nusselt b) Fourier
c) Prandtl d) Biot

4) Dropwise condensation usually occurs on _____.
a) Glazed surface b) Smooth surface
c) Oily surface d) Coated surface

5) For a white body _____.
a) $\alpha = 1, \rho = 0, \tau = 0$ b) $\alpha = 0, \rho = 1, \tau = 0$
c) $\alpha = 0, \rho = 0, \tau = 1$ d) $\alpha = 0, \rho = 0, \tau = 0$

6) In fins parameter 'm' equals to _____.
a) $(hp/kA)^2$ b) $(kA/hp)^2$
c) $(kA/hp)^{1/2}$ d) $(hp/kA)^{1/2}$

7) The overall heat transfer co-efficient is used in case of _____.
a) Conduction b) Convection
c) Radiation d) Conduction and convection

8) Which of the following has the lowest thermal conductivity?
a) air b) water
c) brick d) copper

9) Which of the following forms of water have the highest value of thermal conductivity?

a) boiling water b) steam
c) solid ice d) melting ice

10) The LMTD of a counter flow condenser as compared to that of a parallel flow condenser will be _____.

a) more b) less
c) exactly equal d) cannot be predicted

11) Thermal conductivity of nonmetals _____ with rise in temperature.

a) decreases b) increases
c) remains same d) unpredictable

12) The gray body is one for which _____.

a) emissivity is constant b) emissivity equals reflectivity
c) emissivity equals absorptivity d) emissivity equals transmissivity

13) When the thickness of insulation on a pipe exceeds the critical value _____.

a) the heat flow rate increases
b) the heat flow rate decreases
c) the heat flow rate remains constant
d) none of the above

14) The free convection heat transfer is significantly affected by _____.

a) Reynolds number b) Fourier number
c) Grashoff number d) Nusselt

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (BTN02603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.
5) Use of scientific calculator is allowed.

Section – I

Q.2 Attempt the following questions.

a) Derive an expression for critical radius of insulation for cylinder. **05**

b) Explain the effect of temperature on thermal conductivity of solids, liquids and gases. **04**

c) A mild steel tank of wall thickness 10 mm contains water at 90°C. A thermal conductivity of mild Steel is 50 W/m °C and heat transfer coefficient for inside and outside of the tank are 2800 W/m^2 °C and 11 W/m^2 °C respectively. If atmospheric temperature is 20°C. Calculate - **05**
1) Rate of heat loss per m^2 of the tank
2) Temperature of outside surface of tank

Q.3 Attempt the following questions.

a) Derive an expression for temperature distribution equation and heat flow rate through a fin considering uniform cross section for a fin with finite length and insulated tip. **05**

b) Derive an expression of steady state one dimensional heat conduction equation for a cylinder without heat generation. **05**

c) A person is found dead to police at 5 pm in a room whose temperature is 20°C. The temperature of body is measured to be 25°C when found and heat transfer coefficient is estimated to be 8 W/m^2 °C. Considering human body as a cylinder of 30 cm diameter and 1.75 m long calculate actual time of death of person. Take thermo physical properties of body as thermal conductivity (k) = 6.08 W/m K, density 900 Kg/m^3 specific heat (C_p) = 4000 J/Kg K. (Assume healthy person body temperature = 37°C) **04**

Q.4 Attempt the following questions.

a) Explain the following: **04**
1) Steffan Boltzmann law
2) Emissivity

b) A refractory material has emissivity 0.415 at 1460 K and it is exposed to black furnace walls at 1500 K. What is the rate of gain of heat radiation per meter square area? **05**

c) State planks law of radiation and hence derive Wien's displacement law using planks law. **05**

Section – II

Q.5 Attempt the following question.

a) Derive an expression for LMTD of parallel flow heat exchanger. **05**

b) In a counter flow double pipe heat exchanger superheated steam is used to heat water at the rate of 10500 Kg/hr. The steam enters the heat exchanger at 180°C and leaves at 130°C. The inlet and outlet temperature of water are 30°C and 80°C respectively. If overall heat transfer coefficient is 814 W/m^2 °C and Specific heat of water is C_p = 4.187 KJ/Kg K **05**

Calculate -

1) Rate of heat transfer
2) The surface area of heat exchanger

c) Explain construction, working and applications of heat pipe. **04**

Q.6 Attempt the following questions.

a) Using dimensional analysis show that $Nu = f(Re.Pr)$ for forced convection. **05**

b) A cylinder of 8 cm diameter and 15 cm length having surface temperature 50°C expressed vertically in water at 15°C. Find the heat transfer rate from cylinder. The properties of water at 32.5°C are density (ρ) = 995.7 Kg/m^3, specific heat (C_p) = 4.18 KJ/Kg °C, Thermal conductivity (k) = 0.615 W/m K, dynamic viscosity $(\mu) = 0.798 \times 10^{-3}$ Kg/ms, kinematic viscosity $(v) = 0.805 \times 10^{-6}$ m^2/sec. (Use empirical correlation as $\mathrm{Nu} = 0.13\ (\mathrm{Gr.Pr})^{1/3}$) **05**

c) Explain fouling factor in heat exchanger. **04**

Q.7 Attempt the following questions.

a) Explain with neat sketch boiling curve and its different regimes. **05**

b) Explain mechanism of convection and its types. **04**

c) Explain the classification of heat exchanger. **05**

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) _____ involves establishing the amount of work to be done & the time when each element of the work will start.
a) Planning b) Routing
c) Scheduling d) Organizing

2) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

3) In _____ concept product enjoys the supreme importance.
a) Selling b) Marketing
c) Manufacturing d) Business

4) 'Span of control' is decided under _____.
a) Controlling function b) Budget control
c) Planning for project d) Organizing

5) Organization structure is primarily concerned with _____ and _____ of tasks and authority.
a) Allocation and Delegation
b) Allocation and apportionment
c) Reporting and delegating
d) Setting standards and delegation

6) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

7) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

8) Quality is defined as the _____ for use.

a) Fitness b) Standard
c) Requirement d) Availability

9) The quality of design is concerned with the _____ for the manufacture of the product.

a) Exactness of specification b) Fitness of specification
c) Correctness of specification d) Tightness of specification

10) The statistician who invented the control chart for use in industrial quality control was: _____.

a) Deming b) Taguchi
c) Pareto d) Shewhart

11) The chart that aggregates poor quality outcomes to show management which are the most important problems is the: _____.

a) C chart b) Pareto chart
c) R chart d) X-bar chart

12) The items are subjected to _____ test must be inspected by sampling inspection

a) Quality b) Destructive
c) Production d) Single

13) 'AQL' Stands for _____.

a) Average quality level b) Acceptance quality level
c) Average quality limit d) Acceptance quality limit

14) LTPD stands for _____.

a) Lot Tolerance Perfect Defective
b) Lot Tolerance Percent Defective
c) Lot Tolerable Percent Defective
d) Lot Tolerance Piece Defective

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Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**
b) Explain the functions of marketing department. **04**

Q.3 **a)** What is planning? Explain steps in planning. **05**
b) What are the types of organization structures? Explain any one with all details. **05**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**
b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 **Write short note on (Any Three)** **09**
a) Channel of distribution
b) Social responsibilities in management
c) Methods of Departmentation
d) Various types of communications
e) Motivation techniques

Section – II

Q.6 **a)** Define quality and state the dimensions of quality. **05**
b) Explain quality cost its control. **05**

Q.7 **a)** Explain cause and effect diagram and Pareto analysis with suitable example. **05**
b) Make a List of quality gurus. Explain any one's contribution in the field of quality. **04**

Q.8 **a)** In a manufacturing process the number of defectives found in the inspection of 10 lots of 400 items each are given below: **05**

Lot. No.	No. of Defectives
1	2
2	5
3	6
4	8
5	3
6	4
7	1
8	3
9	5
10	7

Determine the trial control limits for “np” chart & draw P chart for the same.

b) What is acceptance sampling? Explain sampling plans with examples. **04**

Q.9 **Write short note on (Any Three)** **09**

a) Need of Environment management system
b) Steps in quality control
c) Continuous process improvement
d) X bar chart
e) Six Sigma

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

2) The quality of design is concerned with the _____ for the manufacture of the product.
a) Exactness of specification b) Fitness of specification
c) Correctness of specification d) Tightness of specification

3) The statistician who invented the control chart for use in industrial quality control was: _____.
a) Deming b) Taguchi
c) Pareto d) Shewhart

4) The chart that aggregates poor quality outcomes to show management which are the most important problems is the: _____.
a) C chart b) Pareto chart
c) R chart d) X-bar chart

5) The items are subjected to _____ test must be inspected by sampling inspection
a) Quality b) Destructive
c) Production d) Single

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a) Average quality level b) Acceptance quality level
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7) LTPD stands for _____.
a) Lot Tolerance Perfect Defective
b) Lot Tolerance Percent Defective
c) Lot Tolerable Percent Defective
d) Lot Tolerance Piece Defective

8) _____ involves establishing the amount of work to be done & the time when each element of the work will start.

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c) Scheduling d) Organizing

9) Which of the following is not an element of management process?

a) Pricing b) Staffing
c) Planning d) Controlling

10) In _____ concept product enjoys the supreme importance.

a) Selling b) Marketing
c) Manufacturing d) Business

11) 'Span of control' is decided under _____.

a) Controlling function b) Budget control
c) Planning for project d) Organizing

12) Organization structure is primarily concerned with _____ and _____ of tasks and authority.

a) Allocation and Delegation
b) Allocation and apportionment
c) Reporting and delegating
d) Setting standards and delegation

13) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.

a) Autocratic b) Democratic
c) The free rein d) Ideal

14) Which motivational theory considers mainly the 'Hierarchy of needs'?

a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**
b) Explain the functions of marketing department. **04**

Q.3 **a)** What is planning? Explain steps in planning. **05**
b) What are the types of organization structures? Explain any one with all details. **05**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**
b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 **Write short note on (Any Three)** **09**
a) Channel of distribution
b) Social responsibilities in management
c) Methods of Departmentation
d) Various types of communications
e) Motivation techniques

Section – II

Q.6 **a)** Define quality and state the dimensions of quality. **05**
b) Explain quality cost its control. **05**

Q.7 **a)** Explain cause and effect diagram and Pareto analysis with suitable example. **05**
b) Make a List of quality gurus. Explain any one's contribution in the field of quality. **04**

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Lot. No.	No. of Defectives
1	2
2	5
3	6
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7	1
8	3
9	5
10	7

Determine the trial control limits for “np” chart & draw P chart for the same.

b) What is acceptance sampling? Explain sampling plans with examples. **04**

Q.9 **Write short note on (Any Three)** **09**

a) Need of Environment management system
b) Steps in quality control
c) Continuous process improvement
d) X bar chart
e) Six Sigma

Seat No.	

Set | R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The chart that aggregates poor quality outcomes to show management which are the most important problems is the: _____.
a) C chart b) Pareto chart
c) R chart d) X-bar chart

2) The items are subjected to _____ test must be inspected by sampling inspection
a) Quality b) Destructive
c) Production d) Single

3) 'AQL' Stands for _____.
a) Average quality level b) Acceptance quality level
c) Average quality limit d) Acceptance quality limit

4) LTPD stands for _____.
a) Lot Tolerance Perfect Defective
b) Lot Tolerance Percent Defective
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5) _____ involves establishing the amount of work to be done & the time when each element of the work will start.
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c) Scheduling d) Organizing

6) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

7) In _____ concept product enjoys the supreme importance.
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c) Manufacturing d) Business

8) 'Span of control' is decided under _____.
a) Controlling function b) Budget control
c) Planning for project d) Organizing

9) Organization structure is primarily concerned with _____ and _____ of tasks and authority.
a) Allocation and Delegation
b) Allocation and apportionment
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10) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
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11) Which motivational theory considers mainly the 'Hierarchy of needs'?
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a) Deming b) Taguchi
c) Pareto d) Shewhart

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**
b) Explain the functions of marketing department. **04**

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b) What are the types of organization structures? Explain any one with all details. **05**

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Section – II

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e) Six Sigma

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
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b) Lot Tolerance Percent Defective
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a) Controlling function b) Budget control
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b) Allocation and apportionment
c) Reporting and delegating
d) Setting standards and delegation

SLR-GF-133

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (BTN02604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

Section – I

Q.2	**a)**	Explain the system approach to management process.	**05**
	b)	Explain the functions of marketing department.	**04**
Q.3	**a)**	What is planning? Explain steps in planning.	**05**
	b)	What are the types of organization structures? Explain any one with all details.	**05**
Q.4	**a)**	Define Leadership. Explain four extreme styles.	**05**
	b)	What is motivation? Explain Maslow's theory of motivation.	**04**
Q.5	**Write short note on (Any Three)**		**09**

a) Channel of distribution
b) Social responsibilities in management
c) Methods of Departmentation
d) Various types of communications
e) Motivation techniques

Section – II

Q.6	**a)**	Define quality and state the dimensions of quality.	**05**
	b)	Explain quality cost its control.	**05**
Q.7	**a)**	Explain cause and effect diagram and Pareto analysis with suitable example.	**05**
	b)	Make a List of quality gurus. Explain any one's contribution in the field of quality.	**04**

Q.8 **a)** In a manufacturing process the number of defectives found in the inspection of 10 lots of 400 items each are given below: **05**

Lot. No.	No. of Defectives
1	2
2	5
3	6
4	8
5	3
6	4
7	1
8	3
9	5
10	7

Determine the trial control limits for “np” chart & draw P chart for the same.

b) What is acceptance sampling? Explain sampling plans with examples. **04**

Q.9 **Write short note on (Any Three)** **09**

a) Need of Environment management system
b) Steps in quality control
c) Continuous process improvement
d) X bar chart
e) Six Sigma

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (BTN02608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make Suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following is not project management goal?
a) Keeping overall costs within budget
b) Delivering the software to the customer at the agreed time
c) Maintaining a happy and well-functioning development team
d) Avoiding customer complaints

2) Risk is usually _____ as the project progress.
a) Increases b) Reduces
c) Remained same d) None of the above

3) The PERT in project management means program evaluation and _____ technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

4) Assembling project team and assigning their responsibilities are done during which phase of a project management?
a) Initiation b) Planning
c) Execution d) Closure

5) The basic nature of a project is a/an _____ one.
a) Permanent b) Temporary
c) a) and b) d) None of the above

6) Which from the following statement (s) is/are NOT true?
I) Projects have defined objectives
II) Programs have a larger scope than projects
III) The projects and programs in a portfolio must be directly related
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c) III only d) II and III only

7) Which of these is not one of the constraints of a project?
a) Scope b) Resources
c) Team d) Budget

8) Which from the following represents the correct project cycle?
a) Planning → Initiating → Executing → Closing
b) Planning → Executing → Initiating → Closing
c) Initiating → Planning → Executing → Closing
d) Initiating → Executing → Planning → Closing

9) Which of the following statements is true?
a) PERT is considered as a deterministic approach and CPM is a probabilistic technique
b) PERT is considered as a probabilistic techniques and CPM is considered as a deterministic approach
c) PERT and CPM are both probabilistic techniques
d) PERT and CPM are both considered as deterministic approaches

10) Which is the first stage in the project management model?
a) Understanding the project environment
b) Project definition
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11) Typical kinds of costs found in a project include _____.
a) Direct costs
b) Project overhead costs
c) General and administrative costs
d) a, b, and c are all included

12) There is _____ correlation between project complexity and project risk.
a) an unknown
b) a positive
c) no
d) a negative

13) What is considered to be the most useful skill for a project manager who works in a matrix environment in order to achieve project goals?
a) Leadership skill
b) Influencing
c) Conflict management skill
d) Time management

14) Reasons why estimating time and cost are important include all of the following except: _____.
a) To schedule work
b) To determine how long the project should take and cost
c) To develop cash flow needs
d) All of the above are valid reasons

SLR-GF-134

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (BTN02608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
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Section – I

Q.2	**a)**	Define project management and discuss its characteristics.	**05**
	b)	Explain the project management process	**05**
	c)	Write Short note on Monte Carlo Simulation.	**04**
Q.3	**a)**	Define Risk Management and Explain the Role of risk Management in overall project management.	**05**
	b)	Elaborate the steps in risk management.	**05**
	c)	Explain the role of project manager.	**04**
Q.4	**a)**	Explain different cost estimating methods.	**05**
	b)	Describe the Project Budgeting.	**05**
	c)	Write a short note on Return on Investment.	**04**

Section – II

Q.5	**a)**	Explain the Project planning process in detail.	**05**
	b)	Explain the significance of CPM and PERT in Project Management.	**05**
	c)	Write a short note on project life cycle.	**04**
Q.6	**a)**	Describe the process of project performance measurement.	**05**
	b)	Explain purpose of project execution & control process.	**05**
	c)	Write a short note on work break down structure (WBS).	**04**
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	b)	Explain the benefits & challenges of performance measurement and evaluation.	**05**
	c)	Write a short note on Project Management Information System (PMIS).	**04**

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (BTN02608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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c) Team d) Budget

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (BTN02608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2	**a)**	Define project management and discuss its characteristics.	**05**
	b)	Explain the project management process	**05**
	c)	Write Short note on Monte Carlo Simulation.	**04**
Q.3	**a)**	Define Risk Management and Explain the Role of risk Management in overall project management.	**05**
	b)	Elaborate the steps in risk management.	**05**
	c)	Explain the role of project manager.	**04**
Q.4	**a)**	Explain different cost estimating methods.	**05**
	b)	Describe the Project Budgeting.	**05**
	c)	Write a short note on Return on Investment.	**04**

Section – II

Q.5	**a)**	Explain the Project planning process in detail.	**05**
	b)	Explain the significance of CPM and PERT in Project Management.	**05**
	c)	Write a short note on project life cycle.	**04**
Q.6	**a)**	Describe the process of project performance measurement.	**05**
	b)	Explain purpose of project execution & control process.	**05**
	c)	Write a short note on work break down structure (WBS).	**04**
Q.7	**a)**	Explain the scope of MS Projects in Project Management.	**05**
	b)	Explain the benefits & challenges of performance measurement and evaluation.	**05**
	c)	Write a short note on Project Management Information System (PMIS).	**04**

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (BTN02608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

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c) Project control
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Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (BTN02608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
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Section – I

Q.2	**a)**	Define project management and discuss its characteristics.	**05**
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Section – II

Q.5	**a)**	Explain the Project planning process in detail.	**05**
	b)	Explain the significance of CPM and PERT in Project Management.	**05**
	c)	Write a short note on project life cycle.	**04**
Q.6	**a)**	Describe the process of project performance measurement.	**05**
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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (BTN02608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (BTN02608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
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Section – I

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	c)	Write a short note on Return on Investment.	**04**

Section – II

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	c)	Write a short note on Project Management Information System (PMIS).	**04**

SLR-GF-135

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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4) Make suitable assumption if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) MVP stands for _____.
a) Most viable product b) Maximum viable product
c) Minimum viable product d) None of above

2) During brain storming sessions, people should promote _____.
a) Criticizing b) Free Thinking
c) Rewarding Ideas d) All of the above

3) Rashmi is creating a new product for Engineering college students. She takes a design thinking approach. Her first step is, addressing who she is creating the product for? And conducts research on understanding the market. What is this step in the design thinking process?
a) Define b) Ideate
c) Empathise d) Prototype

4) Design Thinking is: _____
a) Thinking about design
b) Designing ways in which people think
c) Asking users to solve problems
d) Defining, framing and solving problems from users' perspectives

5) In which of the following type the manufacturing cost may go up?
a) Standardization b) Simplification
c) Diversification d) All of the above

6) The necessity to know the environment in which the product will be used is termed as _____.
a) Design Situation b) Design Analysis
c) Aesthetics d) Ergonomics

7) What are the steps of Design Thinking Process?
a) Understand > Draw > Ideate > Create > Test
b) Empathise > Define > Ideate > Prototype > Test
c) Empathise > Design > Implement > Produce > Test
d) Understand > Define > Ideate > Produce > Try

8) The purpose of _____ is to generate large number of ideas.
a) Idea Screening
b) Brain Storming
c) Concept development and Testing
d) Marketing Strategy Development

9) Which of the following statement is not correct?
a) Creativity is originality in any art
b) Thinking is not required for creativity
c) Creativity is new consequence of a work performed
d) None of the above

10) The _____ function plays the lead role in defining the physical form of the product to best meet customer needs.
a) Design b) Manufacturing
c) Marketing d) None of the above

11) Fear of _____ blocks creativity.
a) Making Mistakes b) Being Criticised
c) Being Alone d) All of the Above

12) You are conducting user research for a project to design a coffee sipper, which of the following details you would not take off users?
a) Daily coffee intake b) Hand measurement
c) Disability while standing d) Economic

13) Rahul gets an opportunity to design mask for specially-abled children. They are deaf and use hearing aid. Rahul designs beautiful mask with good colour combination and cartoon printed on it, but design will not serve the purpose because it was like normal mask with ear looping elastic. Which stage did Rahul go wrong in design?
a) Empathize b) Prototype
c) Ideate d) Test

14) The principles of good design are _____.
a) color, depth, form, line, shape, space, texture, and value.
b) balance, contrast, emphasis, proportion, repetition, simplicity, space, and unity.
c) All of the above
d) None of the above

SLR-GF-135

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
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Section – I

Q.2 **a)** Define Conventional Design Process. Define Industrial Design. **07**
b) Discuss the visual effect of line and form with suitable examples. **07**

Q.3 **a)** Discuss Human Factors in ergonomics. **07**
b) What are Primary and Secondary Principles of Design? **07**

Q.4 **Write short note (Any Two)** **14**
a) Market Survey
b) Mechanics of seeing with suitable examples
c) Aesthetics of Design

Section – II

Q.5 **a)** What is Design Thinking? Explain the stages. **07**
b) Explain in detail design situation. **07**

Q.6 **a)** Explain role of setting specification and market requirements in product design. **07**
b) What are characteristics of Good Design? **07**

Q.7 **Write short notes on (Any Two)** **14**
a) Prototyping
b) DFMA
c) Empathise Stage in Design Thinking

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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c) Marketing d) None of the above

4) Fear of _____ blocks creativity.
a) Making Mistakes b) Being Criticised
c) Being Alone d) All of the Above

5) You are conducting user research for a project to design a coffee sipper, which of the following details you would not take off users?
a) Daily coffee intake b) Hand measurement
c) Disability while standing d) Economic

6) Rahul gets an opportunity to design mask for specially-abled children. They are deaf and use hearing aid. Rahul designs beautiful mask with good colour combination and cartoon printed on it, but design will not serve the purpose because it was like normal mask with ear looping elastic. Which stage did Rahul go wrong in design?
a) Empathize b) Prototype
c) Ideate d) Test

7) The principles of good design are _____.
a) color, depth, form, line, shape, space, texture, and value.
b) balance, contrast, emphasis, proportion, repetition, simplicity, space, and unity.
c) All of the above
d) None of the above

8) MVP stands for _____.
a) Most viable product
b) Maximum viable product
c) Minimum viable product
d) None of above

9) During brain storming sessions, people should promote _____.
a) Criticizing
b) Free Thinking
c) Rewarding Ideas
d) All of the above

10) Rashmi is creating a new product for Engineering college students. She takes a design thinking approach. Her first step is, addressing who she is creating the product for? And conducts research on understanding the market. What is this step in the design thinking process?
a) Define
b) Ideate
c) Empathise
d) Prototype

11) Design Thinking is: _____
a) Thinking about design
b) Designing ways in which people think
c) Asking users to solve problems
d) Defining, framing and solving problems from users' perspectives

12) In which of the following type the manufacturing cost may go up?
a) Standardization
b) Simplification
c) Diversification
d) All of the above

13) The necessity to know the environment in which the product will be used is termed as _____.
a) Design Situation
b) Design Analysis
c) Aesthetics
d) Ergonomics

14) What are the steps of Design Thinking Process?
a) Understand > Draw > Ideate > Create > Test
b) Empathise > Define > Ideate > Prototype > Test
c) Empathise > Design > Implement > Produce > Test
d) Understand > Define > Ideate > Produce > Try

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Make suitable assumptions if necessary and state them clearly.
3) Figures to right indicates full marks.

Section – I

Q.2	**a)**	Define Conventional Design Process. Define Industrial Design.	**07**
	b)	Discuss the visual effect of line and form with suitable examples.	**07**
Q.3	**a)**	Discuss Human Factors in ergonomics.	**07**
	b)	What are Primary and Secondary Principles of Design?	**07**
Q.4	**Write short note (Any Two)**		**14**
	a)	Market Survey	
	b)	Mechanics of seeing with suitable examples	
	c)	Aesthetics of Design	

Section – II

Q.5	**a)**	What is Design Thinking? Explain the stages.	**07**
	b)	Explain in detail design situation.	**07**
Q.6	**a)**	Explain role of setting specification and market requirements in product design.	**07**
	b)	What are characteristics of Good Design?	**07**
Q.7	**Write short notes on (Any Two)**		**14**
	a)	Prototyping	
	b)	DFMA	
	c)	Empathise Stage in Design Thinking	

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicate full marks.
4) Make suitable assumption if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Fear of _____ blocks creativity.
a) Making Mistakes b) Being Criticised
c) Being Alone d) All of the Above

2) You are conducting user research for a project to design a coffee sipper, which of the following details you would not take off users?
a) Daily coffee intake b) Hand measurement
c) Disability while standing d) Economic

3) Rahul gets an opportunity to design mask for specially-abled children. They are deaf and use hearing aid. Rahul designs beautiful mask with good colour combination and cartoon printed on it, but design will not serve the purpose because it was like normal mask with ear looping elastic. Which stage did Rahul go wrong in design?
a) Empathize b) Prototype
c) Ideate d) Test

4) The principles of good design are _____.
a) color, depth, form, line, shape, space, texture, and value.
b) balance, contrast, emphasis, proportion, repetition, simplicity, space, and unity.
c) All of the above
d) None of the above

5) MVP stands for _____.
a) Most viable product b) Maximum viable product
c) Minimum viable product d) None of above

6) During brain storming sessions, people should promote _____.
a) Criticizing b) Free Thinking
c) Rewarding Ideas d) All of the above

7) Rashmi is creating a new product for Engineering college students. She takes a design thinking approach. Her first step is, addressing who she is creating the product for? And conducts research on understanding the market. What is this step in the design thinking process?

a) Define b) Ideate
c) Empathise d) Prototype

8) Design Thinking is: _____

a) Thinking about design
b) Designing ways in which people think
c) Asking users to solve problems
d) Defining, framing and solving problems from users' perspectives

9) In which of the following type the manufacturing cost may go up?

a) Standardization b) Simplification
c) Diversification d) All of the above

10) The necessity to know the environment in which the product will be used is termed as _____.

a) Design Situation b) Design Analysis
c) Aesthetics d) Ergonomics

11) What are the steps of Design Thinking Process?

a) Understand > Draw > Ideate > Create > Test
b) Empathise > Define > Ideate > Prototype > Test
c) Empathise > Design > Implement > Produce > Test
d) Understand > Define > Ideate > Produce > Try

12) The purpose of _____ is to generate large number of ideas.

a) Idea Screening
b) Brain Storming
c) Concept development and Testing
d) Marketing Strategy Development

13) Which of the following statement is not correct?

a) Creativity is originality in any art
b) Thinking is not required for creativity
c) Creativity is new consequence of a work performed
d) None of the above

14) The _____ function plays the lead role in defining the physical form of the product to best meet customer needs.

a) Design b) Manufacturing
c) Marketing d) None of the above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Make suitable assumptions if necessary and state them clearly.
3) Figures to right indicates full marks.

Section – I

Q.2 **a)** Define Conventional Design Process. Define Industrial Design. **07**
b) Discuss the visual effect of line and form with suitable examples. **07**

Q.3 **a)** Discuss Human Factors in ergonomics. **07**
b) What are Primary and Secondary Principles of Design? **07**

Q.4 **Write short note (Any Two)** **14**
a) Market Survey
b) Mechanics of seeing with suitable examples
c) Aesthetics of Design

Section – II

Q.5 **a)** What is Design Thinking? Explain the stages. **07**
b) Explain in detail design situation. **07**

Q.6 **a)** Explain role of setting specification and market requirements in product design. **07**
b) What are characteristics of Good Design? **07**

Q.7 **Write short notes on (Any Two)** **14**
a) Prototyping
b) DFMA
c) Empathise Stage in Design Thinking

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicate full marks.
4) Make suitable assumption if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The necessity to know the environment in which the product will be used is termed as _____.
a) Design Situation b) Design Analysis
c) Aesthetics d) Ergonomics

2) What are the steps of Design Thinking Process?
a) Understand > Draw > Ideate > Create > Test
b) Empathise > Define > Ideate > Prototype > Test
c) Empathise > Design > Implement > Produce > Test
d) Understand > Define > Ideate > Produce > Try

3) The purpose of _____ is to generate large number of ideas.
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c) Concept development and Testing
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4) Which of the following statement is not correct?
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c) Marketing d) None of the above

6) Fear of _____ blocks creativity.
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c) Being Alone d) All of the Above

7) You are conducting user research for a project to design a coffee sipper, which of the following details you would not take off users?
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d) None of the above

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c) Minimum viable product d) None of above

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a) Define b) Ideate
c) Empathise d) Prototype

13) Design Thinking is: _____

a) Thinking about design
b) Designing ways in which people think
c) Asking users to solve problems
d) Defining, framing and solving problems from users' perspectives

14) In which of the following type the manufacturing cost may go up?

a) Standardization b) Simplification
c) Diversification d) All of the above

SLR-GF-135

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (BTN02609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Make suitable assumptions if necessary and state them clearly.
3) Figures to right indicates full marks.

Section – I

Q.2 **a)** Define Conventional Design Process. Define Industrial Design. **07**
b) Discuss the visual effect of line and form with suitable examples. **07**

Q.3 **a)** Discuss Human Factors in ergonomics. **07**
b) What are Primary and Secondary Principles of Design? **07**

Q.4 **Write short note (Any Two)** **14**
a) Market Survey
b) Mechanics of seeing with suitable examples
c) Aesthetics of Design

Section – II

Q.5 **a)** What is Design Thinking? Explain the stages. **07**
b) Explain in detail design situation. **07**

Q.6 **a)** Explain role of setting specification and market requirements in product design. **07**
b) What are characteristics of Good Design? **07**

Q.7 **Write short notes on (Any Two)** **14**
a) Prototyping
b) DFMA
c) Empathise Stage in Design Thinking

SLR-GF-136

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following is an additive used for saving base plastic material?
a) Fillers b) Pigments
c) Plastisizers d) None of these

2) Polymers are large chain molecules having a high molecular weight in the range of _____.
a) 104 to 107 b) 103 to 107
c) 105 to 108 d) 102 to 108

3) In Addition, polymerization reaction the polymer is formed in a _____ step.
a) Single b) Double
c) Three d) None of these

4) The process which measured quantity of preform or charge of thermoset polymer material is heated in the pot and it is transferred into the mould cavity is _____.
a) Injection molding b) Transfer Molding
c) Blow Molding d) Rotational Molding

5) _____ moulding is used to produce overhead hollow plastic water storage tanks.
a) Rotational Moulding b) Injection moulding
c) Compression moulding d) Transfer moulding

6) The complicated joints are produced by _____.
a) High frequency Induction Welding
b) Hot gas Welding
c) Hot tool Welding
d) Both b) and c)

7) In _____ welding method, the workpieces to be joined are irradiated with a stream of neutrons.
a) Infrared b) Nuclear
c) Hot gas d) Heated tool

8) Outer corner radius should be normally _____ Times the wall thickness.
a) 1.5 b) 2.5
c) 5.5 d) 0.5

9) Design of _____ is the most important design aspect in Plastic part design.
a) Corner b) Wall Thickness
c) Rib d) Hole

10) Which of the following is the type of compression mould?
a) Semi-automatic open flash mould
b) Hand compression mould
c) Semi-automatic Semi positive mould
d) All of the above

11) The excess material flows out of the cavity and forms a thin layer of plastic film is called as _____.
a) Flash b) Sink marks
c) Wastage d) None of these

12) The major factor in Injection cycle speed is _____.
a) The type of thermoplastic
b) The temperature of the plastic
c) Injection speed and pressure
d) Efficiency of the cooling system

13) Cooling time is directly proportional to the _____.
a) Heaviest wall thickness b) Thermal diffusivity
c) Both a and b d) None of these

14) Which of the following is the most effective cooling channel?
a) Parallel b) Series
c) Both a and b d) None of these

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any TWO questions from each section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 **a)** Differentiate between Thermoplastic material and Thermosetting Plastic Material. **04**
b) Explain Polymer degradation with its different types. **06**
c) What are the applications of plastics in the agriculture and packaging sector? **04**

Q.3 **a)** Explain with a neat sketch an Extrusion Moulding Process for plastics. **05**
b) Write a short note on “High Frequency Induction Welding Method”. **05**
c) With a neat sketch. Explain the Rotational moulding process. **04**

Q.4 **a)** Discuss on Tolerances and Allowances of molded plastic parts. **04**
b) Write design aspects of Wall thickness and Corners in plastic parts. **06**
c) Explain design rules related to Holes or Opening in the plastics. **04**

Section – II

Q.5 **a)** Design a compression mould for a machine component shown in Fig. which is made up of phenol formaldehyde, thermoset plastic. **07**
Take bulk factor = 3, Compression pressure = 180 kg./cm^2,
density = 2 g/cm^3

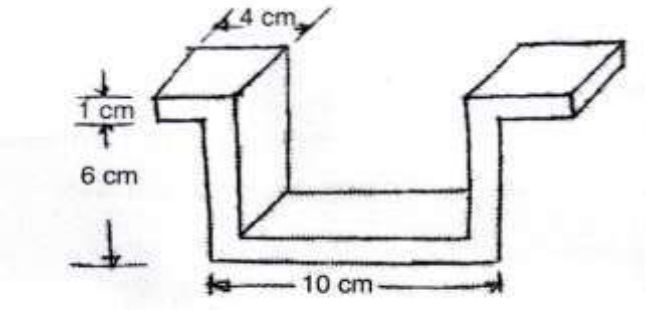

Fig. 5 A

b) Enlist different types of Transfer moulding process. Explain Pot type and Plunger type transfer molding process with neat sketches. **07**

Q.6 **a)** Draw a neat sketch of Injection mould used in Injection moulding process and explain function of each component/element present in it. **06**
b) Differentiate between Semi automatic and Automatic Injection molding process. **04**

	c)	What are the types of ejection systems for injection moulding? Explain any one in detail.	**04**
Q.7	**a)**	Give the brief classification of Cooling systems used in Injection moulding. Explain Baffled straight hole system with neat sketch.	**05**
	b)	The maximum wall thickness of polypropylene material is 40 mm. If thermal conductivity of the material is 0.22 w/mK, density is 946 kg/m^3, Specific heat is 1.68 KJ/Kg.K then find out the time required for cooling of Injection mould.	**04**
	c)	Water entering at 40°C to the cooling system provided to mould is leaving at 60°C. If the total heat absorbed per hour is 20000 kJ, then find out the amount of water circulated per hour (k = 30.5).	**05**

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Outer corner radius should be normally _____ Times the wall thickness.
a) 1.5 b) 2.5
c) 5.5 d) 0.5

2) Design of _____ is the most important design aspect in Plastic part design.
a) Corner b) Wall Thickness
c) Rib d) Hole

3) Which of the following is the type of compression mould?
a) Semi-automatic open flash mould
b) Hand compression mould
c) Semi-automatic Semi positive mould
d) All of the above

4) The excess material flows out of the cavity and forms a thin layer of plastic film is called as _____.
a) Flash b) Sink marks
c) Wastage d) None of these

5) The major factor in Injection cycle speed is _____.
a) The type of thermoplastic
b) The temperature of the plastic
c) Injection speed and pressure
d) Efficiency of the cooling system

6) Cooling time is directly proportional to the _____.
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c) Both a and b d) None of these

7) Which of the following is the most effective cooling channel?
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13) The complicated joints are produced by _____.

a) High frequency Induction Welding
b) Hot gas Welding
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d) Both b) and c)

14) In _____ welding method, the workpieces to be joined are irradiated with a stream of neutrons.

a) Infrared b) Nuclear
c) Hot gas d) Heated tool

Seat No.	

Set | Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any TWO questions from each section.
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Section – I

Q.2 **a)** Differentiate between Thermoplastic material and Thermosetting Plastic Material. **04**
b) Explain Polymer degradation with its different types. **06**
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Q.3 **a)** Explain with a neat sketch an Extrusion Moulding Process for plastics. **05**
b) Write a short note on “High Frequency Induction Welding Method”. **05**
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Section – II

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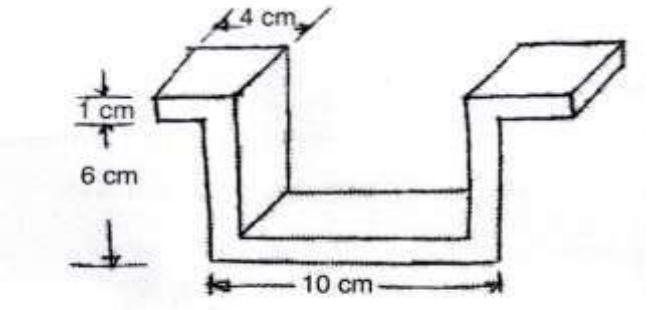

Fig. 5 A

b) Enlist different types of Transfer moulding process. Explain Pot type and Plunger type transfer molding process with neat sketches. **07**

Q.6 **a)** Draw a neat sketch of Injection mould used in Injection moulding process and explain function of each component/element present in it. **06**
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	c)	Water entering at 40°C to the cooling system provided to mould is leaving at 60°C. If the total heat absorbed per hour is 20000 kJ, then find out the amount of water circulated per hour (k = 30.5).	**05**

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The excess material flows out of the cavity and forms a thin layer of plastic film is called as _____.
a) Flash b) Sink marks
c) Wastage d) None of these

2) The major factor in Injection cycle speed is _____.
a) The type of thermoplastic
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b) Wall Thickness
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Seat No.	

Set | R

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any TWO questions from each section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 **a)** Differentiate between Thermoplastic material and Thermosetting Plastic Material. **04**
b) Explain Polymer degradation with its different types. **06**
c) What are the applications of plastics in the agriculture and packaging sector? **04**

Q.3 **a)** Explain with a neat sketch an Extrusion Moulding Process for plastics. **05**
b) Write a short note on “High Frequency Induction Welding Method”. **05**
c) With a neat sketch. Explain the Rotational moulding process. **04**

Q.4 **a)** Discuss on Tolerances and Allowances of molded plastic parts. **04**
b) Write design aspects of Wall thickness and Corners in plastic parts. **06**
c) Explain design rules related to Holes or Opening in the plastics. **04**

Section – II

Q.5 **a)** Design a compression mould for a machine component shown in Fig. which is made up of phenol formaldehyde, thermoset plastic. **07**
Take bulk factor = 3, Compression pressure = 180 kg./cm^2,
density = 2 g/cm^3

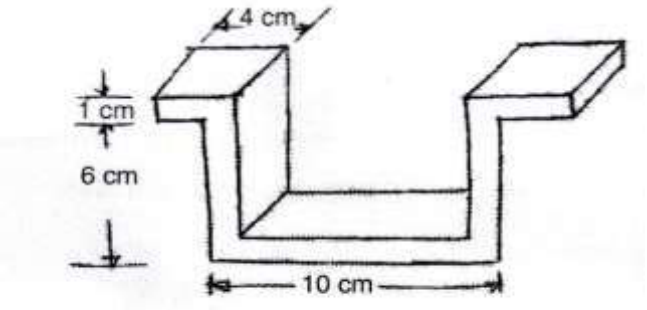

Fig. 5 A

b) Enlist different types of Transfer moulding process. Explain Pot type and Plunger type transfer molding process with neat sketches. **07**

Q.6 **a)** Draw a neat sketch of Injection mould used in Injection moulding process and explain function of each component/element present in it. **06**
b) Differentiate between Semi automatic and Automatic Injection molding process. **04**

	c)	What are the types of ejection systems for injection moulding? Explain any one in detail.	**04**
Q.7	**a)**	Give the brief classification of Cooling systems used in Injection moulding. Explain Baffled straight hole system with neat sketch.	**05**
	b)	The maximum wall thickness of polypropylene material is 40 mm. If thermal conductivity of the material is 0.22 w/mK, density is 946 kg/m^3, Specific heat is 1.68 KJ/Kg.K then find out the time required for cooling of Injection mould.	**04**
	c)	Water entering at 40°C to the cooling system provided to mould is leaving at 60°C. If the total heat absorbed per hour is 20000 kJ, then find out the amount of water circulated per hour (k = 30.5).	**05**

Seat No.	

Set **S**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The complicated joints are produced by _____.
a) High frequency Induction Welding
b) Hot gas Welding
c) Hot tool Welding
d) Both b) and c)

2) In _____ welding method, the workpieces to be joined are irradiated with a stream of neutrons.
a) Infrared b) Nuclear
c) Hot gas d) Heated tool

3) Outer corner radius should be normally _____ Times the wall thickness.
a) 1.5 b) 2.5
c) 5.5 d) 0.5

4) Design of _____ is the most important design aspect in Plastic part design.
a) Corner b) Wall Thickness
c) Rib d) Hole

5) Which of the following is the type of compression mould?
a) Semi-automatic open flash mould
b) Hand compression mould
c) Semi-automatic Semi positive mould
d) All of the above

6) The excess material flows out of the cavity and forms a thin layer of plastic film is called as _____.
a) Flash b) Sink marks
c) Wastage d) None of these

7) The major factor in Injection cycle speed is _____.
a) The type of thermoplastic
b) The temperature of the plastic
c) Injection speed and pressure
d) Efficiency of the cooling system

8) Cooling time is directly proportional to the _____.
a) Heaviest wall thickness b) Thermal diffusivity
c) Both a and b d) None of these

9) Which of the following is the most effective cooling channel?
a) Parallel b) Series
c) Both a and b d) None of these

10) Which of the following is an additive used for saving base plastic material?
a) Fillers b) Pigments
c) Plastisizers d) None of these

11) Polymers are large chain molecules having a high molecular weight in the range of _____.
a) 104 to 107 b) 103 to 107
c) 105 to 108 d) 102 to 108

12) In Addition, polymerization reaction the polymer is formed in a _____ step.
a) Single b) Double
c) Three d) None of these

13) The process which measured quantity of preform or charge of thermoset polymer material is heated in the pot and it is transferred into the mould cavity is _____.
a) Injection molding b) Transfer Molding
c) Blow Molding d) Rotational Molding

14) _____ moulding is used to produce overhead hollow plastic water storage tanks.
a) Rotational Moulding b) Injection moulding
c) Compression moulding d) Transfer moulding

Seat No.	

Set | S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (BTN02610)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any TWO questions from each section.
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Section – I

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b) Explain Polymer degradation with its different types. **06**
c) What are the applications of plastics in the agriculture and packaging sector? **04**

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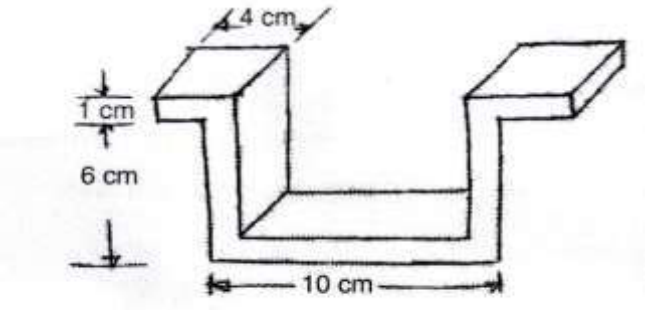

Fig. 5 A

b) Enlist different types of Transfer moulding process. Explain Pot type and Plunger type transfer molding process with neat sketches. **07**

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	b)	The maximum wall thickness of polypropylene material is 40 mm. If thermal conductivity of the material is 0.22 w/mK, density is 946 kg/m^3, Specific heat is 1.68 KJ/Kg.K then find out the time required for cooling of Injection mould.	**04**
	c)	Water entering at 40°C to the cooling system provided to mould is leaving at 60°C. If the total heat absorbed per hour is 20000 kJ, then find out the amount of water circulated per hour (k = 30.5).	**05**

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Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Where should the centre of gravity of the rail section be located?
a) Near to the bottom of the rail
b) Close to the upper portion
c) Close to the mid height
d) Can be anywhere between the section

2) Which of the following is not a component of the rail?
a) Head b) Web
c) Ballast d) Foot

3) Why is the foot made wide?
a) To avoid corrosion b) To avoid overturning
c) For making it cost efficient d) For easy manufacturing

4) Where does maximum lateral wear of rail occur?
a) On curves b) On flat gradient
c) On steep gradient d) Same everywhere

5) What causes wheel burns?
a) Slipping of wheel on rail surface
b) Falling of metal chunks
c) Manufacturing defects
d) High speed

6) The longitudinal movement of the rails in a track is technically known as _____.
a) Buckling b) Hogging
c) Creeping d) Cracking

7) The intrinsic swaying motion appearing in railway vehicles due to the vehicles forward speed and the wheel rail contact is known as _____.
a) Swaging b) Hunting
c) Slipping d) Creeping

8) The self propelled vehicle used for hauling railroad cars on track is _____.
a) Trailer b) Wagons
c) Engine d) Locomotive

9) Which of the following is a cause of derailment of a vehicle?
a) Overturning b) Wheel climbing
c) Displacement of track d) All of the above

10) Which of the following is a type of transversal load acting on track?
a) Axle load b) Wheel weight
c) Guidance force d) None of the above

11) What is the effect of longitudinal acceleration force on wheel set?
a) Tension in front of wheel set and compression behind it.
b) Compression in front of wheel set and tension behind it.
c) Compression on both the sides of wheel set.
d) Tension on both the sides of wheel set.

12) Which of the following is a type of quasi- static vertical load acting on the track?
a) Wheel load b) Car body weight
c) Cross wind d) Daily traffic load

13) The grip between wheel and the rail is known as _____.
a) Traction b) Adhesion
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14) Which one of the following is used as extra rail to prevent derailment?
a) Stock rail b) Guard rail
c) Tongue rail d) Wing rail

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Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday,22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
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Section – I

Q.2	**a)**	Explain with neat sketch fundamental functional principles of vehicle running on a straight path.	**07**
	b)	Explain the lateral behavior of vehicle with conventional bogies.	**07**
Q.3	**a)**	Explain behavior of single railway wheel set moving in curves.	**07**
	b)	Write short note on distinctive features of railway systems.	**07**
Q.4	**a)**	Define the term derailment of railway vehicle. Explain factors affecting derailment.	**07**
	b)	Describe the term derailment with wheel climb.	**07**

Section – II

Q.5	**a)**	Explain static vertical loads acting on the track.	**07**
	b)	Explain the term forces due to vehicle oscillations.	**07**
Q.6	**a)**	Explain dynamic vertical loads acting on the track.	**07**
	b)	Explain total transversal force acting on the track.	**07**
Q.7	**a)**	With neat sketch explain the concept of longitudinal rail creep forces.	**07**
	b)	Define traction forces and explain different types of it.	**07**

Seat No.		Set	Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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a) Trailer b) Wagons
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7) Which one of the following is used as extra rail to prevent derailment?
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c) Tongue rail d) Wing rail

8) Where should the centre of gravity of the rail section be located?
a) Near to the bottom of the rail
b) Close to the upper portion
c) Close to the mid height
d) Can be anywhere between the section

9) Which of the following is not a component of the rail?
a) Head b) Web
c) Ballast d) Foot

10) Why is the foot made wide?
a) To avoid corrosion b) To avoid overturning
c) For making it cost efficient d) For easy manufacturing

11) Where does maximum lateral wear of rail occur?
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c) On steep gradient d) Same everywhere

12) What causes wheel burns?
a) Slipping of wheel on rail surface
b) Falling of metal chunks
c) Manufacturing defects
d) High speed

13) The longitudinal movement of the rails in a track is technically known as _____.
a) Buckling b) Hogging
c) Creeping d) Cracking

14) The intrinsic swaying motion appearing in railway vehicles due to the vehicles forward speed and the wheel rail contact is known as _____.
a) Swaging b) Hunting
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Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday,22-12-2023 Max. Marks: 56
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Section – II

Q.5	**a)**	Explain static vertical loads acting on the track.	**07**
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	b)	Define traction forces and explain different types of it.	**07**

Seat No.		Set	R

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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13) Which of the following is a cause of derailment of a vehicle?
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d) All of the above

14) Which of the following is a type of transversal load acting on track?
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b) Wheel weight
c) Guidance force
d) None of the above

SLR-GF-137

Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday,22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
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Section – I

Q.2	**a)**	Explain with neat sketch fundamental functional principles of vehicle running on a straight path.	**07**
	b)	Explain the lateral behavior of vehicle with conventional bogies.	**07**
Q.3	**a)**	Explain behavior of single railway wheel set moving in curves.	**07**
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Section – II

Q.5	**a)**	Explain static vertical loads acting on the track.	**07**
	b)	Explain the term forces due to vehicle oscillations.	**07**
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Q.7	**a)**	With neat sketch explain the concept of longitudinal rail creep forces.	**07**
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Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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a) Slipping of wheel on rail surface
b) Falling of metal chunks
c) Manufacturing defects
d) High speed

SLR-GF-137

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Transportation System (BTN02611)

Day & Date: Friday,22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
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Section – I

Q.2	**a)**	Explain with neat sketch fundamental functional principles of vehicle running on a straight path.	**07**
	b)	Explain the lateral behavior of vehicle with conventional bogies.	**07**
Q.3	**a)**	Explain behavior of single railway wheel set moving in curves.	**07**
	b)	Write short note on distinctive features of railway systems.	**07**
Q.4	**a)**	Define the term derailment of railway vehicle. Explain factors affecting derailment.	**07**
	b)	Describe the term derailment with wheel climb.	**07**

Section – II

Q.5	**a)**	Explain static vertical loads acting on the track.	**07**
	b)	Explain the term forces due to vehicle oscillations.	**07**
Q.6	**a)**	Explain dynamic vertical loads acting on the track.	**07**
	b)	Explain total transversal force acting on the track.	**07**
Q.7	**a)**	With neat sketch explain the concept of longitudinal rail creep forces.	**07**
	b)	Define traction forces and explain different types of it.	**07**

SLR-GF-138

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) Use of non-programmable scientific calculator is allowed

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select the correct alternative. **14**

1) The Integral (I) controller mode adjusts the controller output based on the _____.
a) Error between set point and process variable
b) Rate of change of error
c) Accumulated error over time
d) None of the above

2) Which of the following specifications is not a transient response specification?
a) Peak time b) Settling time
c) Rise time d) Bandwidth

3) Which of the following best describes a transfer function?
a) A mathematical representation of a system's input-output relationship
b) A statistical analysis on experimental results
c) A graphical representation of data
d) A descriptive narrative about a scientific concept

4) What is the advantage of on-off control?
a) Precise and accurate control
b) Works well for systems with complex dynamics
c) Easy to implement and cost-effective
d) Handles non-linear processes effectively

5) What does the derivative component of PID control do?
a) Reduces steady state error
b) Minimizes overshoot and oscillations
c) Improves stability
d) Adjusts controller gain

6) In _____ space scheme, the trajectory is specified in terms of end effector configurations.
a) Joint
b) Cartesian
c) Both a and b
d) None of the above

7) Which of the following factors are considered in trajectory planning?
a) Robot's kinematics and dynamics
b) Time and energy consumption
c) Obstacles and workspace constraints
d) All of the above

8) Which of the following sensors can be used for obstacle detection in robotics?
a) Cameras
b) LIDAR
c) Proximity sensors
d) All of the above

9) _____ method of path planning creates a field or gradient across the robot's map that directs the robot to the goal position.
a) Road map
b) Potential field
c) Cell decomposition
d) All of these

10) Which type of actuator is commonly used in applications that require rapid motion and lightweight design?
a) Hydraulic
b) Pneumatic
c) Electric
d) None of the above

11) What is the role of teach pendant in lead through programming?
a) It is a handheld device used to manually control the robot's movement.
b) It is a communication interface that connects the robot to external device.
c) It is a software tool for visualizing and editing robot programs.
d) It is a safety mechanism that stops the robot when an obstacle is detected

12) What is the purpose of considering ergonomics in workcell design?
a) To minimize the footprint of workcell
b) To maximize the productivity of robot
c) To optimize the use of available resources
d) To ensure well-being and safety of human operator

13) What is the primary purpose of AGVs in industrial applications?
a) Quality control and inspection
b) Robotic assembly and welding
c) Material handling and transportation
d) Inventory management

14) What is the primary advantage of mobile robots?
a) Performs tasks in dynamic and changing environments
b) Require minimal maintenance and calibration
c) Less expensive as compared to other robots
d) Have a higher payload capacity

Seat No.	

Set | P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and state it clearly.

Section – I

Q.2	**a)**	Draw a generalized block diagram for Robot Joint Control and explain all the components of the same.	**07**
	b)	Draw a block diagram of a control system and explain all the components.	**07**
Q.3	**a)**	Explain the working of the on-off control mode. Enlist its advantages and limitations.	**07**
	b)	What is integral control mode? Explain its working with advantages and limitations.	**07**
Q.4	**a)**	Derive the trajectory equation of cartesian straight-line motion.	**07**
	b)	Enlist obstacle and collision avoidance algorithms. Explain any one of them.	**07**

Section – II

Q.5	**a)**	Distinguish between hydraulic and electric actuators.	**07**
	b)	Draw a block diagram of a DC servomotor and explain its working.	**07**
Q.6	**a)**	How are the robot cell layouts classified? Explain robot-centred cell layout.	**07**
	b)	Discuss in detail walkthrough programming methods of robot.	**07**
Q.7	**a)**	Define AGVs. Discuss any 3 applications of AGVs.	**07**
	b)	How are mobile robots classified? Explain the navigation techniques in mobile robots.	**07**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) Use of non-programmable scientific calculator is allowed

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select the correct alternative. **14**

1) Which of the following sensors can be used for obstacle detection in robotics?
a) Cameras b) LIDAR
c) Proximity sensors d) All of the above

2) _____ method of path planning creates a field or gradient across the robot's map that directs the robot to the goal position.
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c) Cell decomposition d) All of these

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8) The Integral (I) controller mode adjusts the controller output based on the _____.
a) Error between set point and process variable
b) Rate of change of error
c) Accumulated error over time
d) None of the above

9) Which of the following specifications is not a transient response specification?
a) Peak time
b) Settling time
c) Rise time
d) Bandwidth

10) Which of the following best describes a transfer function?
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b) A statistical analysis on experimental results
c) A graphical representation of data
d) A descriptive narrative about a scientific concept

11) What is the advantage of on-off control?
a) Precise and accurate control
b) Works well for systems with complex dynamics
c) Easy to implement and cost-effective
d) Handles non-linear processes effectively

12) What does the derivative component of PID control do?
a) Reduces steady state error
b) Minimizes overshoot and oscillations
c) Improves stability
d) Adjusts controller gain

13) In _____ space scheme, the trajectory is specified in terms of end effector configurations.
a) Joint
b) Cartesian
c) Both a and b
d) None of the above

14) Which of the following factors are considered in trajectory planning?
a) Robot's kinematics and dynamics
b) Time and energy consumption
c) Obstacles and workspace constraints
d) All of the above

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Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and state it clearly.

Section – I

Q.2	**a)**	Draw a generalized block diagram for Robot Joint Control and explain all the components of the same.	**07**
	b)	Draw a block diagram of a control system and explain all the components.	**07**
Q.3	**a)**	Explain the working of the on-off control mode. Enlist its advantages and limitations.	**07**
	b)	What is integral control mode? Explain its working with advantages and limitations.	**07**
Q.4	**a)**	Derive the trajectory equation of cartesian straight-line motion.	**07**
	b)	Enlist obstacle and collision avoidance algorithms. Explain any one of them.	**07**

Section – II

Q.5	**a)**	Distinguish between hydraulic and electric actuators.	**07**
	b)	Draw a block diagram of a DC servomotor and explain its working.	**07**
Q.6	**a)**	How are the robot cell layouts classified? Explain robot-centred cell layout.	**07**
	b)	Discuss in detail walkthrough programming methods of robot.	**07**
Q.7	**a)**	Define AGVs. Discuss any 3 applications of AGVs.	**07**
	b)	How are mobile robots classified? Explain the navigation techniques in mobile robots.	**07**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) Use of non-programmable scientific calculator is allowed

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select the correct alternative. 14

1) What is the role of teach pendant in lead through programming?
a) It is a handheld device used to manually control the robot's movement.
b) It is a communication interface that connects the robot to external device.
c) It is a software tool for visualizing and editing robot programs.
d) It is a safety mechanism that stops the robot when an obstacle is detected

2) What is the purpose of considering ergonomics in workcell design?
a) To minimize the footprint of workcell
b) To maximize the productivity of robot
c) To optimize the use of available resources
d) To ensure well-being and safety of human operator

3) What is the primary purpose of AGVs in industrial applications?
a) Quality control and inspection
b) Robotic assembly and welding
c) Material handling and transportation
d) Inventory management

4) What is the primary advantage of mobile robots?
a) Performs tasks in dynamic and changing environments
b) Require minimal maintenance and calibration
c) Less expensive as compared to other robots
d) Have a higher payload capacity

5) The Integral (I) controller mode adjusts the controller output based on the _____.
a) Error between set point and process variable
b) Rate of change of error
c) Accumulated error over time
d) None of the above

6) Which of the following specifications is not a transient response specification?
a) Peak time b) Settling time
c) Rise time d) Bandwidth

7) Which of the following best describes a transfer function?
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c) A graphical representation of data
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b) Minimizes overshoot and oscillations
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d) Adjusts controller gain

10) In _____ space scheme, the trajectory is specified in terms of end effector configurations.
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13) _____ method of path planning creates a field or gradient across the robot's map that directs the robot to the goal position.
a) Road map b) Potential field
c) Cell decomposition d) All of these

14) Which type of actuator is commonly used in applications that require rapid motion and lightweight design?
a) Hydraulic b) Pneumatic
c) Electric d) None of the above

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and state it clearly.

Section – I

Q.2	**a)**	Draw a generalized block diagram for Robot Joint Control and explain all the components of the same.	**07**
	b)	Draw a block diagram of a control system and explain all the components.	**07**
Q.3	**a)**	Explain the working of the on-off control mode. Enlist its advantages and limitations.	**07**
	b)	What is integral control mode? Explain its working with advantages and limitations.	**07**
Q.4	**a)**	Derive the trajectory equation of cartesian straight-line motion.	**07**
	b)	Enlist obstacle and collision avoidance algorithms. Explain any one of them.	**07**

Section – II

Q.5	**a)**	Distinguish between hydraulic and electric actuators.	**07**
	b)	Draw a block diagram of a DC servomotor and explain its working.	**07**
Q.6	**a)**	How are the robot cell layouts classified? Explain robot-centred cell layout.	**07**
	b)	Discuss in detail walkthrough programming methods of robot.	**07**
Q.7	**a)**	Define AGVs. Discuss any 3 applications of AGVs.	**07**
	b)	How are mobile robots classified? Explain the navigation techniques in mobile robots.	**07**

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) Use of non-programmable scientific calculator is allowed

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select the correct alternative. **14**

1) In _____ space scheme, the trajectory is specified in terms of end effector configurations.
a) Joint b) Cartesian
c) Both a and b d) None of the above

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b) Time and energy consumption
c) Obstacles and workspace constraints
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5) Which type of actuator is commonly used in applications that require rapid motion and lightweight design?
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d) Bandwidth

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b) Minimizes overshoot and oscillations
c) Improves stability
d) Adjusts controller gain

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Networks and Controllers (BTN02612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and state it clearly.

Section – I

Q.2	**a)**	Draw a generalized block diagram for Robot Joint Control and explain all the components of the same.	**07**
	b)	Draw a block diagram of a control system and explain all the components.	**07**
Q.3	**a)**	Explain the working of the on-off control mode. Enlist its advantages and limitations.	**07**
	b)	What is integral control mode? Explain its working with advantages and limitations.	**07**
Q.4	**a)**	Derive the trajectory equation of cartesian straight-line motion.	**07**
	b)	Enlist obstacle and collision avoidance algorithms. Explain any one of them.	**07**

Section – II

Q.5	**a)**	Distinguish between hydraulic and electric actuators.	**07**
	b)	Draw a block diagram of a DC servomotor and explain its working.	**07**
Q.6	**a)**	How are the robot cell layouts classified? Explain robot-centred cell layout.	**07**
	b)	Discuss in detail walkthrough programming methods of robot.	**07**
Q.7	**a)**	Define AGVs. Discuss any 3 applications of AGVs.	**07**
	b)	How are mobile robots classified? Explain the navigation techniques in mobile robots.	**07**

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Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which additive manufacturing technology uses a digital light projector to cure liquid resin layer by layer?
a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

2) Which additive manufacturing technology extrudes thermoplastic filament layer by layer to build a 3D object?
a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

3) Which design approach focuses on optimizing the design for efficient manufacturing and assembly?
a) Design for 3D Printing
b) Design for Manufacturing and Assembly
c) Core DFM for 3D Printing
d) Design Tools for 3D Printing

4) What is one of the objectives of Design for 3D Printing?
a) Maximizing production planning and control
b) Minimizing the use of additive manufacturing technologies
c) Optimizing design for efficient manufacturing and assembly
d) Implementing traditional manufacturing techniques in 3D printing

5) Which type of software is used for creating the 3D models that will be printed?
a) Slicing/CAM software
b) Printer Control/Client software
c) 3D Modeling/CAD software
d) Rendering software

6) What is the purpose of slicing software in 3D printing?
   a) Creating 3D models
   b) Controlling the 3D printer
   c) Transforming 3D models into printable instructions
   d) Visualizing the final printed object

7) Which software is responsible for controlling the 3D printer during the printing process?
   a) Slicing/CAM software
   b) Printer Control/Client software
   c) 3D Modeling/CAD software
   d) Simulation software

8) What is the purpose of 3D scanning?
   a) Creating 3D models for virtual reality
   b) Capturing real-world objects and converting them into digital 3D models
   c) Controlling the 3D printer during the printing process
   d) Transforming 2D images into 3D representations

9) Which technology is used to create digital models for 3D printing?
   a) Computer-Aided Design (CAD)
   b) Virtual Reality (VR)
   c) Augmented Reality (AR)
   d) Artificial Intelligence (Al)

10) What is the main advantage of using layers in 3D printing?
   a) It makes the printing process faster
   b) It allows for more precise and complex designs
   c) It reduces the cost of materials
   d) It allows for a smoother surface finish

11) How are 3D printing processes classified?
   a) By the type of material used
   b) By the size of the object being printed
   c) By the number of colors in the design
   d) By the speed of the printing process

12) What is the purpose of software in 3D printing?
   a) To create a physical object from a digital design
   b) To choose the color and texture of the final product
   c) To determine the size and shape of the final product
   d) To program the printer's hardware

13) What is an STL file?
   a) A file format used in 2D printing
   b) A file format used in 3D printing
   c) A file format used in video editing
   d) A file format used in music production

14) Which additive manufacturing technology uses a UV laser to cure photopolymer resin layer by layer?

a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

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Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions from the remaining of the question.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions from the remaining of the question.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and state it clearly.
5) Use of scientific calculator is allowed.

Section – I

Q.2 Discuss CAD and Associated technology used in 3d printer. **10**

Q.3 Illustrate classification of 3d printing processes. **09**

Q.4 Enlist different 3D Printing Technologies and describe any 01 with application. **09**

Q.5 Explain the concept of Design for Manufacturing and Assembly (DFMA) and explain its significance in the context of 3D printing. **09**

Section – II

Q.6 Discuss the significance of 3D modeling/CAD software in the 3D printing workflow. **10**

Q.7 Explain the key steps involved in preparing a 3D model for printing using slicing/CAM software. **09**

Q.8 Describe the basic principles behind 3D scanning technology and the process involved in creating digital 3D models. **09**

Q.9 Illustrate the importance of cleaning and repairing 3D scans before 3D printing. **09**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

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   d) Rendering software

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   a) Creating 3D models
   b) Controlling the 3D printer
   c) Transforming 3D models into printable instructions
   d) Visualizing the final printed object

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b) Printer Control/Client software
c) 3D Modeling/CAD software
d) Simulation software

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions from the remaining of the question.
2) In Section II, Q. No. 6 is compulsory and attempt any two questions from the remaining of the question.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and state it clearly.
5) Use of scientific calculator is allowed.

Section – I

Q.2 Discuss CAD and Associated technology used in 3d printer. **10**

Q.3 Illustrate classification of 3d printing processes. **09**

Q.4 Enlist different 3D Printing Technologies and describe any 01 with application. **09**

Q.5 Explain the concept of Design for Manufacturing and Assembly (DFMA) and explain its significance in the context of 3D printing. **09**

Section – II

Q.6 Discuss the significance of 3D modeling/CAD software in the 3D printing workflow. **10**

Q.7 Explain the key steps involved in preparing a 3D model for printing using slicing/CAM software. **09**

Q.8 Describe the basic principles behind 3D scanning technology and the process involved in creating digital 3D models. **09**

Q.9 Illustrate the importance of cleaning and repairing 3D scans before 3D printing. **09**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) How are 3D printing processes classified?
a) By the type of material used
b) By the size of the object being printed
c) By the number of colors in the design
d) By the speed of the printing process

2) What is the purpose of software in 3D printing?
a) To create a physical object from a digital design
b) To choose the color and texture of the final product
c) To determine the size and shape of the final product
d) To program the printer's hardware

3) What is an STL file?
a) A file format used in 2D printing
b) A file format used in 3D printing
c) A file format used in video editing
d) A file format used in music production

4) Which additive manufacturing technology uses a UV laser to cure photopolymer resin layer by layer?
a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

5) Which additive manufacturing technology uses a digital light projector to cure liquid resin layer by layer?
a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

6) Which additive manufacturing technology extrudes thermoplastic filament layer by layer to build a 3D object?
a) Stereolithography (SLA)
b) Digital Light Processing (DLP)
c) Fused Deposition Modeling (FDM)
d) Selective Laser Sintering (SLS)

7) Which design approach focuses on optimizing the design for efficient manufacturing and assembly?
a) Design for 3D Printing
b) Design for Manufacturing and Assembly
c) Core DFM for 3D Printing
d) Design Tools for 3D Printing

8) What is one of the objectives of Design for 3D Printing?
a) Maximizing production planning and control
b) Minimizing the use of additive manufacturing technologies
c) Optimizing design for efficient manufacturing and assembly
d) Implementing traditional manufacturing techniques in 3D printing

9) Which type of software is used for creating the 3D models that will be printed?
a) Slicing/CAM software
b) Printer Control/Client software
c) 3D Modeling/CAD software
d) Rendering software

10) What is the purpose of slicing software in 3D printing?
a) Creating 3D models
b) Controlling the 3D printer
c) Transforming 3D models into printable instructions
d) Visualizing the final printed object

11) Which software is responsible for controlling the 3D printer during the printing process?
a) Slicing/CAM software
b) Printer Control/Client software
c) 3D Modeling/CAD software
d) Simulation software

12) What is the purpose of 3D scanning?
a) Creating 3D models for virtual reality
b) Capturing real-world objects and converting them into digital 3D models
c) Controlling the 3D printer during the printing process
d) Transforming 2D images into 3D representations

13) Which technology is used to create digital models for 3D printing?
a) Computer-Aided Design (CAD)
b) Virtual Reality (VR)
c) Augmented Reality (AR)
d) Artificial Intelligence (Al)

14) What is the main advantage of using layers in 3D printing?
a) It makes the printing process faster
b) It allows for more precise and complex designs
c) It reduces the cost of materials
d) It allows for a smoother surface finish

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Discuss CAD and Associated technology used in 3d printer. **10**

Q.3 Illustrate classification of 3d printing processes. **09**

Q.4 Enlist different 3D Printing Technologies and describe any 01 with application. **09**

Q.5 Explain the concept of Design for Manufacturing and Assembly (DFMA) and explain its significance in the context of 3D printing. **09**

Section – II

Q.6 Discuss the significance of 3D modeling/CAD software in the 3D printing workflow. **10**

Q.7 Explain the key steps involved in preparing a 3D model for printing using slicing/CAM software. **09**

Q.8 Describe the basic principles behind 3D scanning technology and the process involved in creating digital 3D models. **09**

Q.9 Illustrate the importance of cleaning and repairing 3D scans before 3D printing. **09**

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) What is the purpose of slicing software in 3D printing?
a) Creating 3D models
b) Controlling the 3D printer
c) Transforming 3D models into printable instructions
d) Visualizing the final printed object

2) Which software is responsible for controlling the 3D printer during the printing process?
a) Slicing/CAM software
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d) Simulation software

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c) It reduces the cost of materials
d) It allows for a smoother surface finish

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   a) By the type of material used
   b) By the size of the object being printed
   c) By the number of colors in the design
   d) By the speed of the printing process

7) What is the purpose of software in 3D printing?
   a) To create a physical object from a digital design
   b) To choose the color and texture of the final product
   c) To determine the size and shape of the final product
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   c) A file format used in video editing
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   c) Fused Deposition Modeling (FDM)
   d) Selective Laser Sintering (SLS)

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   a) Stereolithography (SLA)
   b) Digital Light Processing (DLP)
   c) Fused Deposition Modeling (FDM)
   d) Selective Laser Sintering (SLS)

11) Which additive manufacturing technology extrudes thermoplastic filament layer by layer to build a 3D object?
   a) Stereolithography (SLA)
   b) Digital Light Processing (DLP)
   c) Fused Deposition Modeling (FDM)
   d) Selective Laser Sintering (SLS)

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   a) Design for 3D Printing
   b) Design for Manufacturing and Assembly
   c) Core DFM for 3D Printing
   d) Design Tools for 3D Printing

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   a) Maximizing production planning and control
   b) Minimizing the use of additive manufacturing technologies
   c) Optimizing design for efficient manufacturing and assembly
   d) Implementing traditional manufacturing techniques in 3D printing

14) Which type of software is used for creating the 3D models that will be printed?

a) Slicing/CAM software
b) Printer Control/Client software
c) 3D Modeling/CAD software
d) Rendering software

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Seat No.	

Set S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
3D Printing Hardware & Software (BTN02613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In Section I, Q. No. 2 is compulsory and attempt any two questions from the remaining of the question.
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5) Use of scientific calculator is allowed.

Section – I

Q.2 Discuss CAD and Associated technology used in 3d printer. **10**

Q.3 Illustrate classification of 3d printing processes. **09**

Q.4 Enlist different 3D Printing Technologies and describe any 01 with application. **09**

Q.5 Explain the concept of Design for Manufacturing and Assembly (DFMA) and explain its significance in the context of 3D printing. **09**

Section – II

Q.6 Discuss the significance of 3D modeling/CAD software in the 3D printing workflow. **10**

Q.7 Explain the key steps involved in preparing a 3D model for printing using slicing/CAM software. **09**

Q.8 Describe the basic principles behind 3D scanning technology and the process involved in creating digital 3D models. **09**

Q.9 Illustrate the importance of cleaning and repairing 3D scans before 3D printing. **09**

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Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) The mean temperature of heat addition can be increased by _____.
a) increasing the amount of heat supplied at high temperatures
b) decreasing the amount of heat added at low temperatures
c) both of the mentioned
d) none of the mentioned

2) Which cycle is idealized cycle for the spark ignition internal combustion engines?
a) Otto cycle b) Diesel cycle
c) Dual cycle d) Bryton cycle

3) In diesel cycle heat rejection occurs at _____.
a) Reversible constant volume process
b) Reversible constant pressure process
c) Irreversible constant volume process
d) Irreversible constant pressure process

4) Which of the following energy has the greatest potential among all the sources of renewable energy?
a) Solar energy b) Wind Energy
c) Thermal energy d) Hydro-electrical energy

5) What is total amount of solar energy received by earth and atmosphere?
a) 3.8 X 1024 J/year b) 9.2 X 1024 J/year
c) 5.4 X 1024 J/year d) 2.1 X 1024 J/year

6) Which is most common source of energy from which electricity is produced?
a) Hydroelectricity b) Wind energy
c) Coal d) Solar energy

7) Thermocouple is a _____.
a) Primary device b) Secondary transducer
c) Tertiary transducer d) None of the mentioned

8) Which of the following element is used as a thermocouple in nuclear reactor?
a) Boron b) Platinum
c) Copper d) Iron

9) Which of the following converts' energy from the combustion of fuel directly to the electrical energy?
a) Ni-Cd cell b) Dynamo
c) Fuel cell d) Electrolytic cell

10) Which of the following is continuously replaced in a fuel cell?
a) Oxidiser b) Fuel
c) Both fuel and oxidizer d) None of the above

11) Operation of thermocouple Is governed by _____.
a) Peltier effect b) Seebeck effect
c) Thomson effect d) All of the mentioned

12) The term photo voltaic comes from _____.
a) Spanish b) Greek
c) German d) English

13) When the source of light is not sun light then the photo voltaic cell is used as _____.
a) Photo diode b) Photo voltaic cell
c) Photo detector d) Photo transmitter

14) The region where the electrons and holes diffused across the junction is called _____.
a) Depletion Junction b) Depletion region
c) Depletion space d) Depletion boundary

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Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each Section.
2) Assume suitable data if required.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:
a) Drive an expression of Carnot cycle. **07**
b) Drive an expression of Brayton cycle. **07**

Q.3 Solve:
a) Classify in details of different types of Batteries. **07**
b) Explain in details construction and working of Lithium Ion Batteries. **07**

Q.4 Solve:
a) Describe Thermionic convertor with neat sketches. **07**
b) Write a short note on types of Thermoelectric Convertor. **07**

Section – II

Q.5 Solve:
a) Describe the Application, Advantages & Drawbacks of Fuel cells. **07**
b) Write Short note on Performance of Fuel cell. **07**

Q.6 Solve:
a) What are different types of energy storage technologies. Explain mechanical energy storage technology with neat sketch. **07**
b) Write short note on Electrical Energy. **07**

Q.7 Solve:
a) Explain Construction and working of solar cell with neat sketch. **07**
b) Describe in details Construction and working of solar photovoltaic cell. **07**

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Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Which of the following element is used as a thermocouple in nuclear reactor?
a) Boron b) Platinum
c) Copper d) Iron

2) Which of the following converts' energy from the combustion of fuel directly to the electrical energy?
a) Ni-Cd cell b) Dynamo
c) Fuel cell d) Electrolytic cell

3) Which of the following is continuously replaced in a fuel cell?
a) Oxidiser b) Fuel
c) Both fuel and oxidizer d) None of the above

4) Operation of thermocouple Is governed by _____.
a) Peltier effect b) Seebeck effect
c) Thomson effect d) All of the mentioned

5) The term photo voltaic comes from _____.
a) Spanish b) Greek
c) German d) English

6) When the source of light is not sun light then the photo voltaic cell is used as _____.
a) Photo diode b) Photo voltaic cell
c) Photo detector d) Photo transmitter

7) The region where the electrons and holes diffused across the junction is called _____.
a) Depletion Junction b) Depletion region
c) Depletion space d) Depletion boundary

8) The mean temperature of heat addition can be increased by _____.
a) increasing the amount of heat supplied at high temperatures
b) decreasing the amount of heat added at low temperatures
c) both of the mentioned
d) none of the mentioned

9) Which cycle is idealized cycle for the spark ignition internal combustion engines?

a) Otto cycle
b) Diesel cycle
c) Dual cycle
d) Bryton cycle

10) In diesel cycle heat rejection occurs at _____.

a) Reversible constant volume process
b) Reversible constant pressure process
c) Irreversible constant volume process
d) Irreversible constant pressure process

11) Which of the following energy has the greatest potential among all the sources of renewable energy?

a) Solar energy
b) Wind Energy
c) Thermal energy
d) Hydro-electrical energy

12) What is total amount of solar energy received by earth and atmosphere?

a) 3.8 X 1024 J/year
b) 9.2 X 1024 J/year
c) 5.4 X 1024 J/year
d) 2.1 X 1024 J/year

13) Which is most common source of energy from which electricity is produced?

a) Hydroelectricity
b) Wind energy
c) Coal
d) Solar energy

14) Thermocouple is a _____.

a) Primary device
b) Secondary transducer
c) Tertiary transducer
d) None of the mentioned

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Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
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Section – I

Q.2 Solve:
a) Drive an expression of Carnot cycle. **07**
b) Drive an expression of Brayton cycle. **07**

Q.3 Solve:
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a) Describe Thermionic convertor with neat sketches. **07**
b) Write a short note on types of Thermoelectric Convertor. **07**

Section – II

Q.5 Solve:
a) Describe the Application, Advantages & Drawbacks of Fuel cells. **07**
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Q.6 Solve:
a) What are different types of energy storage technologies. Explain mechanical energy storage technology with neat sketch. **07**
b) Write short note on Electrical Energy. **07**

Q.7 Solve:
a) Explain Construction and working of solar cell with neat sketch. **07**
b) Describe in details Construction and working of solar photovoltaic cell. **07**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

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Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Operation of thermocouple Is governed by _____.
a) Peltier effect b) Seebeck effect
c) Thomson effect d) All of the mentioned

2) The term photo voltaic comes from _____.
a) Spanish b) Greek
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3) When the source of light is not sun light then the photo voltaic cell is used as _____.
a) Photo diode b) Photo voltaic cell
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4) The region where the electrons and holes diffused across the junction is called _____.
a) Depletion Junction b) Depletion region
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a) Oxidiser
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Seat No.	

Set R

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Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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d) 2.1 X 1024 J/year

SLR-GF-140

Seat No.	

Set S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Conversion Systems (BTN02614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each Section.
2) Assume suitable data if required.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:
a) Drive an expression of Carnot cycle. **07**
b) Drive an expression of Brayton cycle. **07**

Q.3 Solve:
a) Classify in details of different types of Batteries. **07**
b) Explain in details construction and working of Lithium Ion Batteries. **07**

Q.4 Solve:
a) Describe Thermionic convertor with neat sketches. **07**
b) Write a short note on types of Thermoelectric Convertor. **07**

Section – II

Q.5 Solve:
a) Describe the Application, Advantages & Drawbacks of Fuel cells. **07**
b) Write Short note on Performance of Fuel cell. **07**

Q.6 Solve:
a) What are different types of energy storage technologies. Explain mechanical energy storage technology with neat sketch. **07**
b) Write short note on Electrical Energy. **07**

Q.7 Solve:
a) Explain Construction and working of solar cell with neat sketch. **07**
b) Describe in details Construction and working of solar photovoltaic cell. **07**

SLR-GF-141

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Type. (Each question carries one mark) **14**

1) Number of cells connected in series provide a _____.
a) High current carrying capacity b) Higher Voltage
c) Higher power d) None of the above

2) Specific Gravity of an electrolyte in a single cell or a battery is always _____.
a) Equal to 1.0 b) Greater than 1.0
c) Less than 1.0 d) None of the above

3) Storage batteries are rated according to _____.
a) Ambient Temperature b) Discharge Rate
c) a and b d) None of the above

4) _____ avoids the direct contact of the positive and negative plate in a lithium-ion battery?
a) Electrolyte b) Separator
c) Load d) Rectifier

5) Which is the electrolyte used in Li-ion battery?
a) Lead dioxide b) Lithium-based gel
c) Sulfur dioxide d) Cobalt

6) Which of the following statement is true for the movement of electrons concerning the direction of current?
a) Same as the direction of current
b) Opposite direction of current
c) Does not depend on the direction of current
d) No movement of electrons

7) It is noticed that during charging _____.
a) There is a rise in voltage
b) Energy is absorbed by the cell
c) Specific gravity of H_2SO_4 is increased
d) All of the above

8) Overcharging _____.
a) Produces excessive gassing
b) Loosens the active material
c) Increases the temperature resulting in buckling of plates
d) All of the above

9) Under charging _____.
a) Reduces specific gravity of the electrolyte
b) Increases specific gravity of the electrolyte
c) Produces excessive gassing
d) Increases the temperature

10) Each cell has a vent cap _____.
a) To allow gases out when the cell is on charge
b) To add water to the cell if needed
c) To check the level of electrolyte
d) To do all above functions

11) Cell short circuit results in _____.
a) Low specific gravity electrolyte b) Abnormal high-temperature
c) Reduced gassing on charge d) All of the above

12) Internal resistance of a cell is reduced to by _____.
a) Using vent plug to permit gas formed during discharge
b) Increasing the plate area
c) Putting plates very close together
d) All of the above

13) Which of the following circuit is used for cooling of the lithium-ion battery?
a) Air conditioning b) Heater circuit
c) Ignition circuit d) EGR circuit

14) What is the maximum operating temperature in degree centigrade above which the lithium-ion battery should not be operated?
a) 10 b) 20
c) 30 d) 40

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question 1 is objective type and is compulsory.
2) Solve any two questions from Section-I and Section-II.
3) Figures to the right indicates full marks.

Section – I

Q.2 **a)** **Define the following:** **07**
1) State of charge
2) C-Rate
3) Specific Energy Density
4) Life cycles
5) Depth of Discharge
6) Usable capacity
7) Energy capacity

b) Explain parameters for EV battery selection. **07**

Q.3 **a)** Explain LMO and LTO battery chemistries. **07**
b) Explain various cell failures. **07**

Q.4 **a)** Explain Lithium-Polymer battery with neat sketch. **07**
b) Explain Lithium-air battery with neat sketch. **07**

Section – II

Q.5 **a)** Explain Battery Pack Development Process. **07**
b) Explain forces acting on battery pack with neat sketch. **07**

Q.6 **a)** Explain battery pack temperature considerations. **07**
b) Explain why thermal management of battery pack is important. **07**

Q.7 **a)** Explain battery leasing charges and investment by EO. **07**
b) Explain on-board, off-board chargers and slow and fast chargers. **07**

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Type. (Each question carries one mark) **14**

1) Overcharging _____.
a) Produces excessive gassing
b) Loosens the active material
c) Increases the temperature resulting in buckling of plates
d) All of the above

2) Under charging _____.
a) Reduces specific gravity of the electrolyte
b) Increases specific gravity of the electrolyte
c) Produces excessive gassing
d) Increases the temperature

3) Each cell has a vent cap _____.
a) To allow gases out when the cell is on charge
b) To add water to the cell if needed
c) To check the level of electrolyte
d) To do all above functions

4) Cell short circuit results in _____.
a) Low specific gravity electrolyte b) Abnormal high-temperature
c) Reduced gassing on charge d) All of the above

5) Internal resistance of a cell is reduced to by _____.
a) Using vent plug to permit gas formed during discharge
b) Increasing the plate area
c) Putting plates very close together
d) All of the above

6) Which of the following circuit is used for cooling of the lithium-ion battery?
a) Air conditioning b) Heater circuit
c) Ignition circuit d) EGR circuit

7) What is the maximum operating temperature in degree centigrade above which the lithium-ion battery should not be operated?
a) 10 b) 20
c) 30 d) 40

8) Number of cells connected in series provide a _____.
a) High current carrying capacity b) Higher Voltage
c) Higher power d) None of the above

9) Specific Gravity of an electrolyte in a single cell or a battery is always _____.
a) Equal to 1.0 b) Greater than 1.0
c) Less than 1.0 d) None of the above

10) Storage batteries are rated according to _____.
a) Ambient Temperature b) Discharge Rate
c) a and b d) None of the above

11) _____ avoids the direct contact of the positive and negative plate in a lithium-ion battery?
a) Electrolyte b) Separator
c) Load d) Rectifier

12) Which is the electrolyte used in Li-ion battery?
a) Lead dioxide b) Lithium-based gel
c) Sulfur dioxide d) Cobalt

13) Which of the following statement is true for the movement of electrons concerning the direction of current?
a) Same as the direction of current
b) Opposite direction of current
c) Does not depend on the direction of current
d) No movement of electrons

14) It is noticed that during charging _____.
a) There is a rise in voltage
b) Energy is absorbed by the cell
c) Specific gravity of H_2SO_4 is increased
d) All of the above

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question 1 is objective type and is compulsory.
2) Solve any two questions from Section-I and Section-II.
3) Figures to the right indicates full marks.

Section – I

Q.2 **a)** **Define the following:** **07**
1) State of charge
2) C-Rate
3) Specific Energy Density
4) Life cycles
5) Depth of Discharge
6) Usable capacity
7) Energy capacity

b) Explain parameters for EV battery selection. **07**

Q.3 **a)** Explain LMO and LTO battery chemistries. **07**
b) Explain various cell failures. **07**

Q.4 **a)** Explain Lithium-Polymer battery with neat sketch. **07**
b) Explain Lithium-air battery with neat sketch. **07**

Section – II

Q.5 **a)** Explain Battery Pack Development Process. **07**
b) Explain forces acting on battery pack with neat sketch. **07**

Q.6 **a)** Explain battery pack temperature considerations. **07**
b) Explain why thermal management of battery pack is important. **07**

Q.7 **a)** Explain battery leasing charges and investment by EO. **07**
b) Explain on-board, off-board chargers and slow and fast chargers. **07**

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Type. (Each question carries one mark) **14**

1) Cell short circuit results in _____.
a) Low specific gravity electrolyte b) Abnormal high-temperature
c) Reduced gassing on charge d) All of the above

2) Internal resistance of a cell is reduced to by _____.
a) Using vent plug to permit gas formed during discharge
b) Increasing the plate area
c) Putting plates very close together
d) All of the above

3) Which of the following circuit is used for cooling of the lithium-ion battery?
a) Air conditioning b) Heater circuit
c) Ignition circuit d) EGR circuit

4) What is the maximum operating temperature in degree centigrade above which the lithium-ion battery should not be operated?
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c) 30 d) 40

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c) Higher power d) None of the above

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d) Cobalt

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a) Produces excessive gassing
b) Loosens the active material
c) Increases the temperature resulting in buckling of plates
d) All of the above

13) Under charging _____.
a) Reduces specific gravity of the electrolyte
b) Increases specific gravity of the electrolyte
c) Produces excessive gassing
d) Increases the temperature

14) Each cell has a vent cap _____.
a) To allow gases out when the cell is on charge
b) To add water to the cell if needed
c) To check the level of electrolyte
d) To do all above functions

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question 1 is objective type and is compulsory.
2) Solve any two questions from Section-I and Section-II.
3) Figures to the right indicates full marks.

Section – I

Q.2 **a)** **Define the following:** **07**
1) State of charge
2) C-Rate
3) Specific Energy Density
4) Life cycles
5) Depth of Discharge
6) Usable capacity
7) Energy capacity

b) Explain parameters for EV battery selection. **07**

Q.3 **a)** Explain LMO and LTO battery chemistries. **07**
b) Explain various cell failures. **07**

Q.4 **a)** Explain Lithium-Polymer battery with neat sketch. **07**
b) Explain Lithium-air battery with neat sketch. **07**

Section – II

Q.5 **a)** Explain Battery Pack Development Process. **07**
b) Explain forces acting on battery pack with neat sketch. **07**

Q.6 **a)** Explain battery pack temperature considerations. **07**
b) Explain why thermal management of battery pack is important. **07**

Q.7 **a)** Explain battery leasing charges and investment by EO. **07**
b) Explain on-board, off-board chargers and slow and fast chargers. **07**

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Type. (Each question carries one mark) **14**

1) Which of the following statement is true for the movement of electrons concerning the direction of current?
a) Same as the direction of current
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c) Increases the temperature resulting in buckling of plates
d) All of the above

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b) Increases specific gravity of the electrolyte
c) Produces excessive gassing
d) Increases the temperature

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c) To check the level of electrolyte
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c) Reduced gassing on charge d) All of the above

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c) Putting plates very close together
d) All of the above

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a) Air conditioning b) Heater circuit
c) Ignition circuit d) EGR circuit

9) What is the maximum operating temperature in degree centigrade above which the lithium-ion battery should not be operated?
a) 10 b) 20
c) 30 d) 40

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a) High current carrying capacity b) Higher Voltage
c) Higher power d) None of the above

11) Specific Gravity of an electrolyte in a single cell or a battery is always _____.
a) Equal to 1.0 b) Greater than 1.0
c) Less than 1.0 d) None of the above

12) Storage batteries are rated according to _____.
a) Ambient Temperature b) Discharge Rate
c) a and b d) None of the above

13) _____ avoids the direct contact of the positive and negative plate in a lithium-ion battery?
a) Electrolyte b) Separator
c) Load d) Rectifier

14) Which is the electrolyte used in Li-ion battery?
a) Lead dioxide b) Lithium-based gel
c) Sulfur dioxide d) Cobalt

SLR-GF-141

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Battery Technology and Charging Infrastructure (BTN02615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question 1 is objective type and is compulsory.
2) Solve any two questions from Section-I and Section-II.
3) Figures to the right indicates full marks.

Section – I

Q.2 **a)** **Define the following:** **07**
1) State of charge
2) C-Rate
3) Specific Energy Density
4) Life cycles
5) Depth of Discharge
6) Usable capacity
7) Energy capacity

b) Explain parameters for EV battery selection. **07**

Q.3 **a)** Explain LMO and LTO battery chemistries. **07**
b) Explain various cell failures. **07**

Q.4 **a)** Explain Lithium-Polymer battery with neat sketch. **07**
b) Explain Lithium-air battery with neat sketch. **07**

Section – II

Q.5 **a)** Explain Battery Pack Development Process. **07**
b) Explain forces acting on battery pack with neat sketch. **07**

Q.6 **a)** Explain battery pack temperature considerations. **07**
b) Explain why thermal management of battery pack is important. **07**

Q.7 **a)** Explain battery leasing charges and investment by EO. **07**
b) Explain on-board, off-board chargers and slow and fast chargers. **07**

SLR-GF-142

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Design – II (197041601)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The product of diametric pitch and circular pitch is equal to _____.
a) 2π b) $2/\pi$
c) π d) None of the above

2) The breakdown of the oil film in gear causes _____.
a) Abrasive wear b) Destructive pitting
c) Scoring d) Creep

3) Dynamic load acting on a gear depends upon _____.
a) Tooth error b) Number of teeth
c) Speed d) All of the above

4) In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called _____.
a) Normal pitch b) Axial pitch
c) Diametric pitch d) Module

5) For designing a cylinder with ductile material having both ends open _____.
a) Clavarino's equation is used b) Birnies equation is used
c) Lame's equation is used d) Any equation can be used

6) A cylinder is considered thin when the ratio of its inner diameter to wall thickness is _____.
a) less than 15 b) more than 15
c) more than 20 d) less than 20

7) When the design tolerance is slightly greater than $(\pm 3\hat{\sigma})$?
a) the percentage of rejected components is inevitable
b) there is virtually no rejection provided that the manufacturing process is centred
c) there is no rejection even if the manufacturing process is slightly off-center
d) none of the above

8) The bevel factor is given as _____.
a) $\mathrm{b/L}$ b) $\mathrm{b/2L}$
c) $1 - \mathrm{b/2L}$ d) $1 - \mathrm{b/L}$

9) When bevel gears having equal teeth and equal pitch angles connect two shafts intersecting at 90° then they are known as _____.

a) Angular bevel gears b) Crown bevel gears
c) Internal bevel gears d) Mitre gears

10) The worm wheel should be _____.

a) Embeddable and conformable b) Hard and conformable
c) Hard and embeddable d) None of the above

11) Number of starts on the worm depends upon _____.

a) Speed of the worm b) Speed of the worm wheel
c) Velocity reduction d) Number of teeth on the worm wheel

12) In a bearing no. 6205, the digit 2 designates _____.

a) Bore size b) Series of bearing
c) Type of bearing d) None of these

13) The reliability of ball bearings for rated life is _____.

a) 50% b) 90%
c) 99% d) 10%

14) When length of bearing is greater than the diameter of the journal it is called as _____.

a) Short bearing b) Long bearing
c) Square bearing d) All of these

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Design – II (197041601)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2 **a)** Differentiate between Spur gears and Helical Gears **03**

b) Outline the various types of gear tooth failures and explain the causes and remedies for the same. **04**

c) A pair of parallel helical gears consists of a 20 teeth pinion meshing with a 100 teeth gear. The pinion rotates at 720 rpm. The normal pressure angle is 20°, while the helix angle is 25°. The face width is 40 mm and the normal module is 4 mm. The pinion as well as the gear is made of steel 40C8 (Sut = 600 N/mm^2) and heat treated to a surface hardness of 300 BHN. The service factor and the factor of safety are 1.5 and 2 respectively. Assume that the velocity factor accounts for the dynamic load and calculate the power transmitting capacity of gears. Y27 = 0.3475. **07**

Q.3 **a)** It is required to design a pair of spur gears with 20° full-depth involute teeth based on the Lewis equation. The velocity factor is to be used to account for dynamic load. The pinion shaft is connected to a 10 kW, 1440 rpm motor. The starting torque of the motor is 150% of the rated torque. The speed reduction is 4:1. The pinion as well as the gear is made of plain carbon steel 40C8 (Sut = 600 N/mm^2). The factor of safety can be taken as 1.5. Design the gears, specify their dimensions. Assume number of teeth on pinion as 18. **07**

b) The piston rod of a hydraulic cylinder exerts an operating force of 10 kN. The friction due to piston packing and stuffing box is equivalent to 10% of the operating force. The pressure in the cylinder is 10 MPa. The cylinder is made of cast iron FG200 and the factor of safety is 5. Determine the diameter and the thickness of the cylinder. **04**

c) Explain types of end closures. **03**

Q.4 **a)** It has been observed from a sample of 200 bearing bushes that the internal diameters are normally distributed with a mean of 30.010 mm and a standard deviation of 0.008 mm. The upper and lower limits for the internal diameter, as specified by the designer, are 30.02 and 30.00 mm respectively. Calculate the percentage of rejected bushes. **07**

b) What do you mean by Autofrettage? Explain the methods of autofrettage. **05**

c) Define Beam Strength and Wear Strength for spur gears. **02**

Section – II

Q.5 **a)** A pair of bevel gears transmitting 7.5 kW at 300 rpm having pitch circle diameters of pinion and gear as 200 mm and 150 mm. The face width is 40 mm. The pressure angle is 20°. Determine the components of the resultant gear tooth force and draw a free-body diagram of forces acting on the pinion and the gear. **07**

b) Derive expression for beam strength of bevel gear. **07**

Q.6 **a)** A pair of worm and worm wheel is designated as 3/60/10/6. The worm is transmitting 5 kW power at 1440 rpm to the worm wheel. The coefficient of friction is 0.1 and the normal pressure angle is 20°. Determine the components of the gear tooth force acting on the worm and the worm wheel. **07**

b) Derive expression for efficiency of worm gear drive. **04**

c) Explain the working principle of Hydrodynamic Journal Bearing **03**

Q.7 **a)** Explain the procedure for selection of bearing from Manufacturers catalogue. **04**

b) A single-row deep groove ball bearing has a dynamic load capacity of 40500 N and operates on the following work cycle: **06**

i) radial load of 5000 N at 500 rpm for 25% of the time;

ii) radial load of 10000 N at 700 rpm for 50% of the time;

iii) radial load of 7000 N at 400 rpm for the remaining 25% of the time.

Calculate the expected life of the bearing in hours.

c) Write a short note on Bearing materials for sliding contact bearings. **04**

SLR-GF-142

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Design – II (197041601)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The bevel factor is given as _____.
a) b/L b) $b/2L$
c) $1 - b/2L$ d) $1 - b/L$

2) When bevel gears having equal teeth and equal pitch angles connect two shafts intersecting at 90° then they are known as _____.
a) Angular bevel gears b) Crown bevel gears
c) Internal bevel gears d) Mitre gears

3) The worm wheel should be _____.
a) Embeddable and conformable b) Hard and conformable
c) Hard and embeddable d) None of the above

4) Number of starts on the worm depends upon _____.
a) Speed of the worm b) Speed of the worm wheel
c) Velocity reduction d) Number of teeth on the worm wheel

5) In a bearing no. 6205, the digit 2 designates _____.
a) Bore size b) Series of bearing
c) Type of bearing d) None of these

6) The reliability of ball bearings for rated life is _____.
a) 50% b) 90%
c) 99% d) 10%

7) When length of bearing is greater than the diameter of the journal it is called as _____.
a) Short bearing b) Long bearing
c) Square bearing d) All of these

8) The product of diametric pitch and circular pitch is equal to _____.
a) 2π b) $2/\pi$
c) π d) None of the above

9) The breakdown of the oil film in gear causes _____.
a) Abrasive wear b) Destructive pitting
c) Scoring d) Creep

10) Dynamic load acting on a gear depends upon _____.
a) Tooth error b) Number of teeth
c) Speed d) All of the above

11) In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called _____.
a) Normal pitch b) Axial pitch
c) Diametric pitch d) Module

12) For designing a cylinder with ductile material having both ends open _____.
a) Clavarino's equation is used b) Birnies equation is used
c) Lame's equation is used d) Any equation can be used

13) A cylinder is considered thin when the ratio of its inner diameter to wall thickness is _____.
a) less than 15 b) more than 15
c) more than 20 d) less than 20

14) When the design tolerance is slightly greater than $(\pm 3\hat{\sigma})$?
a) the percentage of rejected components is inevitable
b) there is virtually no rejection provided that the manufacturing process is centred
c) there is no rejection even if the manufacturing process is slightly off-center
d) none of the above

Seat No.	

Set | Q

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Design – II (197041601)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2 **a)** Differentiate between Spur gears and Helical Gears **03**

b) Outline the various types of gear tooth failures and explain the causes and remedies for the same. **04**

c) A pair of parallel helical gears consists of a 20 teeth pinion meshing with a 100 teeth gear. The pinion rotates at 720 rpm. The normal pressure angle is 20°, while the helix angle is 25°. The face width is 40 mm and the normal module is 4 mm. The pinion as well as the gear is made of steel 40C8 (Sut = 600 N/mm^2) and heat treated to a surface hardness of 300 BHN. The service factor and the factor of safety are 1.5 and 2 respectively. Assume that the velocity factor accounts for the dynamic load and calculate the power transmitting capacity of gears. Y27 = 0.3475. **07**

Q.3 **a)** It is required to design a pair of spur gears with 20° full-depth involute teeth based on the Lewis equation. The velocity factor is to be used to account for dynamic load. The pinion shaft is connected to a 10 kW, 1440 rpm motor. The starting torque of the motor is 150% of the rated torque. The speed reduction is 4:1. The pinion as well as the gear is made of plain carbon steel 40C8 (Sut = 600 N/mm^2). The factor of safety can be taken as 1.5. Design the gears, specify their dimensions. Assume number of teeth on pinion as 18. **07**

b) The piston rod of a hydraulic cylinder exerts an operating force of 10 kN. The friction due to piston packing and stuffing box is equivalent to 10% of the operating force. The pressure in the cylinder is 10 MPa. The cylinder is made of cast iron FG200 and the factor of safety is 5. Determine the diameter and the thickness of the cylinder. **04**

c) Explain types of end closures. **03**

Q.4 **a)** It has been observed from a sample of 200 bearing bushes that the internal diameters are normally distributed with a mean of 30.010 mm and a standard deviation of 0.008 mm. The upper and lower limits for the internal diameter, as specified by the designer, are 30.02 and 30.00 mm respectively. Calculate the percentage of rejected bushes. **07**

b) What do you mean by Autofrettage? Explain the methods of autofrettage. **05**

c) Define Beam Strength and Wear Strength for spur gears. **02**

Section – II

Q.5	**a)**	A pair of bevel gears transmitting 7.5 kW at 300 rpm having pitch circle diameters of pinion and gear as 200 mm and 150 mm. The face width is 40 mm. The pressure angle is 20°. Determine the components of the resultant gear tooth force and draw a free-body diagram of forces acting on the pinion and the gear.	**07**
	b)	Derive expression for beam strength of bevel gear.	**07**
Q.6	**a)**	A pair of worm and worm wheel is designated as 3/60/10/6. The worm is transmitting 5 kW power at 1440 rpm to the worm wheel. The coefficient of friction is 0.1 and the normal pressure angle is 20°. Determine the components of the gear tooth force acting on the worm and the worm wheel.	**07**
	b)	Derive expression for efficiency of worm gear drive.	**04**
	c)	Explain the working principle of Hydrodynamic Journal Bearing	**03**
Q.7	**a)**	Explain the procedure for selection of bearing from Manufacturers catalogue.	**04**
	b)	A single-row deep groove ball bearing has a dynamic load capacity of 40500 N and operates on the following work cycle: i) radial load of 5000 N at 500 rpm for 25% of the time; ii) radial load of 10000 N at 700 rpm for 50% of the time; iii) radial load of 7000 N at 400 rpm for the remaining 25% of the time. Calculate the expected life of the bearing in hours.	**06**
	c)	Write a short note on Bearing materials for sliding contact bearings.	**04**

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Design – II (197041601)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Number of starts on the worm depends upon _____.
a) Speed of the worm b) Speed of the worm wheel
c) Velocity reduction d) Number of teeth on the worm wheel

2) In a bearing no. 6205, the digit 2 designates _____.
a) Bore size b) Series of bearing
c) Type of bearing d) None of these

3) The reliability of ball bearings for rated life is _____.
a) 50% b) 90%
c) 99% d) 10%

4) When length of bearing is greater than the diameter of the journal it is called as _____.
a) Short bearing b) Long bearing
c) Square bearing d) All of these

5) The product of diametric pitch and circular pitch is equal to _____.
a) 2π b) $2/\pi$
c) π d) None of the above

6) The breakdown of the oil film in gear causes _____.
a) Abrasive wear b) Destructive pitting
c) Scoring d) Creep

7) Dynamic load acting on a gear depends upon _____.
a) Tooth error b) Number of teeth
c) Speed d) All of the above

8) In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called _____.
a) Normal pitch b) Axial pitch
c) Diametric pitch d) Module

9) For designing a cylinder with ductile material having both ends open _____.
a) Clavarino's equation is used b) Birnies equation is used
c) Lame's equation is used d) Any equation can be used

10) A cylinder is considered thin when the ratio of its inner diameter to wall thickness is _____.

a) less than 15 b) more than 15
c) more than 20 d) less than 20

11) When the design tolerance is slightly greater than $(\pm 3\hat{\sigma})$?

a) the percentage of rejected components is inevitable
b) there is virtually no rejection provided that the manufacturing process is centred
c) there is no rejection even if the manufacturing process is slightly off-center
d) none of the above

12) The bevel factor is given as _____.

a) $\mathrm{b/L}$ b) $\mathrm{b/2L}$
c) $1 - \mathrm{b/2L}$ d) $1 - \mathrm{b/L}$

13) When bevel gears having equal teeth and equal pitch angles connect two shafts intersecting at 90° then they are known as _____.

a) Angular bevel gears b) Crown bevel gears
c) Internal bevel gears d) Mitre gears

14) The worm wheel should be _____.

a) Embeddable and conformable b) Hard and conformable
c) Hard and embeddable d) None of the above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Design – II (197041601)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2 **a)** Differentiate between Spur gears and Helical Gears **03**

b) Outline the various types of gear tooth failures and explain the causes and remedies for the same. **04**

c) A pair of parallel helical gears consists of a 20 teeth pinion meshing with a 100 teeth gear. The pinion rotates at 720 rpm. The normal pressure angle is 20°, while the helix angle is 25°. The face width is 40 mm and the normal module is 4 mm. The pinion as well as the gear is made of steel 40C8 (Sut = 600 N/mm^2) and heat treated to a surface hardness of 300 BHN. The service factor and the factor of safety are 1.5 and 2 respectively. Assume that the velocity factor accounts for the dynamic load and calculate the power transmitting capacity of gears. Y27 = 0.3475. **07**

Q.3 **a)** It is required to design a pair of spur gears with 20° full-depth involute teeth based on the Lewis equation. The velocity factor is to be used to account for dynamic load. The pinion shaft is connected to a 10 kW, 1440 rpm motor. The starting torque of the motor is 150% of the rated torque. The speed reduction is 4:1. The pinion as well as the gear is made of plain carbon steel 40C8 (Sut = 600 N/mm^2). The factor of safety can be taken as 1.5. Design the gears, specify their dimensions. Assume number of teeth on pinion as 18. **07**

b) The piston rod of a hydraulic cylinder exerts an operating force of 10 kN. The friction due to piston packing and stuffing box is equivalent to 10% of the operating force. The pressure in the cylinder is 10 MPa. The cylinder is made of cast iron FG200 and the factor of safety is 5. Determine the diameter and the thickness of the cylinder. **04**

c) Explain types of end closures. **03**

Q.4 **a)** It has been observed from a sample of 200 bearing bushes that the internal diameters are normally distributed with a mean of 30.010 mm and a standard deviation of 0.008 mm. The upper and lower limits for the internal diameter, as specified by the designer, are 30.02 and 30.00 mm respectively. Calculate the percentage of rejected bushes. **07**

b) What do you mean by Autofrettage? Explain the methods of autofrettage. **05**

c) Define Beam Strength and Wear Strength for spur gears. **02**

Section – II

Q.5	**a)**	A pair of bevel gears transmitting 7.5 kW at 300 rpm having pitch circle diameters of pinion and gear as 200 mm and 150 mm. The face width is 40 mm. The pressure angle is 20°. Determine the components of the resultant gear tooth force and draw a free-body diagram of forces acting on the pinion and the gear.	**07**
	b)	Derive expression for beam strength of bevel gear.	**07**
Q.6	**a)**	A pair of worm and worm wheel is designated as 3/60/10/6. The worm is transmitting 5 kW power at 1440 rpm to the worm wheel. The coefficient of friction is 0.1 and the normal pressure angle is 20°. Determine the components of the gear tooth force acting on the worm and the worm wheel.	**07**
	b)	Derive expression for efficiency of worm gear drive.	**04**
	c)	Explain the working principle of Hydrodynamic Journal Bearing	**03**
Q.7	**a)**	Explain the procedure for selection of bearing from Manufacturers catalogue.	**04**
	b)	A single-row deep groove ball bearing has a dynamic load capacity of 40500 N and operates on the following work cycle: i) radial load of 5000 N at 500 rpm for 25% of the time; ii) radial load of 10000 N at 700 rpm for 50% of the time; iii) radial load of 7000 N at 400 rpm for the remaining 25% of the time. Calculate the expected life of the bearing in hours.	**06**
	c)	Write a short note on Bearing materials for sliding contact bearings.	**04**

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Design – II (197041601)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) A cylinder is considered thin when the ratio of its inner diameter to wall thickness is _____.
a) less than 15 b) more than 15
c) more than 20 d) less than 20

2) When the design tolerance is slightly greater than $(\pm 3\hat{\sigma})$?
a) the percentage of rejected components is inevitable
b) there is virtually no rejection provided that the manufacturing process is centred
c) there is no rejection even if the manufacturing process is slightly off-center
d) none of the above

3) The bevel factor is given as _____.
a) $\mathrm{b/L}$ b) $\mathrm{b/2L}$
c) $1 - \mathrm{b/2L}$ d) $1 - \mathrm{b/L}$

4) When bevel gears having equal teeth and equal pitch angles connect two shafts intersecting at 90° then they are known as _____.
a) Angular bevel gears b) Crown bevel gears
c) Internal bevel gears d) Mitre gears

5) The worm wheel should be _____.
a) Embeddable and conformable b) Hard and conformable
c) Hard and embeddable d) None of the above

6) Number of starts on the worm depends upon _____.
a) Speed of the worm b) Speed of the worm wheel
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a) Bore size b) Series of bearing
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a) 50% b) 90%
c) 99% d) 10%

9) When length of bearing is greater than the diameter of the journal it is called as _____.

a) Short bearing b) Long bearing
c) Square bearing d) All of these

10) The product of diametric pitch and circular pitch is equal to _____.

a) 2π b) $2/\pi$
c) π d) None of the above

11) The breakdown of the oil film in gear causes _____.

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c) Speed d) All of the above

13) In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called _____.

a) Normal pitch b) Axial pitch
c) Diametric pitch d) Module

14) For designing a cylinder with ductile material having both ends open _____.

a) Clavarino's equation is used b) Birnies equation is used
c) Lame's equation is used d) Any equation can be used

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Design – II (197041601)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2 **a)** Differentiate between Spur gears and Helical Gears **03**

b) Outline the various types of gear tooth failures and explain the causes and remedies for the same. **04**

c) A pair of parallel helical gears consists of a 20 teeth pinion meshing with a 100 teeth gear. The pinion rotates at 720 rpm. The normal pressure angle is 20°, while the helix angle is 25°. The face width is 40 mm and the normal module is 4 mm. The pinion as well as the gear is made of steel 40C8 (Sut = 600 N/mm^2) and heat treated to a surface hardness of 300 BHN. The service factor and the factor of safety are 1.5 and 2 respectively. Assume that the velocity factor accounts for the dynamic load and calculate the power transmitting capacity of gears. Y27 = 0.3475. **07**

Q.3 **a)** It is required to design a pair of spur gears with 20° full-depth involute teeth based on the Lewis equation. The velocity factor is to be used to account for dynamic load. The pinion shaft is connected to a 10 kW, 1440 rpm motor. The starting torque of the motor is 150% of the rated torque. The speed reduction is 4:1. The pinion as well as the gear is made of plain carbon steel 40C8 (Sut = 600 N/mm^2). The factor of safety can be taken as 1.5. Design the gears, specify their dimensions. Assume number of teeth on pinion as 18. **07**

b) The piston rod of a hydraulic cylinder exerts an operating force of 10 kN. The friction due to piston packing and stuffing box is equivalent to 10% of the operating force. The pressure in the cylinder is 10 MPa. The cylinder is made of cast iron FG200 and the factor of safety is 5. Determine the diameter and the thickness of the cylinder. **04**

c) Explain types of end closures. **03**

Q.4 **a)** It has been observed from a sample of 200 bearing bushes that the internal diameters are normally distributed with a mean of 30.010 mm and a standard deviation of 0.008 mm. The upper and lower limits for the internal diameter, as specified by the designer, are 30.02 and 30.00 mm respectively. Calculate the percentage of rejected bushes. **07**

b) What do you mean by Autofrettage? Explain the methods of autofrettage. **05**

c) Define Beam Strength and Wear Strength for spur gears. **02**

Section – II

Q.5	**a)**	A pair of bevel gears transmitting 7.5 kW at 300 rpm having pitch circle diameters of pinion and gear as 200 mm and 150 mm. The face width is 40 mm. The pressure angle is 20°. Determine the components of the resultant gear tooth force and draw a free-body diagram of forces acting on the pinion and the gear.	**07**
	b)	Derive expression for beam strength of bevel gear.	**07**
Q.6	**a)**	A pair of worm and worm wheel is designated as 3/60/10/6. The worm is transmitting 5 kW power at 1440 rpm to the worm wheel. The coefficient of friction is 0.1 and the normal pressure angle is 20°. Determine the components of the gear tooth force acting on the worm and the worm wheel.	**07**
	b)	Derive expression for efficiency of worm gear drive.	**04**
	c)	Explain the working principle of Hydrodynamic Journal Bearing	**03**
Q.7	**a)**	Explain the procedure for selection of bearing from Manufacturers catalogue.	**04**
	b)	A single-row deep groove ball bearing has a dynamic load capacity of 40500 N and operates on the following work cycle: i) radial load of 5000 N at 500 rpm for 25% of the time; ii) radial load of 10000 N at 700 rpm for 50% of the time; iii) radial load of 7000 N at 400 rpm for the remaining 25% of the time. Calculate the expected life of the bearing in hours.	**06**
	c)	Write a short note on Bearing materials for sliding contact bearings.	**04**

SLR-GF-143

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation & Control (197041602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) Use of a non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In a rotameter, the flow is inferred from _____.
a) Force balance on float b) Direction of flow
c) Position of float d) Colour change

2) Which temperature sensor operates on the principle of Seebeck effect?
a) Thermocouple b) RTD
c) Thermistor d) All of the above

3) Which of the following temperature scale is based on the freezing point and boiling point of water at standard atmospheric pressure?
a) Centigrade and Fahrenheit b) Kelvin and Rankine
c) Thermodynamic d) International

4) An LVDT is a type of _____.
a) Analog-to-Digital converter b) Capacitive sensor
c) Digital-to-Analog converter d) Inductive Sensor

5) A hot wire anemometer measure _____.
a) Temperature b) Pressure
c) Flow velocity d) Humidity

6) In a hydraulic load cell, the load is applied on _____.
a) Piston b) Diaphragm
c) Bellows d) None of the above

7) Which of the following devices is used to measure force based on the deformation of a circular ring?
a) Strain gauge b) Dynamometer
c) Proving ring d) Pneumatic load cell

8) An example of open-loop control system is _____.
a) Automatic washing machine
b) Thermostat-controlled heating system
c) Cruise control in a car
d) None of the above

9) In the block diagram reduction technique, the transfer function of series-connected blocks can be obtained by _____.
a) Adding the transfer functions
b) Subtracting the transfer functions
c) Multiplying the transfer functions
d) Dividing the transfer functions

10) The derivative (D) controller mode adjusts the controller output based on the _____.
a) Error between Set point and process variable
b) Accumulated error over time
c) Rate of change of the error
d) None of the above

11) Angle of departure in a root locus is to be calculated if a system has _____.
a) Real Poles b) Real Zeros
c) Complex Conjugate Poles d) Complex Conjugate Zeros

12) If a system has 3 asymptotes, then the angle of asymptotes are _____.
a) 60°, 180° and 300° b) 90°, 180° and 270°
c) 30°, 150° and 270° d) 0°, 180° and 360°

13) A bode plot is a graphical representation of _____.
a) Magnitude and Phase of the frequency response
b) Time response of a system
c) Impulse response of a system
d) None of the above

14) In the magnitude plot, the slope changes at _____.
a) Gain crossover frequency b) Phase crossover frequency
c) Every corner frequency d) Zero dB magnitude

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation & Control (197041602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and state it clearly.
5) Use university graph paper and semi-log paper if required.

Section – I

Q.2 **a)** Explain with a neat diagram, the function of each element in the generalized measurement system. **07**

b) Discuss in detail the working of the Pneumatic Load cell with a neat diagram. **07**

Q.3 **a)** Explain with a neat diagram, the working of the Potentiometer. **07**

b) Derive the expression for the Gauge factor of the resistance strain gauge. **07**

Q.4 **a)** Discuss the working of a Hot wire anemometer with their modes of operation. **07**

b) Explain the construction and working of RTD. **07**

Section – II

Q.5 **a)** Explain the PI control mode, stating its characteristics. **07**

b) Sketch the root locus for system with unity feedback transfer function. **07**

$$G(s)H(s) = \frac{K(s+4)}{s(s^2+2s+2)}$$

Comment on the stability of the system.

Q.6 **a)** Discuss the rules to construct the root locus. **07**

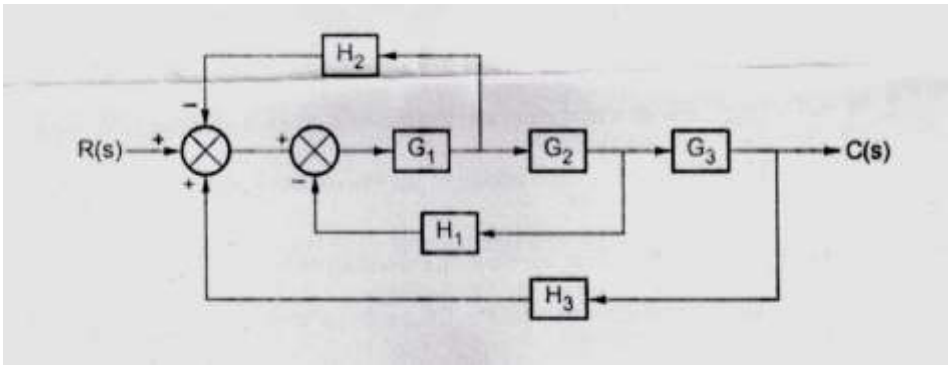
b) For the unity feedback system with open-loop transfer function given by. **07**

$$G(s) = \frac{50}{s(s+2)(s+10)}$$

Sketch Bode Plot. Determine gain crossover frequency, phase crossover frequency, gain margin and phase margin.

Q.7 **a)** Explain the nature of Bode Plots for system gain "K". **07**

b) Determine the overall transfer function of the system shown in fig. given below using block diagram reduction rules. **07**



Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation & Control (197041602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) Use of a non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) An example of open-loop control system is _____.
a) Automatic washing machine
b) Thermostat-controlled heating system
c) Cruise control in a car
d) None of the above

2) In the block diagram reduction technique, the transfer function of series-connected blocks can be obtained by _____.
a) Adding the transfer functions
b) Subtracting the transfer functions
c) Multiplying the transfer functions
d) Dividing the transfer functions

3) The derivative (D) controller mode adjusts the controller output based on the _____.
a) Error between Set point and process variable
b) Accumulated error over time
c) Rate of change of the error
d) None of the above

4) Angle of departure in a root locus is to be calculated if a system has _____.
a) Real Poles b) Real Zeros
c) Complex Conjugate Poles d) Complex Conjugate Zeros

5) If a system has 3 asymptotes, then the angle of asymptotes are _____.
a) 60°, 180° and 300° b) 90°, 180° and 270°
c) 30°, 150° and 270° d) 0°, 180° and 360°

6) A bode plot is a graphical representation of _____.
a) Magnitude and Phase of the frequency response
b) Time response of a system
c) Impulse response of a system
d) None of the above

7) In the magnitude plot, the slope changes at _____.
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a) Force balance on float b) Direction of flow
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9) Which temperature sensor operates on the principle of Seebeck effect?
a) Thermocouple b) RTD
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10) Which of the following temperature scale is based on the freezing point and boiling point of water at standard atmospheric pressure?
a) Centigrade and Fahrenheit b) Kelvin and Rankine
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a) Temperature b) Pressure
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13) In a hydraulic load cell, the load is applied on _____.
a) Piston b) Diaphragm
c) Bellows d) None of the above

14) Which of the following devices is used to measure force based on the deformation of a circular ring?
a) Strain gauge b) Dynamometer
c) Proving ring d) Pneumatic load cell

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation & Control (197041602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and state it clearly.
5) Use university graph paper and semi-log paper if required.

Section – I

Q.2 **a)** Explain with a neat diagram, the function of each element in the generalized measurement system. **07**

b) Discuss in detail the working of the Pneumatic Load cell with a neat diagram. **07**

Q.3 **a)** Explain with a neat diagram, the working of the Potentiometer. **07**

b) Derive the expression for the Gauge factor of the resistance strain gauge. **07**

Q.4 **a)** Discuss the working of a Hot wire anemometer with their modes of operation. **07**

b) Explain the construction and working of RTD. **07**

Section – II

Q.5 **a)** Explain the PI control mode, stating its characteristics. **07**

b) Sketch the root locus for system with unity feedback transfer function. **07**

$$G(s)H(s) = \frac{K(s+4)}{s(s^2+2s+2)}$$

Comment on the stability of the system.

Q.6 **a)** Discuss the rules to construct the root locus. **07**

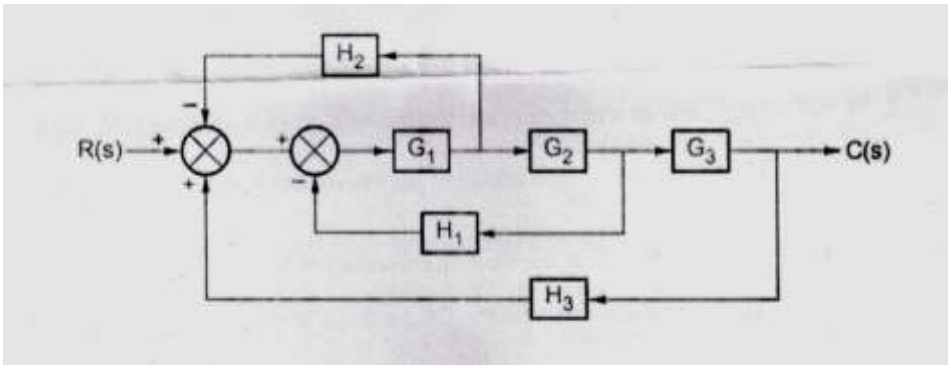
b) For the unity feedback system with open-loop transfer function given by. **07**

$$G(s) = \frac{50}{s(s+2)(s+10)}$$

Sketch Bode Plot. Determine gain crossover frequency, phase crossover frequency, gain margin and phase margin.

Q.7 **a)** Explain the nature of Bode Plots for system gain "K". **07**

b) Determine the overall transfer function of the system shown in fig. given below using block diagram reduction rules. **07**



SLR-GF-143

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation & Control (197041602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) Use of a non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Angle of departure in a root locus is to be calculated if a system has _____.
a) Real Poles b) Real Zeros
c) Complex Conjugate Poles d) Complex Conjugate Zeros

2) If a system has 3 asymptotes, then the angle of asymptotes are _____.
a) 60°, 180° and 300° b) 90°, 180° and 270°
c) 30°, 150° and 270° d) 0°, 180° and 360°

3) A bode plot is a graphical representation of _____.
a) Magnitude and Phase of the frequency response
b) Time response of a system
c) Impulse response of a system
d) None of the above

4) In the magnitude plot, the slope changes at _____.
a) Gain crossover frequency b) Phase crossover frequency
c) Every corner frequency d) Zero dB magnitude

5) In a rotameter, the flow is inferred from _____.
a) Force balance on float b) Direction of flow
c) Position of float d) Colour change

6) Which temperature sensor operates on the principle of Seebeck effect?
a) Thermocouple b) RTD
c) Thermistor d) All of the above

7) Which of the following temperature scale is based on the freezing point and boiling point of water at standard atmospheric pressure?
a) Centigrade and Fahrenheit b) Kelvin and Rankine
c) Thermodynamic d) International

8) An LVDT is a type of _____.
a) Analog-to-Digital converter b) Capacitive sensor
c) Digital-to-Analog converter d) Inductive Sensor

9) A hot wire anemometer measure _____.
a) Temperature b) Pressure
c) Flow velocity d) Humidity

10) In a hydraulic load cell, the load is applied on _____.
a) Piston b) Diaphragm
c) Bellows d) None of the above

11) Which of the following devices is used to measure force based on the deformation of a circular ring?
a) Strain gauge b) Dynamometer
c) Proving ring d) Pneumatic load cell

12) An example of open-loop control system is _____.
a) Automatic washing machine
b) Thermostat-controlled heating system
c) Cruise control in a car
d) None of the above

13) In the block diagram reduction technique, the transfer function of series-connected blocks can be obtained by _____.
a) Adding the transfer functions
b) Subtracting the transfer functions
c) Multiplying the transfer functions
d) Dividing the transfer functions

14) The derivative (D) controller mode adjusts the controller output based on the _____.
a) Error between Set point and process variable
b) Accumulated error over time
c) Rate of change of the error
d) None of the above

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation & Control (197041602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and state it clearly.
5) Use university graph paper and semi-log paper if required.

Section – I

Q.2 **a)** Explain with a neat diagram, the function of each element in the generalized measurement system. **07**

b) Discuss in detail the working of the Pneumatic Load cell with a neat diagram. **07**

Q.3 **a)** Explain with a neat diagram, the working of the Potentiometer. **07**

b) Derive the expression for the Gauge factor of the resistance strain gauge. **07**

Q.4 **a)** Discuss the working of a Hot wire anemometer with their modes of operation. **07**

b) Explain the construction and working of RTD. **07**

Section – II

Q.5 **a)** Explain the PI control mode, stating its characteristics. **07**

b) Sketch the root locus for system with unity feedback transfer function. **07**

$$G(s)H(s) = \frac{K(s+4)}{s(s^2+2s+2)}$$

Comment on the stability of the system.

Q.6 **a)** Discuss the rules to construct the root locus. **07**

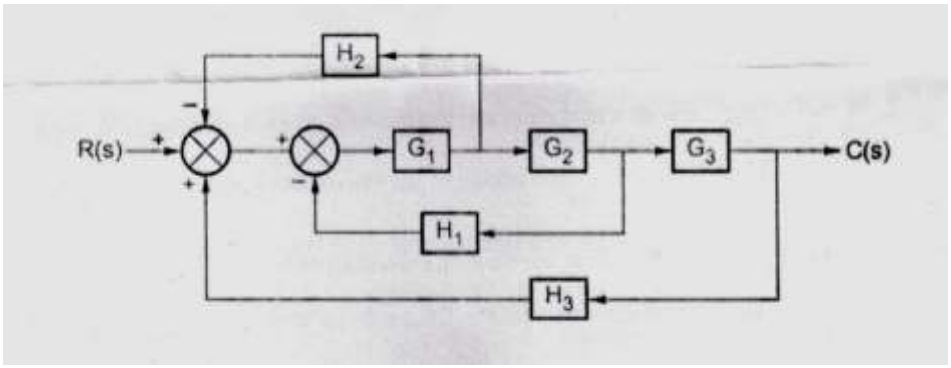
b) For the unity feedback system with open-loop transfer function given by. **07**

$$G(s) = \frac{50}{s(s+2)(s+10)}$$

Sketch Bode Plot. Determine gain crossover frequency, phase crossover frequency, gain margin and phase margin.

Q.7 **a)** Explain the nature of Bode Plots for system gain "K". **07**

b) Determine the overall transfer function of the system shown in fig. given below using block diagram reduction rules. **07**



Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation & Control (197041602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) Use of a non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In a hydraulic load cell, the load is applied on _____.
a) Piston b) Diaphragm
c) Bellows d) None of the above

2) Which of the following devices is used to measure force based on the deformation of a circular ring?
a) Strain gauge b) Dynamometer
c) Proving ring d) Pneumatic load cell

3) An example of open-loop control system is _____.
a) Automatic washing machine
b) Thermostat-controlled heating system
c) Cruise control in a car
d) None of the above

4) In the block diagram reduction technique, the transfer function of series-connected blocks can be obtained by _____.
a) Adding the transfer functions
b) Subtracting the transfer functions
c) Multiplying the transfer functions
d) Dividing the transfer functions

5) The derivative (D) controller mode adjusts the controller output based on the _____.
a) Error between Set point and process variable
b) Accumulated error over time
c) Rate of change of the error
d) None of the above

6) Angle of departure in a root locus is to be calculated if a system has _____.
a) Real Poles b) Real Zeros
c) Complex Conjugate Poles d) Complex Conjugate Zeros

7) If a system has 3 asymptotes, then the angle of asymptotes are _____.
a) 60°, 180° and 300° b) 90°, 180° and 270°
c) 30°, 150° and 270° d) 0°, 180° and 360°

8) A bode plot is a graphical representation of _____.
a) Magnitude and Phase of the frequency response
b) Time response of a system
c) Impulse response of a system
d) None of the above

9) In the magnitude plot, the slope changes at _____.
a) Gain crossover frequency b) Phase crossover frequency
c) Every corner frequency d) Zero dB magnitude

10) In a rotameter, the flow is inferred from _____.
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c) Position of float d) Colour change

11) Which temperature sensor operates on the principle of Seebeck effect?
a) Thermocouple b) RTD
c) Thermistor d) All of the above

12) Which of the following temperature scale is based on the freezing point and boiling point of water at standard atmospheric pressure?
a) Centigrade and Fahrenheit b) Kelvin and Rankine
c) Thermodynamic d) International

13) An LVDT is a type of _____.
a) Analog-to-Digital converter b) Capacitive sensor
c) Digital-to-Analog converter d) Inductive Sensor

14) A hot wire anemometer measure _____.
a) Temperature b) Pressure
c) Flow velocity d) Humidity

SLR-GF-143

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Instrumentation & Control (197041602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary and state it clearly.
5) Use university graph paper and semi-log paper if required.

Section – I

Q.2 **a)** Explain with a neat diagram, the function of each element in the generalized measurement system. **07**

b) Discuss in detail the working of the Pneumatic Load cell with a neat diagram. **07**

Q.3 **a)** Explain with a neat diagram, the working of the Potentiometer. **07**

b) Derive the expression for the Gauge factor of the resistance strain gauge. **07**

Q.4 **a)** Discuss the working of a Hot wire anemometer with their modes of operation. **07**

b) Explain the construction and working of RTD. **07**

Section – II

Q.5 **a)** Explain the PI control mode, stating its characteristics. **07**

b) Sketch the root locus for system with unity feedback transfer function. **07**

$$G(s)H(s) = \frac{K(s+4)}{s(s^2+2s+2)}$$

Comment on the stability of the system.

Q.6 **a)** Discuss the rules to construct the root locus. **07**

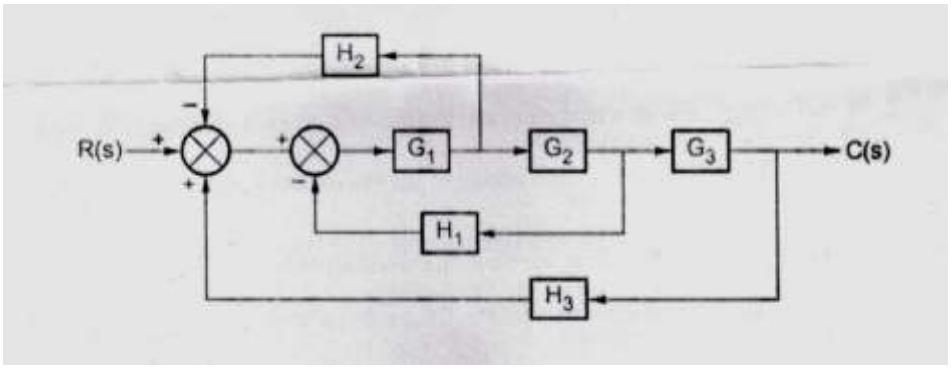
b) For the unity feedback system with open-loop transfer function given by. **07**

$$G(s) = \frac{50}{s(s+2)(s+10)}$$

Sketch Bode Plot. Determine gain crossover frequency, phase crossover frequency, gain margin and phase margin.

Q.7 **a)** Explain the nature of Bode Plots for system gain "K". **07**

b) Determine the overall transfer function of the system shown in fig. given below using block diagram reduction rules. **07**



SLR-GF-144

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (197041603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.
5) Use of non-programmable calculator, table, psychrometry chart are allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Heat transfer from higher temperature to low temperature takes place according to _____.
a) Fourier law
b) First law of thermodynamics
c) Second law of thermodynamics
d) None of these

2) _____number is generally associated with natural convection heat transfer.
a) Prandtl b) Grashoff
c) Nusselt d) None of these

3) An automobile radiator is _____ type of heat exchanger.
a) Parallel flow b) Counter flow
c) Cross flow d) None of these

4) Lumped parameter analysis for transient heat condition is essentially valid for____.
a) Bi < 0.1 b) 0.1 < Bi < 0.5
c) 1 < Bi < 10 d) None of above

5) Heat transfer by radiation is encountered least in: _____.
a) Boiler furnace b) insulated steam pipe
c) electric bulb d) None of these

6) As the temperature increases the thermal conductivity of gas, _____.
a) increases b) decreases
c) remains constant d) none of these

7) When heat is Transferred by molecular collision, it is referred to as heat transfer by _____.
a) conduction b) convection
c) motion d) none of these

8) The concept of overall coefficient of heat transfer is used in heat transfer problems of _____.

a) conduction b) convection
c) conduction and convection d) all the three combined

9) Which of the following has maximum value of thermal conductivity?

a) aluminium b) wood
c) plastic d) none

10) Heat transfer by radiation mainly depends upon _____.

a) its temperature b) nature of the body
c) kind and extent of its surface d) all of the above

11) A perfect black body is one which _____.

a) is black in colour
b) reflects all heat
c) transmits all heat radiations
d) absorbs heat radiations of all wave lengths falling on it

12) Log mean temperature difference in case of counter flow compared to parallel flow will be _____.

a) same b) more
c) less d) depends on other factors

13) Stefan Boltzmann law is applicable for heat transfer by _____.

a) conduction
b) convection
c) radiation
d) conduction and radiation combined

14) A perfect black body is one which _____.

a) is black in colour
b) reflects all heat
c) transmits all heat radiations
d) absorbs heat radiations of all wave lengths falling on it

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (197041603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Use of non-programmable calculator, table, psychrometry chart are allowed.

Section – I

Q.2 Attempt the following questions.

a) Define thermal conductivity. What are its units? Explain the effect of temperature on conductivity of solids. **04**

b) Derive an expression for steady state one dimensional heat flow through the hollow cylinder without heat generation. **05**

c) An exterior wall of a house consists of a 10.16 cm layer of common brick having thermal conductivity 0.7 W/mK. It is followed by a 3.8 cm layer of gypsum plaster with thermal conductivity 0.48 W/mK, What thickness of loosely packed rockwool insulation (k = 0.065 W/mK) should be added to reduce the heat loss through the wall by 80%? **05**

Q.3 Attempt the following questions.

a) Define fin efficiency and fin effectiveness and explain the effect of Biot number on the effectiveness of fin. **06**

b) A pin-fin 2.5 mm diameter is made of copper (k = 396 W/mK). It protrudes from a wall maintained at 95°C and placed in 25°C air. The convective heat transfer coefficient over the fin is 10 W/m^2K. Calculate the heat loss for the fin length 25 mm. **08**

Q.4 Attempt the following questions.

a) Using the dimensional analysis, for natural convection heat transfer, show that $N_u = f(G_r, P_r)$. **06**

b) Water is heated while flowing through 1.5 cm × 3.5 cm rectangular tube at velocity of 1.2 m/s. The inlet temperature of water is 40°C and tube wall is maintained at 80°C. Determine the length of tube required to raise temperature of water by 35°C, Use the following properties of water at T_{bm}. Density = 985.5 kg/m^3, Conductivity = 0.653 W/mK, kinematic viscosity = 0.517×10^{-6} m^2/s, specific heat = 4.19 kJ/kg K,
Use the correlation: $Nu = 0.023\ Re^{0.8}\ Pr^{0.33}$ **08**

Section – II

Q.5 Attempt the following.

a) Explain the concept of velocity boundary layer and thermal boundary layer with the help of neat sketch. **06**

b) Calculate the heat transfer coefficient for water flowing through 25 mm diameter tube at the rate of 1.5 kg/s, when Tbm = 40°C for a turbulent flow of liquid. Use the correlation: $Nu = 0.0243\ Re^{0.3}Pr^{0.4}$ **08**

Q.6 Attempt the following questions.

a) State Plancks law of radiation and hence derive Wiens displacement law. **06**

b) The filament of 7.5 W light bulb may be considered a black body radiating into a black enclosure at 70°C. The filament diameter is 0.1 mm and length are 50 mm. Considering the radiation, determine the filament temperature. **08**

Q.7 Attempt the following questions.

a) Explain the pool boiling curve with the help of neat sketch. **06**

b) Derive the relation for logarithmic mean temperature difference (LMTD) for counter flow heat exchanger. **08**

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (197041603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever necessary.
5) Use of non-programmable calculator, table, psychrometry chart are allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The concept of overall coefficient of heat transfer is used in heat transfer problems of _____.
a) conduction b) convection
c) conduction and convection d) all the three combined

2) Which of the following has maximum value of thermal conductivity?
a) aluminium b) wood
c) plastic d) none

3) Heat transfer by radiation mainly depends upon _____.
a) its temperature b) nature of the body
c) kind and extent of its surface d) all of the above

4) A perfect black body is one which _____.
a) is black in colour
b) reflects all heat
c) transmits all heat radiations
d) absorbs heat radiations of all wave lengths falling on it

5) Log mean temperature difference in case of counter flow compared to parallel flow will be _____.
a) same b) more
c) less d) depends on other factors

6) Stefan Boltzmann law is applicable for heat transfer by _____.
a) conduction
b) convection
c) radiation
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a) Fourier law
b) First law of thermodynamics
c) Second law of thermodynamics
d) None of these

9) _____number is generally associated with natural convection heat transfer.
a) Prandtl
b) Grashoff
c) Nusselt
d) None of these

10) An automobile radiator is _____ type of heat exchanger.
a) Parallel flow
b) Counter flow
c) Cross flow
d) None of these

11) Lumped parameter analysis for transient heat condition is essentially valid for____.
a) Bi < 0.1
b) 0.1 < Bi < 0.5
c) 1 < Bi < 10
d) None of above

12) Heat transfer by radiation is encountered least in: _____.
a) Boiler furnace
b) insulated steam pipe
c) electric bulb
d) None of these

13) As the temperature increases the thermal conductivity of gas, _____.
a) increases
b) decreases
c) remains constant
d) none of these

14) When heat is Transferred by molecular collision, it is referred to as heat transfer by _____.
a) conduction
b) convection
c) motion
d) none of these

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (197041603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt the following questions.

a) Define thermal conductivity. What are its units? Explain the effect of temperature on conductivity of solids. **04**

b) Derive an expression for steady state one dimensional heat flow through the hollow cylinder without heat generation. **05**

c) An exterior wall of a house consists of a 10.16 cm layer of common brick having thermal conductivity 0.7 W/mK. It is followed by a 3.8 cm layer of gypsum plaster with thermal conductivity 0.48 W/mK, What thickness of loosely packed rockwool insulation (k = 0.065 W/mK) should be added to reduce the heat loss through the wall by 80%? **05**

Q.3 Attempt the following questions.

a) Define fin efficiency and fin effectiveness and explain the effect of Biot number on the effectiveness of fin. **06**

b) A pin-fin 2.5 mm diameter is made of copper (k = 396 W/mK). It protrudes from a wall maintained at 95°C and placed in 25°C air. The convective heat transfer coefficient over the fin is 10 W/m^2K. Calculate the heat loss for the fin length 25 mm. **08**

Q.4 Attempt the following questions.

a) Using the dimensional analysis, for natural convection heat transfer, show that $N_u = f(G_r, P_r)$. **06**

b) Water is heated while flowing through 1.5 cm × 3.5 cm rectangular tube at velocity of 1.2 m/s. The inlet temperature of water is 40°C and tube wall is maintained at 80°C. Determine the length of tube required to raise temperature of water by 35°C, Use the following properties of water at T_{bm}. Density = 985.5 kg/m^3, Conductivity = 0.653 W/mK, kinematic viscosity = 0.517×10^{-6} m^2/s, specific heat = 4.19 kJ/kg K,
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Section – II

Q.5 Attempt the following.

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b) The filament of 7.5 W light bulb may be considered a black body radiating into a black enclosure at 70°C. The filament diameter is 0.1 mm and length are 50 mm. Considering the radiation, determine the filament temperature. **08**

Q.7 Attempt the following questions.

a) Explain the pool boiling curve with the help of neat sketch. **06**

b) Derive the relation for logarithmic mean temperature difference (LMTD) for counter flow heat exchanger. **08**

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (197041603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.
5) Use of non-programmable calculator, table, psychrometry chart are allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) A perfect black body is one which _____.
a) is black in colour
b) reflects all heat
c) transmits all heat radiations
d) absorbs heat radiations of all wave lengths falling on it

2) Log mean temperature difference in case of counter flow compared to parallel flow will be _____.
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c) less d) depends on other factors

3) Stefan Boltzmann law is applicable for heat transfer by _____.
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c) radiation
d) conduction and radiation combined

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c) Second law of thermodynamics
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7) An automobile radiator is _____ type of heat exchanger.
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c) Cross flow d) None of these

8) Lumped parameter analysis for transient heat condition is essentially valid for____.
a) Bi < 0.1 b) 0.1 < Bi < 0.5
c) 1 < Bi < 10 d) None of above

9) Heat transfer by radiation is encountered least in: _____.
a) Boiler furnace b) insulated steam pipe
c) electric bulb d) None of these

10) As the temperature increases the thermal conductivity of gas, _____.
a) increases b) decreases
c) remains constant d) none of these

11) When heat is Transferred by molecular collision, it is referred to as heat transfer by _____.
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12) The concept of overall coefficient of heat transfer is used in heat transfer problems of _____.
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13) Which of the following has maximum value of thermal conductivity?
a) aluminium b) wood
c) plastic d) none

14) Heat transfer by radiation mainly depends upon _____.
a) its temperature b) nature of the body
c) kind and extent of its surface d) all of the above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (197041603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Use of non-programmable calculator, table, psychrometry chart are allowed.

Section – I

Q.2 Attempt the following questions.

a) Define thermal conductivity. What are its units? Explain the effect of temperature on conductivity of solids. **04**

b) Derive an expression for steady state one dimensional heat flow through the hollow cylinder without heat generation. **05**

c) An exterior wall of a house consists of a 10.16 cm layer of common brick having thermal conductivity 0.7 W/mK. It is followed by a 3.8 cm layer of gypsum plaster with thermal conductivity 0.48 W/mK, What thickness of loosely packed rockwool insulation (k = 0.065 W/mK) should be added to reduce the heat loss through the wall by 80%? **05**

Q.3 Attempt the following questions.

a) Define fin efficiency and fin effectiveness and explain the effect of Biot number on the effectiveness of fin. **06**

b) A pin-fin 2.5 mm diameter is made of copper (k = 396 W/mK). It protrudes from a wall maintained at 95°C and placed in 25°C air. The convective heat transfer coefficient over the fin is 10 W/m^2K. Calculate the heat loss for the fin length 25 mm. **08**

Q.4 Attempt the following questions.

a) Using the dimensional analysis, for natural convection heat transfer, show that $N_u = f(G_r, P_r)$. **06**

b) Water is heated while flowing through 1.5 cm × 3.5 cm rectangular tube at velocity of 1.2 m/s. The inlet temperature of water is 40°C and tube wall is maintained at 80°C. Determine the length of tube required to raise temperature of water by 35°C, Use the following properties of water at T_{bm}. Density = 985.5 kg/m^3, Conductivity = 0.653 W/mK, kinematic viscosity = 0.517×10^{-6} m^2/s, specific heat = 4.19 kJ/kg K,
Use the correlation: $Nu = 0.023\ Re^{0.8}\ Pr^{0.33}$ **08**

Section – II

Q.5 Attempt the following.

a) Explain the concept of velocity boundary layer and thermal boundary layer with the help of neat sketch. **06**

b) Calculate the heat transfer coefficient for water flowing through 25 mm diameter tube at the rate of 1.5 kg/s, when Tbm = 40°C for a turbulent flow of liquid. Use the correlation: $Nu = 0.0243\ Re^{0.3}Pr^{0.4}$ **08**

Q.6 Attempt the following questions.

a) State Plancks law of radiation and hence derive Wiens displacement law. **06**

b) The filament of 7.5 W light bulb may be considered a black body radiating into a black enclosure at 70°C. The filament diameter is 0.1 mm and length are 50 mm. Considering the radiation, determine the filament temperature. **08**

Q.7 Attempt the following questions.

a) Explain the pool boiling curve with the help of neat sketch. **06**

b) Derive the relation for logarithmic mean temperature difference (LMTD) for counter flow heat exchanger. **08**

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (197041603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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5) Use of non-programmable calculator, table, psychrometry chart are allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) As the temperature increases the thermal conductivity of gas, _____.
a) increases b) decreases
c) remains constant d) none of these

2) When heat is Transferred by molecular collision, it is referred to as heat transfer by _____.
a) conduction b) convection
c) motion d) none of these

3) The concept of overall coefficient of heat transfer is used in heat transfer problems of _____.
a) conduction b) convection
c) conduction and convection d) all the three combined

4) Which of the following has maximum value of thermal conductivity?
a) aluminium b) wood
c) plastic d) none

5) Heat transfer by radiation mainly depends upon _____.
a) its temperature b) nature of the body
c) kind and extent of its surface d) all of the above

6) A perfect black body is one which _____.
a) is black in colour
b) reflects all heat
c) transmits all heat radiations
d) absorbs heat radiations of all wave lengths falling on it

7) Log mean temperature difference in case of counter flow compared to parallel flow will be _____.
a) same b) more
c) less d) depends on other factors

8) Stefan Boltzmann law is applicable for heat transfer by _____.
a) conduction
b) convection
c) radiation
d) conduction and radiation combined

9) A perfect black body is one which _____.
a) is black in colour
b) reflects all heat
c) transmits all heat radiations
d) absorbs heat radiations of all wave lengths falling on it

10) Heat transfer from higher temperature to low temperature takes place according to _____.
a) Fourier law
b) First law of thermodynamics
c) Second law of thermodynamics
d) None of these

11) _____number is generally associated with natural convection heat transfer.
a) Prandtl
b) Grashoff
c) Nusselt
d) None of these

12) An automobile radiator is _____ type of heat exchanger.
a) Parallel flow
b) Counter flow
c) Cross flow
d) None of these

13) Lumped parameter analysis for transient heat condition is essentially valid for____.
a) Bi < 0.1
b) 0.1 < Bi < 0.5
c) 1 < Bi < 10
d) None of above

14) Heat transfer by radiation is encountered least in: _____.
a) Boiler furnace
b) insulated steam pipe
c) electric bulb
d) None of these

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Heat Transfer (197041603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

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c) An exterior wall of a house consists of a 10.16 cm layer of common brick having thermal conductivity 0.7 W/mK. It is followed by a 3.8 cm layer of gypsum plaster with thermal conductivity 0.48 W/mK, What thickness of loosely packed rockwool insulation (k = 0.065 W/mK) should be added to reduce the heat loss through the wall by 80%? **05**

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Section – II

Q.5 Attempt the following.

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Q.7 Attempt the following questions.

a) Explain the pool boiling curve with the help of neat sketch. **06**

b) Derive the relation for logarithmic mean temperature difference (LMTD) for counter flow heat exchanger. **08**

Seat No.	

Set | P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (197041604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Assume suitable data if necessary.
4) Draw neat, suitable diagrams whenever required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve MCQs (Each Correct answer-1 Mark) **14**

1) The Quality depends upon the _____ of a person in a given situations.
a) Vision b) Perspective
c) Standards of situation d) Thinking

2) In _____ style (referred to as impoverished management), managers concern themselves very little with either people or production and have minimum involvement in their jobs.
a) 1.1 b) 1.9
c) 9.9 d) 9.1

3) PDCA stands for _____.
a) Production, Duty, Cycle and Act
b) Plan, Design, Check and Act
c) Plan, Do, Check and Act
d) Production, Do, Check and Act

4) The consecutive points of variation on X or R chart tend to move steadily towards LCL or UCL the pattern of variation is called as _____.
a) Extreme b) Shifts
c) Trend d) Erratic Fluctuations

5) Six Sigma implies _____.
a) A statistical method
b) Teams are effective
c) 3 defects per million in output
d) A trouble-shooting method

6) QFD is a method for _____.
a) Controlling quality in production
b) Finding out what customer wants
c) Translating customer needs to product specifications
d) None of the above

7) Cause and Effect Diagram is also called as _____.
a) Pareto diagram b) Fishbone diagram
c) Histogram d) Scatter diagram

8) The Producer's risk is denoted by _____.
a) λ b) β
c) α d) ρ

9) Territorial departmentation is especially attractive to _____ firms.
a) Medium Scale b) Small Scale
c) All d) Large Scale

10) Self-esteem, status, affiliation with others, affection these comes under _____ needs.
a) Basics b) Primary
c) Third Level d) Secondary

11) Vroom theory may be stated as _____
a) Valance = Force * Expectancy
b) Force = Valance * Expectancy
c) Result = Balance * Expectancy
d) Expectancy = Valance * Force

12) To earn more profit, the cost of capital should be _____.
a) Maximized b) Minimized
c) Same d) Can't Say

13) _____ mangement called country club management.
a) 9.1 b) 9.9
c) 5.5 d) 1.9

14) _____ leaders use his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) The Free rein
c) Democartic d) Ideal

SLR-GF-145

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (197041604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.
4) Draw neat, suitable diagrams whenever required.

Section – I

Q.2 **a)** Explain the system approach to management. Explain in detail. **07**
b) Write importance of departmentation. Explain departmentation by customer with suitable example. **07**

Q.3 **a)** What is controlling and explain process of controlling? **07**
b) What is delegation of authority? Write guideline to overcome weak delegation. **07**

Q.4 **a)** Write note on Leadership behaviour and Styles. Explain four extreme styles. **07**
b) Explain function of Marketing management. **07**

Section – II

Q.5 **a)** Write note on Supplier partnership. **07**
b) What is acceptance sampling? Explain sampling plan and types of sampling plan. **07**

Q.6 **a)** Write note on Total Quality Management (TQM). **07**
b) Write note on quality cost and its control. **07**

Q.7 **a)** In a foundry shop, it is reported that 20% of the products produced are defective. The quality manager has identified following causes for defective production: **07**

1) Material - Non homogenous lots, uncontrolled composition from various sources etc.
2) Process - Temperature variation, delay in filling molds, uncontrolled cooling, cleaning not proper
3) Machines - not maintained, old
4) Labour - Unskilled, lack of training, unaware
5) Tools - No maintenance, workout

Draw the Cause effect diagram.

b) Write procedure for preparation of ‘C’ type control chart. **07**

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (197041604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Draw neat, suitable diagrams whenever required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve MCQs (Each Correct answer-1 Mark) **14**

1) The Producer's risk is denoted by _____.
a) λ b) β
c) α d) ρ

2) Territorial departmentation is especially attractive to _____ firms.
a) Medium Scale b) Small Scale
c) All d) Large Scale

3) Self-esteem, status, affiliation with others, affection these comes under _____ needs.
a) Basics b) Primary
c) Third Level d) Secondary

4) Vroom theory may be stated as _____
a) Valance = Force * Expectancy
b) Force = Valance * Expectancy
c) Result = Balance * Expectancy
d) Expectancy = Valance * Force

5) To earn more profit, the cost of capital should be _____.
a) Maximized b) Minimized
c) Same d) Can't Say

6) _____ mangement called country club management.
a) 9.1 b) 9.9
c) 5.5 d) 1.9

7) _____ leaders use his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) The Free rein
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8) The Quality depends upon the _____ of a person in a given situations.
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9) In _____ style (referred to as impoverished management), managers concern themselves very little with either people or production and have minimum involvement in their jobs.

a) 1.1 b) 1.9
c) 9.9 d) 9.1

10) PDCA stands for _____.

a) Production, Duty, Cycle and Act
b) Plan, Design, Check and Act
c) Plan, Do, Check and Act
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11) The consecutive points of variation on X or R chart tend to move steadily towards LCL or UCL the pattern of variation is called as _____.

a) Extreme b) Shifts
c) Trend d) Erratic Fluctuations

12) Six Sigma implies _____.

a) A statistical method
b) Teams are effective
c) 3 defects per million in output
d) A trouble-shooting method

13) QFD is a method for _____.

a) Controlling quality in production
b) Finding out what customer wants
c) Translating customer needs to product specifications
d) None of the above

14) Cause and Effect Diagram is also called as _____.

a) Pareto diagram b) Fishbone diagram
c) Histogram d) Scatter diagram

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (197041604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Q.4 **a)** Write note on Leadership behaviour and Styles. Explain four extreme styles. **07**
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3) Machines - not maintained, old
4) Labour - Unskilled, lack of training, unaware
5) Tools - No maintenance, workout

Draw the Cause effect diagram.

b) Write procedure for preparation of ‘C’ type control chart. **07**

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (197041604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve MCQs (Each Correct answer-1 Mark) **14**

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a) λ b) β
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13) Territorial departmentation is especially attractive to _____ firms.

a) Medium Scale b) Small Scale
c) All d) Large Scale

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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (197041604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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5) Tools - No maintenance, workout

Draw the Cause effect diagram.

b) Write procedure for preparation of ‘C’ type control chart. **07**

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (197041604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve MCQs (Each Correct answer-1 Mark) **14**

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a) Extreme
b) Shifts
c) Trend
d) Erratic Fluctuations

14) Six Sigma implies _____.

a) A statistical method
b) Teams are effective
c) 3 defects per million in output
d) A trouble-shooting method

SLR-GF-145

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial & Quality Management (197041604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
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Section – I

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b) What is delegation of authority? Write guideline to overcome weak delegation. **07**

Q.4 **a)** Write note on Leadership behaviour and Styles. Explain four extreme styles. **07**
b) Explain function of Marketing management. **07**

Section – II

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2) Process - Temperature variation, delay in filling molds, uncontrolled cooling, cleaning not proper
3) Machines - not maintained, old
4) Labour - Unskilled, lack of training, unaware
5) Tools - No maintenance, workout

Draw the Cause effect diagram.

b) Write procedure for preparation of ‘C’ type control chart. **07**

SLR-GF-146

Seat No.		Set	P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (197041608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If any one factor of a project changes, _____ other factor (s) is/are likely to be affected.
a) all b) one
c) at least one d) at most one

2) A horizontal bar chart that shows project tasks against a calendar is called ___.
a) Milestone b) Goal
c) Gantt chart d) PERT chart

3) While assessing your project processes, you have identified some uncontrolled process variations. Which of the following would be the appropriate chart you may use for this purpose?
a) Pareto diagram b) PERT chart
c) Control chart d) HR personnel chart

4) Projects management is divided in _____ process groups.
a) 5 b) 7
c) 9 d) 11

5) The PERT in project management means program evaluation and _____ technique.
a) resource b) reconciliation
c) reconsideration d) review

6) Which one of the following statements is not true?
a) Risk register facilitates the review and monitoring of risks
b) Risk register facilitates the risk appetite
c) Risk register facilitates the recording of risk responses
d) Risk register facilitates the recording of risks

7) As the project progresses, the risk is usually _____.
a) Increases b) Reduces
c) Remained same d) None of the above

8) In which of the following approaches, Spreadsheets and project management software's are used to estimate cost?

a) Top Down Approach b) Bottom Up Approach
c) Parametric Approach d) Computerized Approach

9) The PERT in project management means program evaluation and technique _____.

a) Resource b) Reconciliation
c) Reconsideration d) Review

10) Scheduling used to determine: _____.

a) Overall project duration
b) Project cost estimating
c) the project management plan
d) sub-contractor's responsibilities

11) Which of the following is not required in Project performance evaluation?

a) Time b) Cost
c) Quality d) Resources

12) Which of the following is a plan that shows how money will be spent over a certain period of time?

a) Cost Allocation b) Budget
c) Financing d) Cost centers

13) Which one of the following is not considered in resource management?

a) Identifying resources
b) Influencing resources
c) Assigning resources to activities
d) Matching resources to the schedule

14) Assembling project team and assigning their responsibilities are done during which phase of a project management?

a) Initiation b) Planning
c) Execution d) Closure

SLR-GF-146

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (197041608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2	**a)**	Define project management and explain the benefits of project management.	**05**
	b)	Explain the process of project management in detail.	**05**
	c)	Write Short note on Bottom-up estimating.	**04**
Q.3	**a)**	Define Risk Management and Explain the steps of risk management.	**05**
	b)	Explain the risk analysis in detail.	**05**
	c)	Explain the project life cycle.	**04**
Q.4	**a)**	Explain analogous estimating and Parametric estimating.	**05**
	b)	Describe the Resource allocation.	**05**
	c)	Write a short note on Payback period.	**04**

Section – II

Q.5	**a)**	Explain the need for Project planning.	**05**
	b)	Explain the CPM and PERT in detail.	**05**
	c)	Write a short note on design of Project Management Information System (PMIS).	**04**
Q.6	**a)**	Describe the project control process.	**05**
	b)	Explain the advantages and challenges of performance measurement and evaluation.	**05**
	c)	Write a short note on Development of project network.	**04**
Q.7	**a)**	Explain the opportunity for use of computers in Project Management.	**05**
	b)	Explain the significance of productivity in project performance.	**05**
	c)	Write a short note on Work Breakdown Structure (WBS).	**04**

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (197041608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In which of the following approaches, Spreadsheets and project management software's are used to estimate cost?
a) Top Down Approach b) Bottom Up Approach
c) Parametric Approach d) Computerized Approach

2) The PERT in project management means program evaluation and technique _____.
a) Resource b) Reconciliation
c) Reconsideration d) Review

3) Scheduling used to determine: _____.
a) Overall project duration
b) Project cost estimating
c) the project management plan
d) sub-contractor's responsibilities

4) Which of the following is not required in Project performance evaluation?
a) Time b) Cost
c) Quality d) Resources

5) Which of the following is a plan that shows how money will be spent over a certain period of time?
a) Cost Allocation b) Budget
c) Financing d) Cost centers

6) Which one of the following is not considered in resource management?
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13) Which one of the following statements is not true?

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SLR-GF-146

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (197041608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
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Section – I

Q.2	**a)**	Define project management and explain the benefits of project management.	**05**
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	b)	Explain the risk analysis in detail.	**05**
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Q.4	**a)**	Explain analogous estimating and Parametric estimating.	**05**
	b)	Describe the Resource allocation.	**05**
	c)	Write a short note on Payback period.	**04**

Section – II

Q.5	**a)**	Explain the need for Project planning.	**05**
	b)	Explain the CPM and PERT in detail.	**05**
	c)	Write a short note on design of Project Management Information System (PMIS).	**04**
Q.6	**a)**	Describe the project control process.	**05**
	b)	Explain the advantages and challenges of performance measurement and evaluation.	**05**
	c)	Write a short note on Development of project network.	**04**
Q.7	**a)**	Explain the opportunity for use of computers in Project Management.	**05**
	b)	Explain the significance of productivity in project performance.	**05**
	c)	Write a short note on Work Breakdown Structure (WBS).	**04**

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (197041608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is not required in Project performance evaluation?
a) Time b) Cost
c) Quality d) Resources

2) Which of the following is a plan that shows how money will be spent over a certain period of time?
a) Cost Allocation b) Budget
c) Financing d) Cost centers

3) Which one of the following is not considered in resource management?
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c) the project management plan
d) sub-contractor's responsibilities

SLR-GF-146

Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (197041608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
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Section – I

Q.2	**a)**	Define project management and explain the benefits of project management.	**05**
	b)	Explain the process of project management in detail.	**05**
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	b)	Explain the risk analysis in detail.	**05**
	c)	Explain the project life cycle.	**04**
Q.4	**a)**	Explain analogous estimating and Parametric estimating.	**05**
	b)	Describe the Resource allocation.	**05**
	c)	Write a short note on Payback period.	**04**

Section – II

Q.5	**a)**	Explain the need for Project planning.	**05**
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Q.7	**a)**	Explain the opportunity for use of computers in Project Management.	**05**
	b)	Explain the significance of productivity in project performance.	**05**
	c)	Write a short note on Work Breakdown Structure (WBS).	**04**

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (197041608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

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c) reconsideration d) review

SLR-GF-146

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Project Management (197041608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
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Section – I

Q.2	**a)**	Define project management and explain the benefits of project management.	**05**
	b)	Explain the process of project management in detail.	**05**
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Q.3	**a)**	Define Risk Management and Explain the steps of risk management.	**05**
	b)	Explain the risk analysis in detail.	**05**
	c)	Explain the project life cycle.	**04**
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	b)	Describe the Resource allocation.	**05**
	c)	Write a short note on Payback period.	**04**

Section – II

Q.5	**a)**	Explain the need for Project planning.	**05**
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Q.7	**a)**	Explain the opportunity for use of computers in Project Management.	**05**
	b)	Explain the significance of productivity in project performance.	**05**
	c)	Write a short note on Work Breakdown Structure (WBS).	**04**

SLR-GF-147

Seat No.	

Set P

T. Y. (B.Tech.) (Sem – II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (197041609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicate full marks.
4) Make suitable assumption if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options **14**

1) Tools for gathering customer need is?
a) Interviews b) Questionnaires
c) Be the Customer d) All of the above

2) The link between customer loyalty and customer satisfaction is _____.
a) Proportional b) Non-proportional
c) Unaffected d) None of the above

3) The following is the source(s) for developing new or improved product?
a) Research and Development department of the enterprise
b) Consumer suggestions and Complaints
c) Other competitive products in the market
d) All of the above

4) _____ Segmentation is a based-on parameters.
a) Geographic b) Demographic
c) Behavioral d) All of the above

5) Sustainable manufacturing is required for _____.
a) Conserving Recourses b) Proper Maintenance
c) Reuse d) All of the above

6) The _____ function plays the lead role in defining the physical form of the product to best meet customer needs.
a) Design b) Manufacturing
c) Marketing d) None of the above

7) In which of the following type the manufacturing cost may go up?
a) Standardization b) Simplification
c) Diversification d) All of the above

8) The necessity to know the environment in which the product will be used is termed _____.
a) Design Situation b) Design Analysis
c) Aesthetics d) Ergonomics

9) An attractive Idea must be developed in to a _____.
a) Product idea b) Product Concept
c) Product Image d) Test market

10) The purpose of _____ is to generate large number of ideas.
a) Idea Screening
b) Brain Storming
c) Concept development and Testing
d) Marketing Strategy Development

11) Which of the following statement is not correct?
a) Creativity is originality in any art
b) Thinking is not required for creativity
c) Creativity is new consequence of a work performed
d) None of the above

12) Fear of _____ blocks creativity.
a) Making Mistakes b) Being Criticised
c) Being Alone d) All of the above

13) A _____ is a detailed version of the idea stated in meaningful consumer terms.
a) Product idea b) Product image
c) Product concept d) Product feature

14) _____ is a three-dimensional area enclosed by a surface.
a) Form b) Shape
c) Line d) None of the above

SLR-GF-147

Seat No.		Set	P

T. Y. (B.Tech.) (Sem – II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (197041609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Make suitable assumption if required.

Section – I

Q.2 **a)** What is Industrial Product Design? **07**
b) Discuss the visual effect of line and form with suitable examples. **07**

Q.3 **a)** Discuss the ergonomic guidelines for designing machines. **07**
b) What are Human Factors in Design? **07**

Q.4 **Write short note (Any Two)** **14**
a) Psychology of Colour
b) Mechanics of seeing with suitable examples
c) Concept of aesthetics with suitable examples

Section – II

Q.5 **a)** How the creative ideas are generated with the help of brain storming session? How it is effectively conducted? **07**
b) Explain in detail design situation. **07**

Q.6 **a)** Explain role of setting specification and market requirements in product design. **07**
b) What are the characteristics of successful product development? **07**

Q.7 **Write short note (Any Two)** **14**
a) Principles of Design
b) Design Thinking
c) Product Planning

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem – II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (197041609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

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SLR-GF-147

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem – II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (197041609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
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Seat No.	

Set | R

T. Y. (B.Tech.) (Sem – II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (197041609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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4) _____ is a three-dimensional area enclosed by a surface.
a) Form b) Shape
c) Line d) None of the above

5) Tools for gathering customer need is?
a) Interviews b) Questionnaires
c) Be the Customer d) All of the above

6) The link between customer loyalty and customer satisfaction is _____.
a) Proportional b) Non-proportional
c) Unaffected d) None of the above

7) The following is the source(s) for developing new or improved product?
a) Research and Development department of the enterprise
b) Consumer suggestions and Complaints
c) Other competitive products in the market
d) All of the above

8) _____ Segmentation is a based-on parameters.
a) Geographic b) Demographic
c) Behavioral d) All of the above

9) Sustainable manufacturing is required for _____.
a) Conserving Recourses b) Proper Maintenance
c) Reuse d) All of the above

10) The _____ function plays the lead role in defining the physical form of the product to best meet customer needs.
a) Design b) Manufacturing
c) Marketing d) None of the above

11) In which of the following type the manufacturing cost may go up?
a) Standardization b) Simplification
c) Diversification d) All of the above

12) The necessity to know the environment in which the product will be used is termed _____.
a) Design Situation b) Design Analysis
c) Aesthetics d) Ergonomics

13) An attractive Idea must be developed in to a _____.
a) Product idea b) Product Concept
c) Product Image d) Test market

14) The purpose of _____ is to generate large number of ideas.
a) Idea Screening
b) Brain Storming
c) Concept development and Testing
d) Marketing Strategy Development

Seat No.	

Set | R

T. Y. (B.Tech.) (Sem – II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (197041609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Make suitable assumption if required.

Section – I

Q.2 **a)** What is Industrial Product Design? **07**
b) Discuss the visual effect of line and form with suitable examples. **07**

Q.3 **a)** Discuss the ergonomic guidelines for designing machines. **07**
b) What are Human Factors in Design? **07**

Q.4 **Write short note (Any Two)** **14**
a) Psychology of Colour
b) Mechanics of seeing with suitable examples
c) Concept of aesthetics with suitable examples

Section – II

Q.5 **a)** How the creative ideas are generated with the help of brain storming session? How it is effectively conducted? **07**
b) Explain in detail design situation. **07**

Q.6 **a)** Explain role of setting specification and market requirements in product design. **07**
b) What are the characteristics of successful product development? **07**

Q.7 **Write short note (Any Two)** **14**
a) Principles of Design
b) Design Thinking
c) Product Planning

Seat No.		Set	S

T. Y. (B.Tech.) (Sem – II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (197041609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicate full marks.
4) Make suitable assumption if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options **14**

1) The _____ function plays the lead role in defining the physical form of the product to best meet customer needs.
a) Design b) Manufacturing
c) Marketing d) None of the above

2) In which of the following type the manufacturing cost may go up?
a) Standardization b) Simplification
c) Diversification d) All of the above

3) The necessity to know the environment in which the product will be used is termed _____.
a) Design Situation b) Design Analysis
c) Aesthetics d) Ergonomics

4) An attractive Idea must be developed in to a _____.
a) Product idea b) Product Concept
c) Product Image d) Test market

5) The purpose of _____ is to generate large number of ideas.
a) Idea Screening
b) Brain Storming
c) Concept development and Testing
d) Marketing Strategy Development

6) Which of the following statement is not correct?
a) Creativity is originality in any art
b) Thinking is not required for creativity
c) Creativity is new consequence of a work performed
d) None of the above

7) Fear of _____ blocks creativity.
a) Making Mistakes b) Being Criticised
c) Being Alone d) All of the above

8) A _____ is a detailed version of the idea stated in meaningful consumer terms.

a) Product idea
b) Product image
c) Product concept
d) Product feature

9) _____ is a three-dimensional area enclosed by a surface.

a) Form
b) Shape
c) Line
d) None of the above

10) Tools for gathering customer need is?

a) Interviews
b) Questionnaires
c) Be the Customer
d) All of the above

11) The link between customer loyalty and customer satisfaction is _____.

a) Proportional
b) Non-proportional
c) Unaffected
d) None of the above

12) The following is the source(s) for developing new or improved product?

a) Research and Development department of the enterprise
b) Consumer suggestions and Complaints
c) Other competitive products in the market
d) All of the above

13) _____ Segmentation is a based-on parameters.

a) Geographic
b) Demographic
c) Behavioral
d) All of the above

14) Sustainable manufacturing is required for _____.

a) Conserving Recourses
b) Proper Maintenance
c) Reuse
d) All of the above

SLR-GF-147

Seat No.		Set	S

T. Y. (B.Tech.) (Sem – II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Product Design (197041609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Make suitable assumption if required.

Section – I

Q.2 **a)** What is Industrial Product Design? **07**
b) Discuss the visual effect of line and form with suitable examples. **07**

Q.3 **a)** Discuss the ergonomic guidelines for designing machines. **07**
b) What are Human Factors in Design? **07**

Q.4 **Write short note (Any Two)** **14**
a) Psychology of Colour
b) Mechanics of seeing with suitable examples
c) Concept of aesthetics with suitable examples

Section – II

Q.5 **a)** How the creative ideas are generated with the help of brain storming session? How it is effectively conducted? **07**
b) Explain in detail design situation. **07**

Q.6 **a)** Explain role of setting specification and market requirements in product design. **07**
b) What are the characteristics of successful product development? **07**

Q.7 **Write short note (Any Two)** **14**
a) Principles of Design
b) Design Thinking
c) Product Planning

SLR-GF-148

Seat No.		Set	P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (197041610)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ are the materials added to plastics materials to raise mechanical properties.
a) Stabilizers b) Colorants
c) Reinforcing agents d) Fillers

2) In case of process ability testing, MI stands for _____.
a) Moment of inertia b) Melt index
c) Malleability Index d) None of these

3) In Addition polymerization reaction the polymer is formed in a _____ step.
a) Single b) Double
c) Three d) None of these

4) Which of the following Moulding method is used to make long hollow plastic pipes?
a) Injection molding b) Transfer Molding
c) Blow Molding d) Extrusion Molding

5) Plastic sheet making is also called as _____.
a) Blow moulding b) Calendering
c) Rotary moulding d) none of above

6) Which of the Welding process is used for thermoplastics?
a) Hot gas welding b) Induction heating
c) Heated tool d) All of the above

7) Materials having a _____ shrinkage allowance can be molded with close tolerance.
a) Low b) High
c) Medium d) None of these

8) Outer corner radius should be normally _____ Times the wall thickness.
a) 1.5 b) 2.5
c) 5.5 d) 0.5

9) In compression molding, for Urea & Melamine materials the suitable pressure range is _____ kg/cm^2.

a) 79 to 105.5 b) 158 to 211
c) 211 to 258 d) 250 to 300

10) The purpose of a fan gate is to _____.

a) Speed solidification
b) Control injection speed
c) Spread material over a large area
d) Redirect the flow of material

11) The major factor in Injection cycle speed is _____.

a) The type of thermoplastic
b) The temperature of the plastic
c) Injection speed and pressure
d) Efficiency of the cooling system

12) A cold-runner three-plate mold has _____.

a) No sprue bushing b) A stripper plate
c) Integrated sprue pickers d) A larger gate system

13) For the Large sized molding land should be _____.

a) 15mm to 25mm b) 4mm to 9mm
c) 1mm to 5mm d) 9mm to 16mm

14) Cooling time is directly proportional to the _____.

a) Heaviest wall thickness b) Thermal diffusivity
c) Both a and b d) None of these

Seat No.	

Set | P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (197041610)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section –I

Q.2	**a)**	Differentiate between Thermoplastic material and Thermosetting Plastic Material.	**04**
	b)	What is Polymerization and what are the types of Polymerizations.	**06**
	c)	What are the applications of plastics in the Medical & Healthcare sector?	**04**
Q.3	**a)**	Explain with a neat sketch an Extrusion Moulding Process for plastics.	**05**
	b)	Explain the Hot tool welding process with advantages, disadvantages & applications	**05**
	c)	With a neat sketch, Explain the Calendering process.	**04**
Q.4	**a)**	Discuss on Tolerances and Allowances of molded plastic parts.	**06**
	b)	Explain in brief about at least Four criteria for design of plastic parts.	**08**

Section – II

Q.5	**a)**	Explain Compression moulding process with its advantages, limitations and applications.	**07**
	b)	What are the main parts of the Transfer mould? Explain function of each part of the Transfer mould with a neat sketch.	**07**
Q.6	**a)**	Draw a neat sketch of Two plate mould and Three plate mould used in Injection moulding.	**06**
	b)	Explain the different types of Runner systems available in Injection moulding.	**04**
	c)	Explain in brief procedure for Injection Mould Design.	**04**
Q.7	**a)**	Water entering at 40°C to the cooling system provided to mould is leaving at 60°C. If the total heat absorbed per hour is 20000 kJ, then find out the amount of water circulated per hour (k = 30.5)	**05**
	b)	The maximum wall thickness of polypropylene material is 40 mm. If thermal conductivity of the material is 0.22 w/mK, density is 946 kg/m^3, Specific heat is 1.68 KJ/Kg.K then find out the time required for cooling of Injection mould.	**05**
	c)	Explain the Angle Type hole system with a neat sketch used for Core plate Cooling.	**04**

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (197041610)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Outer corner radius should be normally _____ Times the wall thickness.
a) 1.5 b) 2.5
c) 5.5 d) 0.5

2) In compression molding, for Urea & Melamine materials the suitable pressure range is _____ kg/cm^2.
a) 79 to 105.5 b) 158 to 211
c) 211 to 258 d) 250 to 300

3) The purpose of a fan gate is to _____.
a) Speed solidification
b) Control injection speed
c) Spread material over a large area
d) Redirect the flow of material

4) The major factor in Injection cycle speed is _____.
a) The type of thermoplastic
b) The temperature of the plastic
c) Injection speed and pressure
d) Efficiency of the cooling system

5) A cold-runner three-plate mold has _____.
a) No sprue bushing b) A stripper plate
c) Integrated sprue pickers d) A larger gate system

6) For the Large sized molding land should be _____.
a) 15mm to 25mm b) 4mm to 9mm
c) 1mm to 5mm d) 9mm to 16mm

7) Cooling time is directly proportional to the _____.
a) Heaviest wall thickness b) Thermal diffusivity
c) Both a and b d) None of these

8) _____ are the materials added to plastics materials to raise mechanical properties.
a) Stabilizers b) Colorants
c) Reinforcing agents d) Fillers

9) In case of process ability testing, MI stands for _____.
a) Moment of inertia b) Melt index
c) Malleability Index d) None of these

10) In Addition polymerization reaction the polymer is formed in a _____ step.
a) Single b) Double
c) Three d) None of these

11) Which of the following Moulding method is used to make long hollow plastic pipes?
a) Injection molding b) Transfer Molding
c) Blow Molding d) Extrusion Molding

12) Plastic sheet making is also called as _____.
a) Blow moulding b) Calendering
c) Rotary moulding d) none of above

13) Which of the Welding process is used for thermoplastics?
a) Hot gas welding b) Induction heating
c) Heated tool d) All of the above

14) Materials having a _____ shrinkage allowance can be molded with close tolerance.
a) Low b) High
c) Medium d) None of these

Seat No.	

Set | Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (197041610)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section –I

Q.2	**a)**	Differentiate between Thermoplastic material and Thermosetting Plastic Material.	**04**
	b)	What is Polymerization and what are the types of Polymerizations.	**06**
	c)	What are the applications of plastics in the Medical & Healthcare sector?	**04**
Q.3	**a)**	Explain with a neat sketch an Extrusion Moulding Process for plastics.	**05**
	b)	Explain the Hot tool welding process with advantages, disadvantages & applications	**05**
	c)	With a neat sketch, Explain the Calendering process.	**04**
Q.4	**a)**	Discuss on Tolerances and Allowances of molded plastic parts.	**06**
	b)	Explain in brief about at least Four criteria for design of plastic parts.	**08**

Section – II

Q.5	**a)**	Explain Compression moulding process with its advantages, limitations and applications.	**07**
	b)	What are the main parts of the Transfer mould? Explain function of each part of the Transfer mould with a neat sketch.	**07**
Q.6	**a)**	Draw a neat sketch of Two plate mould and Three plate mould used in Injection moulding.	**06**
	b)	Explain the different types of Runner systems available in Injection moulding.	**04**
	c)	Explain in brief procedure for Injection Mould Design.	**04**
Q.7	**a)**	Water entering at 40°C to the cooling system provided to mould is leaving at 60°C. If the total heat absorbed per hour is 20000 kJ, then find out the amount of water circulated per hour (k = 30.5)	**05**
	b)	The maximum wall thickness of polypropylene material is 40 mm. If thermal conductivity of the material is 0.22 w/mK, density is 946 kg/m^3, Specific heat is 1.68 KJ/Kg.K then find out the time required for cooling of Injection mould.	**05**
	c)	Explain the Angle Type hole system with a neat sketch used for Core plate Cooling.	**04**

Seat No.		Set	R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (197041610)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The major factor in Injection cycle speed is _____.
a) The type of thermoplastic
b) The temperature of the plastic
c) Injection speed and pressure
d) Efficiency of the cooling system

2) A cold-runner three-plate mold has _____.
a) No sprue bushing b) A stripper plate
c) Integrated sprue pickers d) A larger gate system

3) For the Large sized molding land should be _____.
a) 15mm to 25mm b) 4mm to 9mm
c) 1mm to 5mm d) 9mm to 16mm

4) Cooling time is directly proportional to the _____.
a) Heaviest wall thickness b) Thermal diffusivity
c) Both a and b d) None of these

5) _____ are the materials added to plastics materials to raise mechanical properties.
a) Stabilizers b) Colorants
c) Reinforcing agents d) Fillers

6) In case of process ability testing, MI stands for _____.
a) Moment of inertia b) Melt index
c) Malleability Index d) None of these

7) In Addition polymerization reaction the polymer is formed in a _____ step.
a) Single b) Double
c) Three d) None of these

8) Which of the following Moulding method is used to make long hollow plastic pipes?
a) Injection molding b) Transfer Molding
c) Blow Molding d) Extrusion Molding

9) Plastic sheet making is also called as _____.
a) Blow moulding b) Calendering
c) Rotary moulding d) none of above

10) Which of the Welding process is used for thermoplastics?
a) Hot gas welding b) Induction heating
c) Heated tool d) All of the above

11) Materials having a _____ shrinkage allowance can be molded with close tolerance.
a) Low b) High
c) Medium d) None of these

12) Outer corner radius should be normally _____ Times the wall thickness.
a) 1.5 b) 2.5
c) 5.5 d) 0.5

13) In compression molding, for Urea & Melamine materials the suitable pressure range is _____ kg/cm^2.
a) 79 to 105.5 b) 158 to 211
c) 211 to 258 d) 250 to 300

14) The purpose of a fan gate is to _____.
a) Speed solidification
b) Control injection speed
c) Spread material over a large area
d) Redirect the flow of material

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (197041610)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section –I

Q.2	**a)**	Differentiate between Thermoplastic material and Thermosetting Plastic Material.	**04**
	b)	What is Polymerization and what are the types of Polymerizations.	**06**
	c)	What are the applications of plastics in the Medical & Healthcare sector?	**04**
Q.3	**a)**	Explain with a neat sketch an Extrusion Moulding Process for plastics.	**05**
	b)	Explain the Hot tool welding process with advantages, disadvantages & applications	**05**
	c)	With a neat sketch, Explain the Calendering process.	**04**
Q.4	**a)**	Discuss on Tolerances and Allowances of molded plastic parts.	**06**
	b)	Explain in brief about at least Four criteria for design of plastic parts.	**08**

Section – II

Q.5	**a)**	Explain Compression moulding process with its advantages, limitations and applications.	**07**
	b)	What are the main parts of the Transfer mould? Explain function of each part of the Transfer mould with a neat sketch.	**07**
Q.6	**a)**	Draw a neat sketch of Two plate mould and Three plate mould used in Injection moulding.	**06**
	b)	Explain the different types of Runner systems available in Injection moulding.	**04**
	c)	Explain in brief procedure for Injection Mould Design.	**04**
Q.7	**a)**	Water entering at 40°C to the cooling system provided to mould is leaving at 60°C. If the total heat absorbed per hour is 20000 kJ, then find out the amount of water circulated per hour (k = 30.5)	**05**
	b)	The maximum wall thickness of polypropylene material is 40 mm. If thermal conductivity of the material is 0.22 w/mK, density is 946 kg/m^3, Specific heat is 1.68 KJ/Kg.K then find out the time required for cooling of Injection mould.	**05**
	c)	Explain the Angle Type hole system with a neat sketch used for Core plate Cooling.	**04**

Seat No.	

Set **S**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (197041610)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the Welding process is used for thermoplastics?
a) Hot gas welding b) Induction heating
c) Heated tool d) All of the above

2) Materials having a _____ shrinkage allowance can be molded with close tolerance.
a) Low b) High
c) Medium d) None of these

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c) 5.5 d) 0.5

4) In compression molding, for Urea & Melamine materials the suitable pressure range is _____ kg/cm^2.
a) 79 to 105.5 b) 158 to 211
c) 211 to 258 d) 250 to 300

5) The purpose of a fan gate is to _____.
a) Speed solidification
b) Control injection speed
c) Spread material over a large area
d) Redirect the flow of material

6) The major factor in Injection cycle speed is _____.
a) The type of thermoplastic
b) The temperature of the plastic
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d) Efficiency of the cooling system

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8) For the Large sized molding land should be _____.
a) 15mm to 25mm b) 4mm to 9mm
c) 1mm to 5mm d) 9mm to 16mm

9) Cooling time is directly proportional to the _____.
a) Heaviest wall thickness b) Thermal diffusivity
c) Both a and b d) None of these

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a) Injection molding b) Transfer Molding
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14) Plastic sheet making is also called as _____.
a) Blow moulding b) Calendering
c) Rotary moulding d) none of above

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Plastic Engineering (197041610)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section –I

Q.2	**a)**	Differentiate between Thermoplastic material and Thermosetting Plastic Material.	**04**
	b)	What is Polymerization and what are the types of Polymerizations.	**06**
	c)	What are the applications of plastics in the Medical & Healthcare sector?	**04**
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	c)	With a neat sketch, Explain the Calendering process.	**04**
Q.4	**a)**	Discuss on Tolerances and Allowances of molded plastic parts.	**06**
	b)	Explain in brief about at least Four criteria for design of plastic parts.	**08**

Section – II

Q.5	**a)**	Explain Compression moulding process with its advantages, limitations and applications.	**07**
	b)	What are the main parts of the Transfer mould? Explain function of each part of the Transfer mould with a neat sketch.	**07**
Q.6	**a)**	Draw a neat sketch of Two plate mould and Three plate mould used in Injection moulding.	**06**
	b)	Explain the different types of Runner systems available in Injection moulding.	**04**
	c)	Explain in brief procedure for Injection Mould Design.	**04**
Q.7	**a)**	Water entering at 40°C to the cooling system provided to mould is leaving at 60°C. If the total heat absorbed per hour is 20000 kJ, then find out the amount of water circulated per hour (k = 30.5)	**05**
	b)	The maximum wall thickness of polypropylene material is 40 mm. If thermal conductivity of the material is 0.22 w/mK, density is 946 kg/m^3, Specific heat is 1.68 KJ/Kg.K then find out the time required for cooling of Injection mould.	**05**
	c)	Explain the Angle Type hole system with a neat sketch used for Core plate Cooling.	**04**

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) Batteries used for electrical energy storage are _____.
a) Laclanche cells b) Edison cells
c) Lead acid cells d) Any of the above

2) Turn around efficiency of battery energy storage system is around _____.
a) 75 percent b) 50 percent
c) 25 percent d) 10 percent

3) Certain metals become super-conducting when cooled below _____.
a) melting point b) transition temperature
c) 00 K d) 00 C

4) Identify the adjacent figure _____.
a) solar cell b) solar module
c) solar array d) none of the above

5) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

6) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

7) Solar cells are made up of _____.
a) Semiconductor b) Conductors
c) Insulators d) All of the above

8) P-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

9) N-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

10) The process of adding impurity to silicon is known as _____.
a) Doping b) Imparting
c) Bombarding d) Injecting

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Attempt any four. **16**

a) Differentiate between Solar PV cell and Solar thermal energy.
b) Explain the basic structure of PV module.
c) Write short note on PV module testing and certification.
d) Explain the shading analysis of battery.
e) Explain the different types of Inverters and its operation.

Q.3 Attempt any two. **12**

a) Explain the different Components of a grid connected SPV system.
b) Explain the Introduction to single line diagram and its significance of PV Module.
c) Explain the preparation and general considerations for installation of DC and AC components.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

2) Solar cells are made up of _____.
a) Semiconductor b) Conductors
c) Insulators d) All of the above

3) P-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

4) N-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

5) The process of adding impurity to silicon is known as _____.
a) Doping b) Imparting
c) Bombarding d) Injecting

6) Batteries used for electrical energy storage are _____.
a) Laclanche cells b) Edison cells
c) Lead acid cells d) Any of the above

7) Turn around efficiency of battery energy storage system is around _____.
a) 75 percent b) 50 percent
c) 25 percent d) 10 percent

8) Certain metals become super-conducting when cooled below _____.
a) melting point b) transition temperature
c) 00 K d) 00 C

9) Identify the adjacent figure _____.
a) solar cell b) solar module
c) solar array d) none of the above

10) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Attempt any four. **16**

a) Differentiate between Solar PV cell and Solar thermal energy.
b) Explain the basic structure of PV module.
c) Write short note on PV module testing and certification.
d) Explain the shading analysis of battery.
e) Explain the different types of Inverters and its operation.

Q.3 Attempt any two. **12**

a) Explain the different Components of a grid connected SPV system.
b) Explain the Introduction to single line diagram and its significance of PV Module.
c) Explain the preparation and general considerations for installation of DC and AC components.

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) N-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

2) The process of adding impurity to silicon is known as _____.
a) Doping b) Imparting
c) Bombarding d) Injecting

3) Batteries used for electrical energy storage are _____.
a) Laclanche cells b) Edison cells
c) Lead acid cells d) Any of the above

4) Turn around efficiency of battery energy storage system is around _____.
a) 75 percent b) 50 percent
c) 25 percent d) 10 percent

5) Certain metals become super-conducting when cooled below _____.
a) melting point b) transition temperature
c) 00 K d) 00 C

6) Identify the adjacent figure _____.
a) solar cell b) solar module
c) solar array d) none of the above

7) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

8) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

9) Solar cells are made up of _____.
a) Semiconductor b) Conductors
c) Insulators d) All of the above

10) P-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Attempt any four. **16**

a) Differentiate between Solar PV cell and Solar thermal energy.
b) Explain the basic structure of PV module.
c) Write short note on PV module testing and certification.
d) Explain the shading analysis of battery.
e) Explain the different types of Inverters and its operation.

Q.3 Attempt any two. **12**

a) Explain the different Components of a grid connected SPV system.
b) Explain the Introduction to single line diagram and its significance of PV Module.
c) Explain the preparation and general considerations for installation of DC and AC components.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) Certain metals become super-conducting when cooled below _____.
a) melting point b) transition temperature
c) 00 K d) 00 C

2) Identify the adjacent figure _____.
a) solar cell b) solar module
c) solar array d) none of the above

3) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

4) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

5) Solar cells are made up of _____.
a) Semiconductor b) Conductors
c) Insulators d) All of the above

6) P-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

7) N-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

8) The process of adding impurity to silicon is known as _____.
a) Doping b) Imparting
c) Bombarding d) Injecting

9) Batteries used for electrical energy storage are _____.
a) Laclanche cells b) Edison cells
c) Lead acid cells d) Any of the above

10) Turn around efficiency of battery energy storage system is around _____.
a) 75 percent b) 50 percent
c) 25 percent d) 10 percent

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Attempt any four. **16**

a) Differentiate between Solar PV cell and Solar thermal energy.
b) Explain the basic structure of PV module.
c) Write short note on PV module testing and certification.
d) Explain the shading analysis of battery.
e) Explain the different types of Inverters and its operation.

Q.3 Attempt any two. **12**

a) Explain the different Components of a grid connected SPV system.
b) Explain the Introduction to single line diagram and its significance of PV Module.
c) Explain the preparation and general considerations for installation of DC and AC components.

SLR-GF-152

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design Practice (197041614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) _____ is golden band between Researcher based design & creative design.
a) why not b) where to do
c) why to do d) how to do

2) _____ is example of tangible product.
a) Cycle b) Hotel
c) Airline d) Services of doctors

3) Generally, Rockwell and Brinell test are used for _____ testing.
a) brittleness b) ductility
c) hardness d) toughness

4) At the very beginning involving everybody together to emerge the engineering design is called _____.
a) social work in design
b) smart work in design
c) reliable concept in engineering
d) concurrent concept of engineering design

5) FMEA Means _____.
a) failure mode effect analysis
b) failure mode efficiency analysis
c) failure mode end analysis
d) failure mode energy analysis

6) _____ is a set of graphical pasteurization of operation and various movements, so that it from using this you can make a graphical representation of any process or operation.
a) Therblig b) Bar chart study
c) Flow chart d) System

7) Brain storming may be _____.
a) group creativity technique
b) individual creative technique
c) silent technique
d) very difficult technique to learn

8) _____ is depends upon availability of material.
a) true design b) rational design
c) optimum design d) configuration design

9) _____ is first step in material selection.
a) Translation b) Screening
c) Detaching d) Attaching

10) Screening by applying attribute limits, that is known as _____.
a) Delphy's method b) Crachy's method
c) Ashby's method d) Raighter method

SLR-GF-152

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design Practice (197041614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any four questions from the following questions.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Q.2 With the help of an example, explain the implementation of integrated product development. **10**

Q.3 What is meant by Product Development? Explain various stages of Product Development. **10**

Q.4 What is Configuration Design? Explain steps for developing product architecture. **10**

Q.5 Explain various design requirement factors for material selection. **10**

Q.6 What is product optimization? Explain various strategies to optimize innovative product development **10**

Q.7 Explain various factors affecting material selection. **10**

Q.8 What is Quality Function Deployment (QFD). Explain key components of QFD. **10**

SLR-GF-152

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design Practice (197041614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) _____ is a set of graphical pasteurization of operation and various movements, so that it from using this you can make a graphical representation of any process or operation.
a) Therblig b) Bar chart study
c) Flow chart d) System

2) Brain storming may be _____.
a) group creativity technique
b) individual creative technique
c) silent technique
d) very difficult technique to learn

3) _____ is depends upon availability of material.
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c) optimum design d) configuration design

4) _____ is first step in material selection.
a) Translation b) Screening
c) Detaching d) Attaching

5) Screening by applying attribute limits, that is known as _____.
a) Delphy's method b) Crachy's method
c) Ashby's method d) Raighter method

6) _____ is golden band between Researcher based design & creative design.
a) why not b) where to do
c) why to do d) how to do

7) _____ is example of tangible product.
a) Cycle b) Hotel
c) Airline d) Services of doctors

8) Generally, Rockwell and Brinell test are used for _____ testing.

a) brittleness b) ductility
c) hardness d) toughness

9) At the very beginning involving everybody together to emerge the engineering design is called _____.

a) social work in design
b) smart work in design
c) reliable concept in engineering
d) concurrent concept of engineering design

10) FMEA Means _____.

a) failure mode effect analysis
b) failure mode efficiency analysis
c) failure mode end analysis
d) failure mode energy analysis

SLR-GF-152

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design Practice (197041614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any four questions from the following questions.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Q.2 With the help of an example, explain the implementation of integrated product development. **10**

Q.3 What is meant by Product Development? Explain various stages of Product Development. **10**

Q.4 What is Configuration Design? Explain steps for developing product architecture. **10**

Q.5 Explain various design requirement factors for material selection. **10**

Q.6 What is product optimization? Explain various strategies to optimize innovative product development **10**

Q.7 Explain various factors affecting material selection. **10**

Q.8 What is Quality Function Deployment (QFD). Explain key components of QFD. **10**

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design Practice (197041614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) _____ is first step in material selection.
a) Translation b) Screening
c) Detaching d) Attaching

2) Screening by applying attribute limits, that is known as _____.
a) Delphy's method b) Crachy's method
c) Ashby's method d) Raighter method

3) _____ is golden band between Researcher based design & creative design.
a) why not b) where to do
c) why to do d) how to do

4) _____ is example of tangible product.
a) Cycle b) Hotel
c) Airline d) Services of doctors

5) Generally, Rockwell and Brinell test are used for _____ testing.
a) brittleness b) ductility
c) hardness d) toughness

6) At the very beginning involving everybody together to emerge the engineering design is called _____.
a) social work in design
b) smart work in design
c) reliable concept in engineering
d) concurrent concept of engineering design

7) FMEA Means _____.
a) failure mode effect analysis
b) failure mode efficiency analysis
c) failure mode end analysis
d) failure mode energy analysis

8) _____ is a set of graphical pasteurization of operation and various movements, so that it from using this you can make a graphical representation of any process or operation.

a) Therblig
b) Bar chart study
c) Flow chart
d) System

9) Brain storming may be _____.

a) group creativity technique
b) individual creative technique
c) silent technique
d) very difficult technique to learn

10) _____ is depends upon availability of material.

a) true design
b) rational design
c) optimum design
d) configuration design

SLR-GF-152

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design Practice (197041614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any four questions from the following questions.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Q.2 With the help of an example, explain the implementation of integrated product development. **10**

Q.3 What is meant by Product Development? Explain various stages of Product Development. **10**

Q.4 What is Configuration Design? Explain steps for developing product architecture. **10**

Q.5 Explain various design requirement factors for material selection. **10**

Q.6 What is product optimization? Explain various strategies to optimize innovative product development **10**

Q.7 Explain various factors affecting material selection. **10**

Q.8 What is Quality Function Deployment (QFD). Explain key components of QFD. **10**

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design Practice (197041614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Generally, Rockwell and Brinell test are used for _____ testing.
a) brittleness b) ductility
c) hardness d) toughness

2) At the very beginning involving everybody together to emerge the engineering design is called _____.
a) social work in design
b) smart work in design
c) reliable concept in engineering
d) concurrent concept of engineering design

3) FMEA Means _____.
a) failure mode effect analysis
b) failure mode efficiency analysis
c) failure mode end analysis
d) failure mode energy analysis

4) _____ is a set of graphical pasteurization of operation and various movements, so that it from using this you can make a graphical representation of any process or operation.
a) Therblig b) Bar chart study
c) Flow chart d) System

5) Brain storming may be _____.
a) group creativity technique
b) individual creative technique
c) silent technique
d) very difficult technique to learn

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a) true design b) rational design
c) optimum design d) configuration design

7) _____ is first step in material selection.

a) Translation b) Screening
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8) Screening by applying attribute limits, that is known as _____.

a) Delphy's method b) Crachy's method
c) Ashby's method d) Raighter method

9) _____ is golden band between Researcher based design & creative design.

a) why not b) where to do
c) why to do d) how to do

10) _____ is example of tangible product.

a) Cycle b) Hotel
c) Airline d) Services of doctors

SLR-GF-152

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Design Practice (197041614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any four questions from the following questions.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Q.2 With the help of an example, explain the implementation of integrated product development. **10**

Q.3 What is meant by Product Development? Explain various stages of Product Development. **10**

Q.4 What is Configuration Design? Explain steps for developing product architecture. **10**

Q.5 Explain various design requirement factors for material selection. **10**

Q.6 What is product optimization? Explain various strategies to optimize innovative product development **10**

Q.7 Explain various factors affecting material selection. **10**

Q.8 What is Quality Function Deployment (QFD). Explain key components of QFD. **10**

SLR-GF-153

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Joining Technology for Metals (197041615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct answer: **10**

1) Thermit Welding is a form of _____.
a) Fusion welding b) Gas welding
c) Arc welding d) Resistance welding

2) Which of the following processes is most prone to solidification cracks?
a) MMA with basic coated electrodes
b) MMA with rutile coated electrodes
c) TIG
d) SAW

3) Which of the following welding process uses non-consumable electrodes?
a) LASER welding b) MIG welding
c) TIG welding d) ion beam welding

4) In submerged arc welding, the arc is struck between _____.
a) Consumable coated electrode and work piece
b) Non-consumable electrode and work piece 3
c) Consumable bare electrode and work piece
d) Tungsten electrodes and work piece

5) The widest application of laser welding is _____.
a) Heavy industry b) Structural work
c) Process industry d) Electronic industry

6) The electroslag welding is _____.
a) Process which uses a mixture of iron oxide and granular aluminium
b) Accomplished by maintaining a hot molten metal pool between plates
c) A process in which arc is maintained under a blanket of flux
d) There is nothing called electroslag

7) The welding process in which no filler metal is used is classified as _____.
a) Autogenous b) Homogeneous
c) Heterogeneous d) Fusion

8) Which of the following property is responsible for weld metal cracking?
a) Stress b) Strain
c) Temperature conditions d) Pressure conditions

9) Which of the following is not a type of arc welding?
a) Plasma b) Electro-slag
c) Submerged d) Air-acetylene

10) Which current is used in Tungsten Inert-Gas (TIG) welding?
a) Only A.C. can be used as welding current
b) Only D.C. can be used as welding current
c) Both A.C. and D.C. can be used as welding current
d) None of the above

SLR-GF-153

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Joining Technology for Metals (197041615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Use of scientific calculator is allowed.
3) Figures to right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.
5) Use university graph paper & semi-log paper if required.

Section – I

Q.2	**a)**	What is the concept of heat generation and power density in welding?	**05**
	b)	Classify Joining Process.	**05**
Q.3	**a)**	Discuss the process of submerged arc welding with its application.	**05**
	b)	Discuss various gas welding equipment in brief.	**05**
Q.4	**a)**	Compare between gas welding and arc welding.	**05**
	b)	Explain Laser Beam Welding.	**05**

Section – II

Q.5	**a)**	What is the weld thermal cycle and how does it impact the welded joint?	**05**
	b)	How does solidification of weld metal occur during welding?	**05**
Q.6	**a)**	What are the fundamentals of weldability of metals?	**05**
	b)	What are some common challenges in the weldability of aluminium alloys?	**05**
Q.7	**a)**	What factors contribute to the occurrence of cracking in welded aluminium joints, and how can they be controlled?	**05**
	b)	Explain the phenomenon of heat-affected zone (HAZ) softening in aluminium welds.	**05**

SLR-GF-153

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Joining Technology for Metals (197041615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct answer: **10**

1) The electroslag welding is _____.
a) Process which uses a mixture of iron oxide and granular aluminium
b) Accomplished by maintaining a hot molten metal pool between plates
c) A process in which arc is maintained under a blanket of flux
d) There is nothing called electroslag

2) The welding process in which no filler metal is used is classified as _____.
a) Autogenous b) Homogeneous
c) Heterogeneous d) Fusion

3) Which of the following property is responsible for weld metal cracking?
a) Stress b) Strain
c) Temperature conditions d) Pressure conditions

4) Which of the following is not a type of arc welding?
a) Plasma b) Electro-slag
c) Submerged d) Air-acetylene

5) Which current is used in Tungsten Inert-Gas (TIG) welding?
a) Only A.C. can be used as welding current
b) Only D.C. can be used as welding current
c) Both A.C. and D.C. can be used as welding current
d) None of the above

6) Thermit Welding is a form of _____.
a) Fusion welding b) Gas welding
c) Arc welding d) Resistance welding

7) Which of the following processes is most prone to solidification cracks?
a) MMA with basic coated electrodes
b) MMA with rutile coated electrodes
c) TIG
d) SAW

8) Which of the following welding process uses non-consumable electrodes?
a) LASER welding
b) MIG welding
c) TIG welding
d) ion beam welding

9) In submerged arc welding, the arc is struck between _____.
a) Consumable coated electrode and work piece
b) Non-consumable electrode and work piece 3
c) Consumable bare electrode and work piece
d) Tungsten electrodes and work piece

10) The widest application of laser welding is _____.
a) Heavy industry
b) Structural work
c) Process industry
d) Electronic industry

SLR-GF-153

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Joining Technology for Metals (197041615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Use of scientific calculator is allowed.
3) Figures to right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.
5) Use university graph paper & semi-log paper if required.

Section – I

Q.2	**a)**	What is the concept of heat generation and power density in welding?	**05**
	b)	Classify Joining Process.	**05**
Q.3	**a)**	Discuss the process of submerged arc welding with its application.	**05**
	b)	Discuss various gas welding equipment in brief.	**05**
Q.4	**a)**	Compare between gas welding and arc welding.	**05**
	b)	Explain Laser Beam Welding.	**05**

Section – II

Q.5	**a)**	What is the weld thermal cycle and how does it impact the welded joint?	**05**
	b)	How does solidification of weld metal occur during welding?	**05**
Q.6	**a)**	What are the fundamentals of weldability of metals?	**05**
	b)	What are some common challenges in the weldability of aluminium alloys?	**05**
Q.7	**a)**	What factors contribute to the occurrence of cracking in welded aluminium joints, and how can they be controlled?	**05**
	b)	Explain the phenomenon of heat-affected zone (HAZ) softening in aluminium welds.	**05**

SLR-GF-153

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Joining Technology for Metals (197041615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct answer: **10**

1) Which of the following is not a type of arc welding?
a) Plasma b) Electro-slag
c) Submerged d) Air-acetylene

2) Which current is used in Tungsten Inert-Gas (TIG) welding?
a) Only A.C. can be used as welding current
b) Only D.C. can be used as welding current
c) Both A.C. and D.C. can be used as welding current
d) None of the above

3) Thermit Welding is a form of _____.
a) Fusion welding b) Gas welding
c) Arc welding d) Resistance welding

4) Which of the following processes is most prone to solidification cracks?
a) MMA with basic coated electrodes
b) MMA with rutile coated electrodes
c) TIG
d) SAW

5) Which of the following welding process uses non-consumable electrodes?
a) LASER welding b) MIG welding
c) TIG welding d) ion beam welding

6) In submerged arc welding, the arc is struck between _____.
a) Consumable coated electrode and work piece
b) Non-consumable electrode and work piece 3
c) Consumable bare electrode and work piece
d) Tungsten electrodes and work piece

7) The widest application of laser welding is _____.
a) Heavy industry
b) Structural work
c) Process industry
d) Electronic industry

8) The electroslag welding is _____.
a) Process which uses a mixture of iron oxide and granular aluminium
b) Accomplished by maintaining a hot molten metal pool between plates
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9) The welding process in which no filler metal is used is classified as _____.
a) Autogenous
b) Homogeneous
c) Heterogeneous
d) Fusion

10) Which of the following property is responsible for weld metal cracking?
a) Stress
b) Strain
c) Temperature conditions
d) Pressure conditions

SLR-GF-153

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Joining Technology for Metals (197041615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Use of scientific calculator is allowed.
3) Figures to right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.
5) Use university graph paper & semi-log paper if required.

Section – I

Q.2	**a)**	What is the concept of heat generation and power density in welding?	**05**
	b)	Classify Joining Process.	**05**
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Section – II

Q.5	**a)**	What is the weld thermal cycle and how does it impact the welded joint?	**05**
	b)	How does solidification of weld metal occur during welding?	**05**
Q.6	**a)**	What are the fundamentals of weldability of metals?	**05**
	b)	What are some common challenges in the weldability of aluminium alloys?	**05**
Q.7	**a)**	What factors contribute to the occurrence of cracking in welded aluminium joints, and how can they be controlled?	**05**
	b)	Explain the phenomenon of heat-affected zone (HAZ) softening in aluminium welds.	**05**

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Seat No.	

Set S

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Joining Technology for Metals (197041615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct answer: **10**

1) Which of the following welding process uses non-consumable electrodes?
a) LASER welding b) MIG welding
c) TIG welding d) ion beam welding

2) In submerged arc welding, the arc is struck between _____.
a) Consumable coated electrode and work piece
b) Non-consumable electrode and work piece 3
c) Consumable bare electrode and work piece
d) Tungsten electrodes and work piece

3) The widest application of laser welding is _____.
a) Heavy industry b) Structural work
c) Process industry d) Electronic industry

4) The electroslag welding is _____.
a) Process which uses a mixture of iron oxide and granular aluminium
b) Accomplished by maintaining a hot molten metal pool between plates
c) A process in which arc is maintained under a blanket of flux
d) There is nothing called electroslag

5) The welding process in which no filler metal is used is classified as _____.
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c) Heterogeneous d) Fusion

6) Which of the following property is responsible for weld metal cracking?
a) Stress b) Strain
c) Temperature conditions d) Pressure conditions

7) Which of the following is not a type of arc welding?
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8) Which current is used in Tungsten Inert-Gas (TIG) welding?
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b) Only D.C. can be used as welding current
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d) None of the above

9) Thermit Welding is a form of _____.
a) Fusion welding b) Gas welding
c) Arc welding d) Resistance welding

10) Which of the following processes is most prone to solidification cracks?
a) MMA with basic coated electrodes
b) MMA with rutile coated electrodes
c) TIG
d) SAW

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Joining Technology for Metals (197041615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Use of scientific calculator is allowed.
3) Figures to right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.
5) Use university graph paper & semi-log paper if required.

Section – I

Q.2	**a)**	What is the concept of heat generation and power density in welding?	**05**
	b)	Classify Joining Process.	**05**
Q.3	**a)**	Discuss the process of submerged arc welding with its application.	**05**
	b)	Discuss various gas welding equipment in brief.	**05**
Q.4	**a)**	Compare between gas welding and arc welding.	**05**
	b)	Explain Laser Beam Welding.	**05**

Section – II

Q.5	**a)**	What is the weld thermal cycle and how does it impact the welded joint?	**05**
	b)	How does solidification of weld metal occur during welding?	**05**
Q.6	**a)**	What are the fundamentals of weldability of metals?	**05**
	b)	What are some common challenges in the weldability of aluminium alloys?	**05**
Q.7	**a)**	What factors contribute to the occurrence of cracking in welded aluminium joints, and how can they be controlled?	**05**
	b)	Explain the phenomenon of heat-affected zone (HAZ) softening in aluminium welds.	**05**

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Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Steam Power Engineering (197041616)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 MCQ/ Objective Type Questions. **10**

1) in a Rankine Cycle, heat input is provided to _____.
a) Condenser b) Pump
c) Turbine d) Boiler

2) Rankine cycle efficiency for a power plant is 29.6%. The Carnot cycle efficiency will be _____.
a) Equal to Rankine cycle efficiency
b) Less than Rankine cycle efficiency
c) More than Rankine cycle efficiency
d) There is no comparison for the two

3) The reheat cycle allows steam power plant _____.
a) to use higher pressure ratio
b) to maintain required quality of steam at the exit of the turbine
c) to increase the turbine work
d) all of the above

4) The purpose of superheater in a boiler is _____.
a) to increase the temperature of saturated steam with increase in its pressure
b) to increase the temperature of saturated steam without increase in its pressure
c) to increase the temperature of feedwater for better efficiency
d) none of the above

5) Comparing fire tube and water tube boilers, which boiler can produce comparatively higher pressure steam than another for the same capacity?
a) fire tube boiler
b) water tube boiler
c) both can produce steam at same pressure for the same capacity
d) none of the above

6) In an impulse turbine _____.
   a) The steam is expanded in nozzles only and there is a pressure drop and heat drop
   b) The steam is expanded both in fixed and moving blades continuously
   c) The steam is expanded in moving blades only
   d) The pressure and temperature of steam remains constant

7) The efficiency of steam turbine may be improved by _____.
   a) Reheating of steam
   b) Regenerative feed beating
   c) Binary vapour plants
   d) Any of the above

8) The action of steam in a steam turbine is _____.
   a) static
   b) dynamic
   c) static and dynamic
   d) neither static nor dynamic

9) The type of cooling tower used in power plants is _____.
   a) hyperbolic natural draft towers
   b) forced draft counterflow towers
   c) induced draft counterflow towers
   d) dry towers

10) Range of the cooling tower is _____.
   a) difference between cold water outlet temperature and wet bulb temperature
   b) difference between hot water inlet temperature and wet bulb temperature
   c) difference between hot water inlet temperature and cold water outlet temperature
   d) difference between atmospheric temperature and wet bulb temperature

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Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Steam Power Engineering (197041616)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions of each section.
2) Figures to the right indicate full marks.

Section – I

Q.2 Explain Reheat Vapour Power Cycle in detail. Also, give details about Regenerative Vapour Power Cycle. **10**

Q.3 Compare Fire tube and Water tube boilers. Also, explain different Mountings and Accessories of a boiler. **10**

Q.4 Discuss different Steam Cycles for nuclear power plant. Also, explain in brief supercritical boliers. **10**

Section – II

Q.5 Compare impulse and reaction turbine. Explain various efficiencies of steam turbine. **10**

Q.6 Explain functions, types of Cooling tower in detail. Also, discuss psychometric chart in brief. **10**

Q.7 Explain Pressure & velocity compounding of a turbine. Draw Velocity triangle of reaction turbine. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Steam Power Engineering (197041616)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 MCQ/ Objective Type Questions. 10

1) In an impulse turbine _____.
a) The steam is expanded in nozzles only and there is a pressure drop and heat drop
b) The steam is expanded both in fixed and moving blades continuously
c) The steam is expanded in moving blades only
d) The pressure and temperature of steam remains constant

2) The efficiency of steam turbine may be improved by _____.
a) Reheating of steam b) Regenerative feed beating
c) Binary vapour plants d) Any of the above

3) The action of steam in a steam turbine is _____.
a) static b) dynamic
c) static and dynamic d) neither static nor dynamic

4) The type of cooling tower used in power plants is _____.
a) hyperbolic natural draft towers
b) forced draft counterflow towers
c) induced draft counterflow towers
d) dry towers

5) Range of the cooling tower is _____.
a) difference between cold water outlet temperature and wet bulb temperature
b) difference between hot water inlet temperature and wet bulb temperature
c) difference between hot water inlet temperature and cold water outlet temperature
d) difference between atmospheric temperature and wet bulb temperature

6) in a Rankine Cycle, heat input is provided to _____.
a) Condenser b) Pump
c) Turbine d) Boiler

7) Rankine cycle efficiency for a power plant is 29.6%. The Carnot cycle efficiency will be _____.
a) Equal to Rankine cycle efficiency
b) Less than Rankine cycle efficiency
c) More than Rankine cycle efficiency
d) There is no comparison for the two

8) The reheat cycle allows steam power plant _____.
a) to use higher pressure ratio
b) to maintain required quality of steam at the exit of the turbine
c) to increase the turbine work
d) all of the above

9) The purpose of superheater in a boiler is _____.
a) to increase the temperature of saturated steam with increase in its pressure
b) to increase the temperature of saturated steam without increase in its pressure
c) to increase the temperature of feedwater for better efficiency
d) none of the above

10) Comparing fire tube and water tube boilers, which boiler can produce comparatively higher pressure steam than another for the same capacity?
a) fire tube boiler
b) water tube boiler
c) both can produce steam at same pressure for the same capacity
d) none of the above

SLR-GF-154

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Steam Power Engineering (197041616)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions of each section.
2) Figures to the right indicate full marks.

Section – I

Q.2 Explain Reheat Vapour Power Cycle in detail. Also, give details about Regenerative Vapour Power Cycle. **10**

Q.3 Compare Fire tube and Water tube boilers. Also, explain different Mountings and Accessories of a boiler. **10**

Q.4 Discuss different Steam Cycles for nuclear power plant. Also, explain in brief supercritical boliers. **10**

Section – II

Q.5 Compare impulse and reaction turbine. Explain various efficiencies of steam turbine. **10**

Q.6 Explain functions, types of Cooling tower in detail. Also, discuss psychometric chart in brief. **10**

Q.7 Explain Pressure & velocity compounding of a turbine. Draw Velocity triangle of reaction turbine. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Steam Power Engineering (197041616)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 MCQ/ Objective Type Questions. 10

1) The type of cooling tower used in power plants is _____.
a) hyperbolic natural draft towers
b) forced draft counterflow towers
c) induced draft counterflow towers
d) dry towers

2) Range of the cooling tower is _____.
a) difference between cold water outlet temperature and wet bulb temperature
b) difference between hot water inlet temperature and wet bulb temperature
c) difference between hot water inlet temperature and cold water outlet temperature
d) difference between atmospheric temperature and wet bulb temperature

3) in a Rankine Cycle, heat input is provided to _____.
a) Condenser b) Pump
c) Turbine d) Boiler

4) Rankine cycle efficiency for a power plant is 29.6%. The Carnot cycle efficiency will be _____.
a) Equal to Rankine cycle efficiency
b) Less than Rankine cycle efficiency
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d) There is no comparison for the two

5) The reheat cycle allows steam power plant _____.
a) to use higher pressure ratio
b) to maintain required quality of steam at the exit of the turbine
c) to increase the turbine work
d) all of the above

6) The purpose of superheater in a boiler is _____.
a) to increase the temperature of saturated steam with increase in its pressure
b) to increase the temperature of saturated steam without increase in its pressure
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7) Comparing fire tube and water tube boilers, which boiler can produce comparatively higher pressure steam than another for the same capacity?
a) fire tube boiler
b) water tube boiler
c) both can produce steam at same pressure for the same capacity
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8) In an impulse turbine _____.
a) The steam is expanded in nozzles only and there is a pressure drop and heat drop
b) The steam is expanded both in fixed and moving blades continuously
c) The steam is expanded in moving blades only
d) The pressure and temperature of steam remains constant

9) The efficiency of steam turbine may be improved by _____.
a) Reheating of steam
b) Regenerative feed beating
c) Binary vapour plants
d) Any of the above

10) The action of steam in a steam turbine is _____.
a) static
b) dynamic
c) static and dynamic
d) neither static nor dynamic

SLR-GF-154

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Steam Power Engineering (197041616)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions of each section.
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Section – I

Q.2 Explain Reheat Vapour Power Cycle in detail. Also, give details about Regenerative Vapour Power Cycle. **10**

Q.3 Compare Fire tube and Water tube boilers. Also, explain different Mountings and Accessories of a boiler. **10**

Q.4 Discuss different Steam Cycles for nuclear power plant. Also, explain in brief supercritical boliers. **10**

Section – II

Q.5 Compare impulse and reaction turbine. Explain various efficiencies of steam turbine. **10**

Q.6 Explain functions, types of Cooling tower in detail. Also, discuss psychometric chart in brief. **10**

Q.7 Explain Pressure & velocity compounding of a turbine. Draw Velocity triangle of reaction turbine. **10**

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Seat No.	

Set S

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Steam Power Engineering (197041616)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

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3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 MCQ/ Objective Type Questions. 10

1) The reheat cycle allows steam power plant _____.
a) to use higher pressure ratio
b) to maintain required quality of steam at the exit of the turbine
c) to increase the turbine work
d) all of the above

2) The purpose of superheater in a boiler is _____.
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a) Reheating of steam b) Regenerative feed beating
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6) The action of steam in a steam turbine is _____.
a) static b) dynamic
c) static and dynamic d) neither static nor dynamic

7) The type of cooling tower used in power plants is _____.
a) hyperbolic natural draft towers
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d) dry towers

8) Range of the cooling tower is _____.
a) difference between cold water outlet temperature and wet bulb temperature
b) difference between hot water inlet temperature and wet bulb temperature
c) difference between hot water inlet temperature and cold water outlet temperature
d) difference between atmospheric temperature and wet bulb temperature

9) in a Rankine Cycle, heat input is provided to _____.
a) Condenser b) Pump
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10) Rankine cycle efficiency for a power plant is 29.6%. The Carnot cycle efficiency will be _____.
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b) Less than Rankine cycle efficiency
c) More than Rankine cycle efficiency
d) There is no comparison for the two

SLR-GF-154

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Steam Power Engineering (197041616)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions of each section.
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Section – I

Q.2 Explain Reheat Vapour Power Cycle in detail. Also, give details about Regenerative Vapour Power Cycle. **10**

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Section – II

Q.5 Compare impulse and reaction turbine. Explain various efficiencies of steam turbine. **10**

Q.6 Explain functions, types of Cooling tower in detail. Also, discuss psychometric chart in brief. **10**

Q.7 Explain Pressure & velocity compounding of a turbine. Draw Velocity triangle of reaction turbine. **10**

SLR-GF-155

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.
5) Use of non-programmable calculator, steam table, psychrometry chart are allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In vapour compression cycle, the expansion valve is fitted between: _____.
a) compressor and condenser b) evaporator and compressor
c) condenser and evaporator d) not used in the cycle

2) The saturated moist air has relative humidity: _____.
a) 50% b) 60%
c) 70% d) 100%

3) In the vapour compression cycle, the following device rejects heat to the surrounding: _____.
a) evaporator b) condenser
c) expansion valve d) none of these

4) The temperature limits of a Heat Pump are 318 K and 263 K, then the Carnot COP is: _____.
a) 2.7 b) 3.7
c) 4.7 d) 5.7

5) The minimum temperature to which water can be cooled in the air washer is: _____.
a) DBT b) WBT
c) DPT d) none

6) The refrigerator works on the _____ cycle.
a) vapour compression cycle b) vapour evaporation cycle
c) simple Carnot cycle d) none of these

7) COP of heat pump is: _____.
a) more than one b) less than one
c) equal one d) none of these

8) In the adiabatic saturation process, _____ remains constant.
a) temperature b) volume
c) entropy d) enthalpy

9) An air washer cannot be used for _____ process.
a) humidification and heating b) adiabatic saturation
c) cooling with humidification d) dehumidification

10) DPT is _____ than DBT.
a) higher b) lower
c) same d) none of above

11) Selection of a suitable air conditioning system depends on: _____.
a) Type of the building b) Initial and running costs
c) Reliability and serviceability d) All of the above

12) The following loads act on the air-conditioning room: _____.
a) sensible heat b) latent heat
c) both sensible and latent heat d) none of above

13) Which of the following is the most commonly used duct design method?
a) velocity reduction b) equal friction
c) static regain d) none of these

14) Wet bulb depression is equal to: _____
a) DBT-WBT b) WBT-DBT
c) DPT-WBT d) none of these

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Use of non-programmable calculator, steam table, psychrometry chart are allowed.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following

a) A 5 TR (ton of refrigeration) R12 refrigeration plant has a saturated suction temperature of -5 ^{0}C. The condensation takes place at 32 ^{0}C and there is no under-cooling of liquid refrigerant. Assuming isentropic compression, find: **08**

i) COP of the plant
ii) mass flow rate of refrigerant
iii) power required to run the compressor in kW

Use the following property table for R12

P (bar)	T (^{0}C)	hf (kJ/kg)	hg (kJ/kg)	sg (kJ/kg)
7.85	32	130.5	264.5	1.542
2.61	-5	-	249.3	1.557

Take cp superheated vapour = 0.615 kJ/kgK

b) Explain reversed Carnot cycle. **06**

Q.3 a) Describe desirable properties of refrigerant. **05**
b) Explain ODP and GWP. **05**
c) Explain the effect of change in evaporator pressure on the COP of vapour compression cycle. **04**

Q.4 a) Explain actual vapour absorption (Aqua-Ammonia) refrigeration system. **05**
b) Describe the Linde system. **05**
c) Write: comparison between vapour compression and vapour absorption system. **04**

Section – II

Q.5 a) On a particular day, the atmospheric air was found to have a DBT of 30 ^{0}C and a WBT of 18 ^{0}C. The barometric pressure was observed to be 756 mm of Hg. Using the psychrometric table, determine the relative humidity, the specific humidity, dew point temperature, the enthalpy of air per kg of dry air. **08**

b) Write a note on the air washer. **06**

Q.6 **a)** Explain comfort chart in detail. **05**

b) Derive specific enthalpy of moist air relation. **05**

c) Define SHF, RSHF and GSHF. **04**

Q.7 **a)** An air-conditioned auditorium is to be maintained at 27 ^{0}C DBT and 60 % RH. The ambient condition is 40 ^{0}C DBT and 30 ^{0}C WBT. The total room sensible heat load is 100 MJ/h and the total room latent heat load is 40 MJ/h. The 60 % of the return air is recirculated and mixed with 40 % of the outdoor air after the cooling coil. The condition of air leaving the cooling coil is at 18 ^{0}C. Find: **08**

i) room sensible heat factor
ii) the condition of air entering the auditorium
iii) the amount of make-up air,
iv) apparatus dew point temperature, and
v) by-pass factor of the cooling coil.

Show the processes on the psychrometric chart.

b) Classify duct design methods. Explain any one in detail. **06**

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.
5) Use of non-programmable calculator, steam table, psychrometry chart are allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In the adiabatic saturation process, _____ remains constant.
a) temperature b) volume
c) entropy d) enthalpy

2) An air washer cannot be used for _____ process.
a) humidification and heating b) adiabatic saturation
c) cooling with humidification d) dehumidification

3) DPT is _____ than DBT.
a) higher b) lower
c) same d) none of above

4) Selection of a suitable air conditioning system depends on: _____.
a) Type of the building b) Initial and running costs
c) Reliability and serviceability d) All of the above

5) The following loads act on the air-conditioning room: _____.
a) sensible heat b) latent heat
c) both sensible and latent heat d) none of above

6) Which of the following is the most commonly used duct design method?
a) velocity reduction b) equal friction
c) static regain d) none of these

7) Wet bulb depression is equal to: _____
a) DBT-WBT b) WBT-DBT
c) DPT-WBT d) none of these

8) In vapour compression cycle, the expansion valve is fitted between: _____.
a) compressor and condenser b) evaporator and compressor
c) condenser and evaporator d) not used in the cycle

9) The saturated moist air has relative humidity: _____.
a) 50% b) 60%
c) 70% d) 100%

10) In the vapour compression cycle, the following device rejects heat to the surrounding: _____.

a) evaporator b) condenser
c) expansion valve d) none of these

11) The temperature limits of a Heat Pump are 318 K and 263 K, then the Carnot COP is: _____.

a) 2.7 b) 3.7
c) 4.7 d) 5.7

12) The minimum temperature to which water can be cooled in the air washer is: _____.

a) DBT b) WBT
c) DPT d) none

13) The refrigerator works on the _____ cycle.

a) vapour compression cycle b) vapour evaporation cycle
c) simple Carnot cycle d) none of these

14) COP of heat pump is: _____.

a) more than one b) less than one
c) equal one d) none of these

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Use of non-programmable calculator, steam table, psychrometry chart are allowed.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following

a) A 5 TR (ton of refrigeration) R12 refrigeration plant has a saturated suction temperature of -5 ^{0}C. The condensation takes place at 32 ^{0}C and there is no under-cooling of liquid refrigerant. Assuming isentropic compression, find: **08**

i) COP of the plant
ii) mass flow rate of refrigerant
iii) power required to run the compressor in kW

Use the following property table for R12

P (bar)	T (^{0}C)	hf (kJ/kg)	hg (kJ/kg)	sg (kJ/kg)
7.85	32	130.5	264.5	1.542
2.61	-5	-	249.3	1.557

Take cp superheated vapour = 0.615 kJ/kgK

b) Explain reversed Carnot cycle. **06**

Q.3 a) Describe desirable properties of refrigerant. **05**
b) Explain ODP and GWP. **05**
c) Explain the effect of change in evaporator pressure on the COP of vapour compression cycle. **04**

Q.4 a) Explain actual vapour absorption (Aqua-Ammonia) refrigeration system. **05**
b) Describe the Linde system. **05**
c) Write: comparison between vapour compression and vapour absorption system. **04**

Section – II

Q.5 a) On a particular day, the atmospheric air was found to have a DBT of 30 ^{0}C and a WBT of 18 ^{0}C. The barometric pressure was observed to be 756 mm of Hg. Using the psychrometric table, determine the relative humidity, the specific humidity, dew point temperature, the enthalpy of air per kg of dry air. **08**

b) Write a note on the air washer. **06**

Q.6	**a)**	Explain comfort chart in detail.	**05**
	b)	Derive specific enthalpy of moist air relation.	**05**
	c)	Define SHF, RSHF and GSHF.	**04**
Q.7	**a)**	An air-conditioned auditorium is to be maintained at 27 ^{0}C DBT and 60 % RH. The ambient condition is 40 ^{0}C DBT and 30 ^{0}C WBT. The total room sensible heat load is 100 MJ/h and the total room latent heat load is 40 MJ/h. The 60 % of the return air is recirculated and mixed with 40 % of the outdoor air after the cooling coil. The condition of air leaving the cooling coil is at 18 ^{0}C. Find: i) room sensible heat factor ii) the condition of air entering the auditorium iii) the amount of make-up air, iv) apparatus dew point temperature, and v) by-pass factor of the cooling coil. Show the processes on the psychrometric chart.	**08**
	b)	Classify duct design methods. Explain any one in detail.	**06**

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever necessary.
5) Use of non-programmable calculator, steam table, psychrometry chart are allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Selection of a suitable air conditioning system depends on: _____.
a) Type of the building b) Initial and running costs
c) Reliability and serviceability d) All of the above

2) The following loads act on the air-conditioning room: _____.
a) sensible heat b) latent heat
c) both sensible and latent heat d) none of above

3) Which of the following is the most commonly used duct design method?
a) velocity reduction b) equal friction
c) static regain d) none of these

4) Wet bulb depression is equal to: _____
a) DBT-WBT b) WBT-DBT
c) DPT-WBT d) none of these

5) In vapour compression cycle, the expansion valve is fitted between: _____.
a) compressor and condenser b) evaporator and compressor
c) condenser and evaporator d) not used in the cycle

6) The saturated moist air has relative humidity: _____.
a) 50% b) 60%
c) 70% d) 100%

7) In the vapour compression cycle, the following device rejects heat to the surrounding: _____.
a) evaporator b) condenser
c) expansion valve d) none of these

8) The temperature limits of a Heat Pump are 318 K and 263 K, then the Carnot COP is: _____.
a) 2.7 b) 3.7
c) 4.7 d) 5.7

9) The minimum temperature to which water can be cooled in the air washer is: _____.

a) DBT b) WBT
c) DPT d) none

10) The refrigerator works on the _____ cycle.

a) vapour compression cycle b) vapour evaporation cycle
c) simple Carnot cycle d) none of these

11) COP of heat pump is: _____.

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c) equal one d) none of these

12) In the adiabatic saturation process, _____ remains constant.

a) temperature b) volume
c) entropy d) enthalpy

13) An air washer cannot be used for _____ process.

a) humidification and heating b) adiabatic saturation
c) cooling with humidification d) dehumidification

14) DPT is _____ than DBT.

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Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Use of non-programmable calculator, steam table, psychrometry chart are allowed.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following

a) A 5 TR (ton of refrigeration) R12 refrigeration plant has a saturated suction temperature of -5 ^{0}C. The condensation takes place at 32 ^{0}C and there is no under-cooling of liquid refrigerant. Assuming isentropic compression, find: **08**
i) COP of the plant
ii) mass flow rate of refrigerant
iii) power required to run the compressor in kW

Use the following property table for R12

P (bar)	T (^{0}C)	hf (kJ/kg)	hg (kJ/kg)	sg (kJ/kg)
7.85	32	130.5	264.5	1.542
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Take cp superheated vapour = 0.615 kJ/kgK

b) Explain reversed Carnot cycle. **06**

Q.3 a) Describe desirable properties of refrigerant. **05**
b) Explain ODP and GWP. **05**
c) Explain the effect of change in evaporator pressure on the COP of vapour compression cycle. **04**

Q.4 a) Explain actual vapour absorption (Aqua-Ammonia) refrigeration system. **05**
b) Describe the Linde system. **05**
c) Write: comparison between vapour compression and vapour absorption system. **04**

Section – II

Q.5 a) On a particular day, the atmospheric air was found to have a DBT of 30 ^{0}C and a WBT of 18 ^{0}C. The barometric pressure was observed to be 756 mm of Hg. Using the psychrometric table, determine the relative humidity, the specific humidity, dew point temperature, the enthalpy of air per kg of dry air. **08**
b) Write a note on the air washer. **06**

Q.6 **a)** Explain comfort chart in detail. **05**

b) Derive specific enthalpy of moist air relation. **05**

c) Define SHF, RSHF and GSHF. **04**

Q.7 **a)** An air-conditioned auditorium is to be maintained at 27 ^{0}C DBT and 60 % RH. The ambient condition is 40 ^{0}C DBT and 30 ^{0}C WBT. The total room sensible heat load is 100 MJ/h and the total room latent heat load is 40 MJ/h. The 60 % of the return air is recirculated and mixed with 40 % of the outdoor air after the cooling coil. The condition of air leaving the cooling coil is at 18 ^{0}C. Find: **08**

i) room sensible heat factor
ii) the condition of air entering the auditorium
iii) the amount of make-up air,
iv) apparatus dew point temperature, and
v) by-pass factor of the cooling coil.

Show the processes on the psychrometric chart.

b) Classify duct design methods. Explain any one in detail. **06**

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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5) Use of non-programmable calculator, steam table, psychrometry chart are allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The refrigerator works on the _____ cycle.
a) vapour compression cycle b) vapour evaporation cycle
c) simple Carnot cycle d) none of these

2) COP of heat pump is: _____.
a) more than one b) less than one
c) equal one d) none of these

3) In the adiabatic saturation process, _____ remains constant.
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c) entropy d) enthalpy

4) An air washer cannot be used for _____ process.
a) humidification and heating b) adiabatic saturation
c) cooling with humidification d) dehumidification

5) DPT is _____ than DBT.
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a) DBT-WBT b) WBT-DBT
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10) In vapour compression cycle, the expansion valve is fitted between: _____.

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c) condenser and evaporator d) not used in the cycle

11) The saturated moist air has relative humidity: _____.

a) 50% b) 60%
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12) In the vapour compression cycle, the following device rejects heat to the surrounding: _____.

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13) The temperature limits of a Heat Pump are 318 K and 263 K, then the Carnot COP is: _____.

a) 2.7 b) 3.7
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14) The minimum temperature to which water can be cooled in the air washer is: _____.

a) DBT b) WBT
c) DPT d) none

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (BTN02701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Use of non-programmable calculator, steam table, psychrometry chart are allowed.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following

a) A 5 TR (ton of refrigeration) R12 refrigeration plant has a saturated suction temperature of -5 ^{0}C. The condensation takes place at 32 ^{0}C and there is no under-cooling of liquid refrigerant. Assuming isentropic compression, find: **08**

i) COP of the plant
ii) mass flow rate of refrigerant
iii) power required to run the compressor in kW

Use the following property table for R12

P (bar)	T (^{0}C)	hf (kJ/kg)	hg (kJ/kg)	sg (kJ/kg)
7.85	32	130.5	264.5	1.542
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Take cp superheated vapour = 0.615 kJ/kgK

b) Explain reversed Carnot cycle. **06**

Q.3 a) Describe desirable properties of refrigerant. **05**
b) Explain ODP and GWP. **05**
c) Explain the effect of change in evaporator pressure on the COP of vapour compression cycle. **04**

Q.4 a) Explain actual vapour absorption (Aqua-Ammonia) refrigeration system. **05**
b) Describe the Linde system. **05**
c) Write: comparison between vapour compression and vapour absorption system. **04**

Section – II

Q.5 a) On a particular day, the atmospheric air was found to have a DBT of 30 ^{0}C and a WBT of 18 ^{0}C. The barometric pressure was observed to be 756 mm of Hg. Using the psychrometric table, determine the relative humidity, the specific humidity, dew point temperature, the enthalpy of air per kg of dry air. **08**

b) Write a note on the air washer. **06**

Q.6	**a)**	Explain comfort chart in detail.	**05**
	b)	Derive specific enthalpy of moist air relation.	**05**
	c)	Define SHF, RSHF and GSHF.	**04**
Q.7	**a)**	An air-conditioned auditorium is to be maintained at 27 ^{0}C DBT and 60 % RH. The ambient condition is 40 ^{0}C DBT and 30 ^{0}C WBT. The total room sensible heat load is 100 MJ/h and the total room latent heat load is 40 MJ/h. The 60 % of the return air is recirculated and mixed with 40 % of the outdoor air after the cooling coil. The condition of air leaving the cooling coil is at 18 ^{0}C. Find: i) room sensible heat factor ii) the condition of air entering the auditorium iii) the amount of make-up air, iv) apparatus dew point temperature, and v) by-pass factor of the cooling coil. Show the processes on the psychrometric chart.	**08**
	b)	Classify duct design methods. Explain any one in detail.	**06**

Seat No.	

Set **P**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which component converts chemical energy into mechanical energy in an automobile?
a) Engine b) Transmission
c) Suspension d) Steering

2) What is the purpose of the chassis in an automobile?
a) To provide comfort to passengers
b) To house the engine
c) To support the vehicle's body and components
d) To enhance aerodynamics

3) What does the term "torque" measure in an automobile's performance?
a) Top speed b) Fuel efficiency
c) Engine power d) Turning radius

4) Which component of an automobile's performance is affected by its weight distribution?
a) Fuel efficiency b) Acceleration
c) Top speed d) Traction

5) Which type of transmission is known for better fuel efficiency and greater control by the driver?
a) Automatic transmission
b) Manual transmission
c) Continuously Variable Transmission (CVT)
d) Dual-clutch transmission

6) What is the primary purpose of a differential in a car's transmission system?
a) To control the steering
b) To distribute power evenly to all wheels
c) To help with braking
d) To adjust the suspension

7) In a manual transmission, what is used to disengage the engine from the transmission temporarily?

a) Clutch pedal
b) Brake pedal
c) Accelerator pedal
d) Gear lever

8) What component in the steering system is responsible for converting the rotational motion of the steering wheel into lateral movement of the tires?

a) Suspension system
b) Steering column
c) Rack and pinion
d) Brake pads

9) What is the main purpose of a power steering system?

a) Increase fuel efficiency
b) Enhance braking performance
c) Assist in turning the wheels with less effort
d) Improve suspension comfort

10) What is the purpose of an Anti-lock Braking System (ABS)?

a) To improve fuel efficiency
b) To prevent wheel lock-up during hard braking
c) To reduce engine noise
d) To enhance suspension performance

11) What does "ride height" refer to in a suspension system?

a) The vehicle's top speed
b) The distance between the wheels
c) The distance between the suspension and the ground
d) The amount of cargo a vehicle can carry

12) What is the main purpose of a car's suspension system?

a) To steer the vehicle
b) To transmit power to the wheels
c) To absorb shocks and provide a smooth ride
d) To apply braking force

13) Which type of brakes use friction between brake shoes and a drum to stop the vehicle?

a) Disc brakes
b) Hydraulic brakes
c) Drum brakes
d) Vacuum brakes

14) Which component in a hydraulic brake system is responsible for amplifying the force applied to the brake pedal?

a) Brake pedal
b) Brake caliper
c) Brake master cylinder
d) Brake drum

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Assume suitable data if necessary.
3) Use of non-programmable calculator is allowed.
4) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Explain with suitable reasons for usage of front engine rear wheel drive for most of the vehicle layout. **08**

b) Draw the layout of four-wheel drive and list its advantages and disadvantages. **06**

Q.3 **a)** A motor vehicle weighs 7975.5 N and its engine develops 14.7 kW at 2500 rpm. At this engine speed the road speed of the car on the top gear is 64.37 km/h. Bottom gear reduction is 3.5:1 and the efficiency A of transmission is 88% on top and 80% on bottom gear. The diameter of tires is 0.762 m and the projected front area of the vehicle is 1.116 m^2 the coefficient of air resistance is 0.0314 4N - h2 / km2-m2. R = KaAV2 where R is resistance in N, K is coefficient of resistance. A is the front area in m^2. V is speed in km/h. Road resistance is 0.023 W, N. Calculate: **10**

1) Speed of car on bottom gear
2) Tractive effort available at the wheels on top and bottom gear
3) Gradient which car can climb on bottom gear

b) Obtain the expression for acceleration and gradability in terms of tractive effort and total resistance. **04**

Q.4 **a)** Explain with neat sketch the significance of the torque converter in automatic transmissions and how it affects smoothness and efficiency. **08**

b) Discuss the importance of a synchromesh gearbox in manual transmissions. **06**

Section – II

Q.5 **a)** Describe the construction and operation of a recirculating ball steering system, emphasizing its durability and off-road capabilities. **07**

b) Analyze the effects of wheel alignment parameters (camber, caster, toe) on vehicle handling and tire wear. **07**

Q.6 **a)** Explain construction and working of Air braking system with neat sketch. **06**

b) A motor car has a wheel base of 2.64 m, the height of its CG above the ground is 0.61 m and it is 1.12 m in front of the rear axle. If the car is travelling at 40 km/h on a level track, determine the minimum distance in which the car may be stopped, when **08**

1) The rear wheels are braked
2) The front wheels are braked, and
3) All wheels are braked

Q.7	**a)**	Discuss in detail with neat sketch double wishbone arm type of suspension system.	**06**
	b)	Write in detail functions and requirements of automobile suspension system.	**04**
	c)	Compare rigid suspension system independent suspension system.	**04**

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What component in the steering system is responsible for converting the rotational motion of the steering wheel into lateral movement of the tires?
a) Suspension system b) Steering column
c) Rack and pinion d) Brake pads

2) What is the main purpose of a power steering system?
a) Increase fuel efficiency
b) Enhance braking performance
c) Assist in turning the wheels with less effort
d) Improve suspension comfort

3) What is the purpose of an Anti-lock Braking System (ABS)?
a) To improve fuel efficiency
b) To prevent wheel lock-up during hard braking
c) To reduce engine noise
d) To enhance suspension performance

4) What does "ride height" refer to in a suspension system?
a) The vehicle's top speed
b) The distance between the wheels
c) The distance between the suspension and the ground
d) The amount of cargo a vehicle can carry

5) What is the main purpose of a car's suspension system?
a) To steer the vehicle
b) To transmit power to the wheels
c) To absorb shocks and provide a smooth ride
d) To apply braking force

6) Which type of brakes use friction between brake shoes and a drum to stop the vehicle?
a) Disc brakes b) Hydraulic brakes
c) Drum brakes d) Vacuum brakes

7) Which component in a hydraulic brake system is responsible for amplifying the force applied to the brake pedal?

a) Brake pedal
b) Brake caliper
c) Brake master cylinder
d) Brake drum

8) Which component converts chemical energy into mechanical energy in an automobile?

a) Engine
b) Transmission
c) Suspension
d) Steering

9) What is the purpose of the chassis in an automobile?

a) To provide comfort to passengers
b) To house the engine
c) To support the vehicle's body and components
d) To enhance aerodynamics

10) What does the term "torque" measure in an automobile's performance?

a) Top speed
b) Fuel efficiency
c) Engine power
d) Turning radius

11) Which component of an automobile's performance is affected by its weight distribution?

a) Fuel efficiency
b) Acceleration
c) Top speed
d) Traction

12) Which type of transmission is known for better fuel efficiency and greater control by the driver?

a) Automatic transmission
b) Manual transmission
c) Continuously Variable Transmission (CVT)
d) Dual-clutch transmission

13) What is the primary purpose of a differential in a car's transmission system?

a) To control the steering
b) To distribute power evenly to all wheels
c) To help with braking
d) To adjust the suspension

14) In a manual transmission, what is used to disengage the engine from the transmission temporarily?

a) Clutch pedal
b) Brake pedal
c) Accelerator pedal
d) Gear lever

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Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Assume suitable data if necessary.
3) Use of non-programmable calculator is allowed.
4) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Explain with suitable reasons for usage of front engine rear wheel drive for most of the vehicle layout. **08**

b) Draw the layout of four-wheel drive and list its advantages and disadvantages. **06**

Q.3 **a)** A motor vehicle weighs 7975.5 N and its engine develops 14.7 kW at 2500 rpm. At this engine speed the road speed of the car on the top gear is 64.37 km/h. Bottom gear reduction is 3.5:1 and the efficiency A of transmission is 88% on top and 80% on bottom gear. The diameter of tires is 0.762 m and the projected front area of the vehicle is 1.116 m^2 the coefficient of air resistance is 0.0314 4N - h2 / km2-m2. R = KaAV2 where R is resistance in N, K is coefficient of resistance. A is the front area in m^2. V is speed in km/h. Road resistance is 0.023 W, N. Calculate: **10**

1) Speed of car on bottom gear
2) Tractive effort available at the wheels on top and bottom gear
3) Gradient which car can climb on bottom gear

b) Obtain the expression for acceleration and gradability in terms of tractive effort and total resistance. **04**

Q.4 **a)** Explain with neat sketch the significance of the torque converter in automatic transmissions and how it affects smoothness and efficiency. **08**

b) Discuss the importance of a synchromesh gearbox in manual transmissions. **06**

Section – II

Q.5 **a)** Describe the construction and operation of a recirculating ball steering system, emphasizing its durability and off-road capabilities. **07**

b) Analyze the effects of wheel alignment parameters (camber, caster, toe) on vehicle handling and tire wear. **07**

Q.6 **a)** Explain construction and working of Air braking system with neat sketch. **06**

b) A motor car has a wheel base of 2.64 m, the height of its CG above the ground is 0.61 m and it is 1.12 m in front of the rear axle. If the car is travelling at 40 km/h on a level track, determine the minimum distance in which the car may be stopped, when **08**

1) The rear wheels are braked
2) The front wheels are braked, and
3) All wheels are braked

Q.7	**a)**	Discuss in detail with neat sketch double wishbone arm type of suspension system.	**06**
	b)	Write in detail functions and requirements of automobile suspension system.	**04**
	c)	Compare rigid suspension system independent suspension system.	**04**

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What does "ride height" refer to in a suspension system?
a) The vehicle's top speed
b) The distance between the wheels
c) The distance between the suspension and the ground
d) The amount of cargo a vehicle can carry

2) What is the main purpose of a car's suspension system?
a) To steer the vehicle
b) To transmit power to the wheels
c) To absorb shocks and provide a smooth ride
d) To apply braking force

3) Which type of brakes use friction between brake shoes and a drum to stop the vehicle?
a) Disc brakes b) Hydraulic brakes
c) Drum brakes d) Vacuum brakes

4) Which component in a hydraulic brake system is responsible for amplifying the force applied to the brake pedal?
a) Brake pedal b) Brake caliper
c) Brake master cylinder d) Brake drum

5) Which component converts chemical energy into mechanical energy in an automobile?
a) Engine b) Transmission
c) Suspension d) Steering

6) What is the purpose of the chassis in an automobile?
a) To provide comfort to passengers
b) To house the engine
c) To support the vehicle's body and components
d) To enhance aerodynamics

7) What does the term "torque" measure in an automobile's performance?
a) Top speed b) Fuel efficiency
c) Engine power d) Turning radius

8) Which component of an automobile's performance is affected by its weight distribution?

a) Fuel efficiency
b) Acceleration
c) Top speed
d) Traction

9) Which type of transmission is known for better fuel efficiency and greater control by the driver?

a) Automatic transmission
b) Manual transmission
c) Continuously Variable Transmission (CVT)
d) Dual-clutch transmission

10) What is the primary purpose of a differential in a car's transmission system?

a) To control the steering
b) To distribute power evenly to all wheels
c) To help with braking
d) To adjust the suspension

11) In a manual transmission, what is used to disengage the engine from the transmission temporarily?

a) Clutch pedal
b) Brake pedal
c) Accelerator pedal
d) Gear lever

12) What component in the steering system is responsible for converting the rotational motion of the steering wheel into lateral movement of the tires?

a) Suspension system
b) Steering column
c) Rack and pinion
d) Brake pads

13) What is the main purpose of a power steering system?

a) Increase fuel efficiency
b) Enhance braking performance
c) Assist in turning the wheels with less effort
d) Improve suspension comfort

14) What is the purpose of an Anti-lock Braking System (ABS)?

a) To improve fuel efficiency
b) To prevent wheel lock-up during hard braking
c) To reduce engine noise
d) To enhance suspension performance

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Assume suitable data if necessary.
3) Use of non-programmable calculator is allowed.
4) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Explain with suitable reasons for usage of front engine rear wheel drive for most of the vehicle layout. **08**

b) Draw the layout of four-wheel drive and list its advantages and disadvantages. **06**

Q.3 **a)** A motor vehicle weighs 7975.5 N and its engine develops 14.7 kW at 2500 rpm. At this engine speed the road speed of the car on the top gear is 64.37 km/h. Bottom gear reduction is 3.5:1 and the efficiency A of transmission is 88% on top and 80% on bottom gear. The diameter of tires is 0.762 m and the projected front area of the vehicle is 1.116 m^2 the coefficient of air resistance is 0.0314 4N - h2 / km2-m2. R = KaAV2 where R is resistance in N, K is coefficient of resistance. A is the front area in m^2. V is speed in km/h. Road resistance is 0.023 W, N. Calculate: **10**

1) Speed of car on bottom gear
2) Tractive effort available at the wheels on top and bottom gear
3) Gradient which car can climb on bottom gear

b) Obtain the expression for acceleration and gradability in terms of tractive effort and total resistance. **04**

Q.4 **a)** Explain with neat sketch the significance of the torque converter in automatic transmissions and how it affects smoothness and efficiency. **08**

b) Discuss the importance of a synchromesh gearbox in manual transmissions. **06**

Section – II

Q.5 **a)** Describe the construction and operation of a recirculating ball steering system, emphasizing its durability and off-road capabilities. **07**

b) Analyze the effects of wheel alignment parameters (camber, caster, toe) on vehicle handling and tire wear. **07**

Q.6 **a)** Explain construction and working of Air braking system with neat sketch. **06**

b) A motor car has a wheel base of 2.64 m, the height of its CG above the ground is 0.61 m and it is 1.12 m in front of the rear axle. If the car is travelling at 40 km/h on a level track, determine the minimum distance in which the car may be stopped, when **08**

1) The rear wheels are braked
2) The front wheels are braked, and
3) All wheels are braked

Q.7	**a)**	Discuss in detail with neat sketch double wishbone arm type of suspension system.	**06**
	b)	Write in detail functions and requirements of automobile suspension system.	**04**
	c)	Compare rigid suspension system independent suspension system.	**04**

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What is the primary purpose of a differential in a car's transmission system?
a) To control the steering
b) To distribute power evenly to all wheels
c) To help with braking
d) To adjust the suspension

2) In a manual transmission, what is used to disengage the engine from the transmission temporarily?
a) Clutch pedal b) Brake pedal
c) Accelerator pedal d) Gear lever

3) What component in the steering system is responsible for converting the rotational motion of the steering wheel into lateral movement of the tires?
a) Suspension system b) Steering column
c) Rack and pinion d) Brake pads

4) What is the main purpose of a power steering system?
a) Increase fuel efficiency
b) Enhance braking performance
c) Assist in turning the wheels with less effort
d) Improve suspension comfort

5) What is the purpose of an Anti-lock Braking System (ABS)?
a) To improve fuel efficiency
b) To prevent wheel lock-up during hard braking
c) To reduce engine noise
d) To enhance suspension performance

6) What does "ride height" refer to in a suspension system?
a) The vehicle's top speed
b) The distance between the wheels
c) The distance between the suspension and the ground
d) The amount of cargo a vehicle can carry

7) What is the main purpose of a car's suspension system?
a) To steer the vehicle
b) To transmit power to the wheels
c) To absorb shocks and provide a smooth ride
d) To apply braking force

8) Which type of brakes use friction between brake shoes and a drum to stop the vehicle?
a) Disc brakes
b) Hydraulic brakes
c) Drum brakes
d) Vacuum brakes

9) Which component in a hydraulic brake system is responsible for amplifying the force applied to the brake pedal?
a) Brake pedal
b) Brake caliper
c) Brake master cylinder
d) Brake drum

10) Which component converts chemical energy into mechanical energy in an automobile?
a) Engine
b) Transmission
c) Suspension
d) Steering

11) What is the purpose of the chassis in an automobile?
a) To provide comfort to passengers
b) To house the engine
c) To support the vehicle's body and components
d) To enhance aerodynamics

12) What does the term "torque" measure in an automobile's performance?
a) Top speed
b) Fuel efficiency
c) Engine power
d) Turning radius

13) Which component of an automobile's performance is affected by its weight distribution?
a) Fuel efficiency
b) Acceleration
c) Top speed
d) Traction

14) Which type of transmission is known for better fuel efficiency and greater control by the driver?
a) Automatic transmission
b) Manual transmission
c) Continuously Variable Transmission (CVT)
d) Dual-clutch transmission

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Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (BTN02702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Assume suitable data if necessary.
3) Use of non-programmable calculator is allowed.
4) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Explain with suitable reasons for usage of front engine rear wheel drive for most of the vehicle layout. **08**

b) Draw the layout of four-wheel drive and list its advantages and disadvantages. **06**

Q.3 **a)** A motor vehicle weighs 7975.5 N and its engine develops 14.7 kW at 2500 rpm. At this engine speed the road speed of the car on the top gear is 64.37 km/h. Bottom gear reduction is 3.5:1 and the efficiency A of transmission is 88% on top and 80% on bottom gear. The diameter of tires is 0.762 m and the projected front area of the vehicle is 1.116 m^2 the coefficient of air resistance is 0.0314 4N - h2 / km2-m2. R = KaAV2 where R is resistance in N, K is coefficient of resistance. A is the front area in m^2. V is speed in km/h. Road resistance is 0.023 W, N. Calculate: **10**

1) Speed of car on bottom gear
2) Tractive effort available at the wheels on top and bottom gear
3) Gradient which car can climb on bottom gear

b) Obtain the expression for acceleration and gradability in terms of tractive effort and total resistance. **04**

Q.4 **a)** Explain with neat sketch the significance of the torque converter in automatic transmissions and how it affects smoothness and efficiency. **08**

b) Discuss the importance of a synchromesh gearbox in manual transmissions. **06**

Section – II

Q.5 **a)** Describe the construction and operation of a recirculating ball steering system, emphasizing its durability and off-road capabilities. **07**

b) Analyze the effects of wheel alignment parameters (camber, caster, toe) on vehicle handling and tire wear. **07**

Q.6 **a)** Explain construction and working of Air braking system with neat sketch. **06**

b) A motor car has a wheel base of 2.64 m, the height of its CG above the ground is 0.61 m and it is 1.12 m in front of the rear axle. If the car is travelling at 40 km/h on a level track, determine the minimum distance in which the car may be stopped, when **08**

1) The rear wheels are braked
2) The front wheels are braked, and
3) All wheels are braked

Q.7	**a)**	Discuss in detail with neat sketch double wishbone arm type of suspension system.	**06**
	b)	Write in detail functions and requirements of automobile suspension system.	**04**
	c)	Compare rigid suspension system independent suspension system.	**04**

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) Robotic payload is typically expressed in _____.
a) Kilograms b) Meters
c) Pascals d) Newtons

2) The _____ determines the maximum height a robot arm can obtain when extended upward from its base.
a) Vertical Reach b) Side Reach
c) Parallel Reach d) Horizontal Reach

3) Mechanical movement and configuration of _____ robots closely resemble human arm.
a) SCARA b) Cartesian
c) Articulated d) Cylindrical

4) A _____ uses the same basic physical principles as an electrical transformer.
a) Resolver b) Potentiometer
c) Strain Gauge d) Transistor

5) A _____ is a device that activates or deactivates an electrical signal in a system based on the level of air pressure detected by the component.
a) Strain Gauge b) Resolver
c) LVDT d) Pneumatic Switch

6) The permanent-magnet dc motor is also referred as _____ motor.
a) Variable torque b) Low torque
c) High torque d) None of the above

7) _____ describes the motion of an object, considering the factors like position, acceleration and velocity.
a) Kinetics b) Kinematics
c) Statics d) None of the above

8) Image _____ is the very first step of image processing.
a) Restoration b) Enhancement
c) Acquisition d) Segmentation

9) In _____ camera sensor, the charge to voltage conversion as well as the voltage amplification is carried out in the pixel itself.

a) CCD
b) CMOS
c) IVDT
d) UDAR

10) _____ cameras contain a large matrix of pixels spread across length and breadth, that form an image.

a) Line Scan
b) Area Scan
c) CCD
d) CMOS

11) Pick the configuration which is specifically designed for high-speed assembly operations.

a) SCARA
b) Cartesian
c) Cylindrical
d) Spherical

12) Which of the following is not a robot work cell layout?

a) Robot-centred work cell
b) In-line robot work cell
c) Mobile robot work cell
d) Offshore robot work cell

13) _____ is the spacing between two rows for the machine operations of AS/RS.

a) Aisle
b) Reach
c) Bay
d) None of the above

14) _____ tasks require accuracy to ensure proper placement of workpieces and tools,

a) Assembly
b) Machine Tending
c) Material Handling
d) None of the above

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicates full marks.

Section – I

Q.2	**a)**	Give classification of industrial robots.	**07**
	b)	What is an AGV? Explain navigation techniques used in AGVs.	**07**
Q.3	**a)**	What is role of actuators in robots? Compare hydraulic, pneumatic and electric actuators in detail.	**07**
	b)	What is use of proximity sensors in robots? Explain Inductive and Capacitive type of proximity sensors.	**07**
Q.4	**a)**	Write a short note on 'End Effectors and their Applications'.	**07**
	b)	Derive forward kinematics equation for 3 DOF planar system	**07**

Section – II

Q.5	**a)**	Explain components of machine vision system.	**07**
	b)	Explain line scan and area scan techniques used in machine vision. Which one is best suitable for scanning pharmaceutical bottles?	**07**
Q.6	**a)**	Mention languages commonly used for robot programming. Explain lead through, walk through and offline programming methods.	**07**
	b)	Discuss any two robot work cell layouts with specific examples.	**07**
Q.7	**a)**	What is an ASRS? Explain any 3 types of ASRS with examples.	**07**
	b)	Explain considerations while selecting robot for sealant application. State various applications.	**07**

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) Image _____ is the very first step of image processing.
a) Restoration b) Enhancement
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2) In _____ camera sensor, the charge to voltage conversion as well as the voltage amplification is carried out in the pixel itself.
a) CCD b) CMOS
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3) _____ cameras contain a large matrix of pixels spread across length and breadth, that form an image.
a) Line Scan b) Area Scan
c) CCD d) CMOS

4) Pick the configuration which is specifically designed for high-speed assembly operations.
a) SCARA b) Cartesian
c) Cylindrical d) Spherical

5) Which of the following is not a robot work cell layout?
a) Robot-centred work cell b) In-line robot work cell
c) Mobile robot work cell d) Offshore robot work cell

6) _____ is the spacing between two rows for the machine operations of AS/RS.
a) Aisle b) Reach
c) Bay d) None of the above

7) _____ tasks require accuracy to ensure proper placement of workpieces and tools,
a) Assembly b) Machine Tending
c) Material Handling d) None of the above

8) Robotic payload is typically expressed in _____.
a) Kilograms b) Meters
c) Pascals d) Newtons

9) The _____ determines the maximum height a robot arm can obtain when extended upward from its base.

a) Vertical Reach b) Side Reach
c) Parallel Reach d) Horizontal Reach

10) Mechanical movement and configuration of _____ robots closely resemble human arm.

a) SCARA b) Cartesian
c) Articulated d) Cylindrical

11) A _____ uses the same basic physical principles as an electrical transformer.

a) Resolver b) Potentiometer
c) Strain Gauge d) Transistor

12) A _____ is a device that activates or deactivates an electrical signal in a system based on the level of air pressure detected by the component.

a) Strain Gauge b) Resolver
c) LVDT d) Pneumatic Switch

13) The permanent-magnet dc motor is also referred as _____ motor.

a) Variable torque b) Low torque
c) High torque d) None of the above

14) _____ describes the motion of an object, considering the factors like position, acceleration and velocity.

a) Kinetics b) Kinematics
c) Statics d) None of the above

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicates full marks.

Section – I

Q.2	**a)**	Give classification of industrial robots.	**07**
	b)	What is an AGV? Explain navigation techniques used in AGVs.	**07**
Q.3	**a)**	What is role of actuators in robots? Compare hydraulic, pneumatic and electric actuators in detail.	**07**
	b)	What is use of proximity sensors in robots? Explain Inductive and Capacitive type of proximity sensors.	**07**
Q.4	**a)**	Write a short note on 'End Effectors and their Applications'.	**07**
	b)	Derive forward kinematics equation for 3 DOF planar system	**07**

Section – II

Q.5	**a)**	Explain components of machine vision system.	**07**
	b)	Explain line scan and area scan techniques used in machine vision. Which one is best suitable for scanning pharmaceutical bottles?	**07**
Q.6	**a)**	Mention languages commonly used for robot programming. Explain lead through, walk through and offline programming methods.	**07**
	b)	Discuss any two robot work cell layouts with specific examples.	**07**
Q.7	**a)**	What is an ASRS? Explain any 3 types of ASRS with examples.	**07**
	b)	Explain considerations while selecting robot for sealant application. State various applications.	**07**

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) Pick the configuration which is specifically designed for high-speed assembly operations.
a) SCARA b) Cartesian
c) Cylindrical d) Spherical

2) Which of the following is not a robot work cell layout?
a) Robot-centred work cell b) In-line robot work cell
c) Mobile robot work cell d) Offshore robot work cell

3) _____ is the spacing between two rows for the machine operations of AS/RS.
a) Aisle b) Reach
c) Bay d) None of the above

4) _____ tasks require accuracy to ensure proper placement of workpieces and tools,
a) Assembly b) Machine Tending
c) Material Handling d) None of the above

5) Robotic payload is typically expressed in _____.
a) Kilograms b) Meters
c) Pascals d) Newtons

6) The _____ determines the maximum height a robot arm can obtain when extended upward from its base.
a) Vertical Reach b) Side Reach
c) Parallel Reach d) Horizontal Reach

7) Mechanical movement and configuration of _____ robots closely resemble human arm.
a) SCARA b) Cartesian
c) Articulated d) Cylindrical

8) A _____ uses the same basic physical principles as an electrical transformer.
a) Resolver b) Potentiometer
c) Strain Gauge d) Transistor

9) A _____ is a device that activates or deactivates an electrical signal in a system based on the level of air pressure detected by the component.

a) Strain Gauge b) Resolver
c) LVDT d) Pneumatic Switch

10) The permanent-magnet dc motor is also referred as _____ motor.

a) Variable torque b) Low torque
c) High torque d) None of the above

11) _____ describes the motion of an object, considering the factors like position, acceleration and velocity.

a) Kinetics b) Kinematics
c) Statics d) None of the above

12) Image _____ is the very first step of image processing.

a) Restoration b) Enhancement
c) Acquisition d) Segmentation

13) In _____ camera sensor, the charge to voltage conversion as well as the voltage amplification is carried out in the pixel itself.

a) CCD b) CMOS
c) IVDT d) UDAR

14) _____ cameras contain a large matrix of pixels spread across length and breadth, that form an image.

a) Line Scan b) Area Scan
c) CCD d) CMOS

SLR-GF-157

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicates full marks.

Section – I

Q.2	**a)**	Give classification of industrial robots.	**07**
	b)	What is an AGV? Explain navigation techniques used in AGVs.	**07**
Q.3	**a)**	What is role of actuators in robots? Compare hydraulic, pneumatic and electric actuators in detail.	**07**
	b)	What is use of proximity sensors in robots? Explain Inductive and Capacitive type of proximity sensors.	**07**
Q.4	**a)**	Write a short note on 'End Effectors and their Applications'.	**07**
	b)	Derive forward kinematics equation for 3 DOF planar system	**07**

Section – II

Q.5	**a)**	Explain components of machine vision system.	**07**
	b)	Explain line scan and area scan techniques used in machine vision. Which one is best suitable for scanning pharmaceutical bottles?	**07**
Q.6	**a)**	Mention languages commonly used for robot programming. Explain lead through, walk through and offline programming methods.	**07**
	b)	Discuss any two robot work cell layouts with specific examples.	**07**
Q.7	**a)**	What is an ASRS? Explain any 3 types of ASRS with examples.	**07**
	b)	Explain considerations while selecting robot for sealant application. State various applications.	**07**

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) The permanent-magnet dc motor is also referred as _____ motor.
a) Variable torque b) Low torque
c) High torque d) None of the above

2) _____ describes the motion of an object, considering the factors like position, acceleration and velocity.
a) Kinetics b) Kinematics
c) Statics d) None of the above

3) Image _____ is the very first step of image processing.
a) Restoration b) Enhancement
c) Acquisition d) Segmentation

4) In _____ camera sensor, the charge to voltage conversion as well as the voltage amplification is carried out in the pixel itself.
a) CCD b) CMOS
c) IVDT d) UDAR

5) _____ cameras contain a large matrix of pixels spread across length and breadth, that form an image.
a) Line Scan b) Area Scan
c) CCD d) CMOS

6) Pick the configuration which is specifically designed for high-speed assembly operations.
a) SCARA b) Cartesian
c) Cylindrical d) Spherical

7) Which of the following is not a robot work cell layout?
a) Robot-centred work cell b) In-line robot work cell
c) Mobile robot work cell d) Offshore robot work cell

8) _____ is the spacing between two rows for the machine operations of AS/RS.
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c) Bay d) None of the above

9) _____ tasks require accuracy to ensure proper placement of workpieces and tools,

a) Assembly
b) Machine Tending
c) Material Handling
d) None of the above

10) Robotic payload is typically expressed in _____.

a) Kilograms
b) Meters
c) Pascals
d) Newtons

11) The _____ determines the maximum height a robot arm can obtain when extended upward from its base.

a) Vertical Reach
b) Side Reach
c) Parallel Reach
d) Horizontal Reach

12) Mechanical movement and configuration of _____ robots closely resemble human arm.

a) SCARA
b) Cartesian
c) Articulated
d) Cylindrical

13) A _____ uses the same basic physical principles as an electrical transformer.

a) Resolver
b) Potentiometer
c) Strain Gauge
d) Transistor

14) A _____ is a device that activates or deactivates an electrical signal in a system based on the level of air pressure detected by the component.

a) Strain Gauge
b) Resolver
c) LVDT
d) Pneumatic Switch

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automation and Robotics (BTN02703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicates full marks.

Section – I

Q.2	**a)**	Give classification of industrial robots.	**07**
	b)	What is an AGV? Explain navigation techniques used in AGVs.	**07**
Q.3	**a)**	What is role of actuators in robots? Compare hydraulic, pneumatic and electric actuators in detail.	**07**
	b)	What is use of proximity sensors in robots? Explain Inductive and Capacitive type of proximity sensors.	**07**
Q.4	**a)**	Write a short note on 'End Effectors and their Applications'.	**07**
	b)	Derive forward kinematics equation for 3 DOF planar system	**07**

Section – II

Q.5	**a)**	Explain components of machine vision system.	**07**
	b)	Explain line scan and area scan techniques used in machine vision. Which one is best suitable for scanning pharmaceutical bottles?	**07**
Q.6	**a)**	Mention languages commonly used for robot programming. Explain lead through, walk through and offline programming methods.	**07**
	b)	Discuss any two robot work cell layouts with specific examples.	**07**
Q.7	**a)**	What is an ASRS? Explain any 3 types of ASRS with examples.	**07**
	b)	Explain considerations while selecting robot for sealant application. State various applications.	**07**

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) Mass production is characterized by _____.
a) Low volume high variety b) High volume low variety
c) High volume high variety d) Low volume low variety

2) Select the locational form of operation _____.
a) manufacturing operations
b) transportation and warehouse operations
c) retail operations
d) health care

3) What is the measure of forecast error which calculates the average forecast error over n time periods known as?
a) Mean absolute deviation
b) Mean absolute percentage error
c) Mean error
d) Mean-square error

4) The forecasting model that is based upon salesperson's estimates of expected sales is _____.
a) consumer market survey b) sales force composite
c) delphi method d) jury of executive opinion

5) Net present value [NPV] used to evaluate an investment _____.
a) uses relevant cash flow
b) does not require an estimate of the cost of capital
c) does not allow for the time value of money
d) is shown as a percentage

6) A company invested $ 5000000 on project and net return from the project is $ 500000 per year find out the payback period _____.
a) 50 years b) 25 years
c) 5 years d) 10 years

7) Dispatching authorizes the start of production operations by _____.
a) Release of material and components from stores to first process
b) Release of material from process to process
c) Issue of drawings instruction sheets
d) All of these

8) Gantt chart is mostly used for _____.
a) Routing b) Scheduling
c) Follow up d) Inspection and quality control

9) Using the ABC classification system for inventory, which of the following is a true statement?
a) The "C" items are of moderate dollar value
b) You should allocate about 15 % of the dollar volume to "B" items
c) The "A" items are of low dollar value
d) The "A" items are of high dollar value

10) Which of the following is not an inventory _____?
a) Machines b) Raw materials
c) Finished Product d) Consumable tools

11) Which of the following is primary functions of maintenance department?
a) Maintenance of existing plant and equipments
b) Inspection and lubrication of equipments
c) Proper distribution of utility service
d) All of above

12) Belt of electric motor if broken it needs _____.
a) Corrective Maintenance b) Scheduled Maintenance
c) Preventive d) Timely

13) Value analysis examines the _____.
a) Design of every component b) Method of manufacturing
c) Material used d) All of the above

14) The aim of Just-In-Time manufacturing principle is to eliminate _____.
a) time wastage d) labour wastage
c) cost of excessive inventory d) all of the above

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicates full marks.
3) Make suitable assumptions wherever necessary and state them clearly**.**
4) Draw neat diagram wherever necessary.

Section – I

Q.2 **a)** Explain Job production and Batch production system in detail. **07**
b) With the help of following data, project the trend for next 3 years using least square method. **07**

Years	2015	2016	2017	2018	2019	2020
Sales ('000 units)	200	220	230	240	270	280

Q.3 **a)** Explain in detail Aggregate Planning. **07**
b) Discuss measurement of Capacity. Explain the measures of Capacity. **07**

Q.4 **Write notes on. (any two)** **14**
a) Routing and scheduling.
b) Exponential smoothing method
c) Line Balancing.

Section – II

Q.5 **a)** Explain the different costs associated with Inventory. **05**
b) Write components, advantages and limitation of ABC analysis. **05**
c) A company purchases 35,250 units of raw material at Rs 15 per unit to meet its entire annual requirement the order cost comes to Rs 52 per unit to order and inventory carrying cost Rs 2.25 per unit **04**
Find out-
1) EOQ
2) Total ordering cost
3) Total carrying cost
4) Total inventory cost

Q.6 **a)** Write the scope of maintenance department in organization. **05**
b) Write a short brief note on TPM (Total Productive Maintenance] in organization. **05**
c) Explain in brief the break down type of maintenance. **04**

Q.7 **a)** Explain the concept of KAIZAN. **05**
b) Explain the concept of Supply chain Management. **05**
c) Explain in brief about various phases of value analysis. **04**

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) Gantt chart is mostly used for _____.
a) Routing b) Scheduling
c) Follow up d) Inspection and quality control

2) Using the ABC classification system for inventory, which of the following is a true statement?
a) The "C" items are of moderate dollar value
b) You should allocate about 15 % of the dollar volume to "B" items
c) The "A" items are of low dollar value
d) The "A" items are of high dollar value

3) Which of the following is not an inventory _____?
a) Machines b) Raw materials
c) Finished Product d) Consumable tools

4) Which of the following is primary functions of maintenance department?
a) Maintenance of existing plant and equipments
b) Inspection and lubrication of equipments
c) Proper distribution of utility service
d) All of above

5) Belt of electric motor if broken it needs _____.
a) Corrective Maintenance b) Scheduled Maintenance
c) Preventive d) Timely

6) Value analysis examines the _____.
a) Design of every component b) Method of manufacturing
c) Material used d) All of the above

7) The aim of Just-In-Time manufacturing principle is to eliminate _____.
a) time wastage d) labour wastage
c) cost of excessive inventory d) all of the above

8) Mass production is characterized by _____.
a) Low volume high variety b) High volume low variety
c) High volume high variety d) Low volume low variety

9) Select the locational form of operation _____.
a) manufacturing operations
b) transportation and warehouse operations
c) retail operations
d) health care

10) What is the measure of forecast error which calculates the average forecast error over n time periods known as?
a) Mean absolute deviation
b) Mean absolute percentage error
c) Mean error
d) Mean-square error

11) The forecasting model that is based upon salesperson's estimates of expected sales is _____.
a) consumer market survey
b) sales force composite
c) delphi method
d) jury of executive opinion

12) Net present value [NPV] used to evaluate an investment _____.
a) uses relevant cash flow
b) does not require an estimate of the cost of capital
c) does not allow for the time value of money
d) is shown as a percentage

13) A company invested $ 5000000 on project and net return from the project is $ 500000 per year find out the payback period _____.
a) 50 years
b) 25 years
c) 5 years
d) 10 years

14) Dispatching authorizes the start of production operations by _____.
a) Release of material and components from stores to first process
b) Release of material from process to process
c) Issue of drawings instruction sheets
d) All of these

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicates full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2 **a)** Explain Job production and Batch production system in detail. **07**
b) With the help of following data, project the trend for next 3 years using least square method. **07**

Years	2015	2016	2017	2018	2019	2020
Sales ('000 units)	200	220	230	240	270	280

Q.3 **a)** Explain in detail Aggregate Planning. **07**
b) Discuss measurement of Capacity. Explain the measures of Capacity. **07**

Q.4 **Write notes on. (any two)** **14**
a) Routing and scheduling.
b) Exponential smoothing method
c) Line Balancing.

Section – II

Q.5 **a)** Explain the different costs associated with Inventory. **05**
b) Write components, advantages and limitation of ABC analysis. **05**
c) A company purchases 35,250 units of raw material at Rs 15 per unit to meet its entire annual requirement the order cost comes to Rs 52 per unit to order and inventory carrying cost Rs 2.25 per unit **04**
Find out-
1) EOQ
2) Total ordering cost
3) Total carrying cost
4) Total inventory cost

Q.6 **a)** Write the scope of maintenance department in organization. **05**
b) Write a short brief note on TPM (Total Productive Maintenance] in organization. **05**
c) Explain in brief the break down type of maintenance. **04**

Q.7 **a)** Explain the concept of KAIZAN. **05**
b) Explain the concept of Supply chain Management. **05**
c) Explain in brief about various phases of value analysis. **04**

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) Which of the following is primary functions of maintenance department?
a) Maintenance of existing plant and equipments
b) Inspection and lubrication of equipments
c) Proper distribution of utility service
d) All of above

2) Belt of electric motor if broken it needs _____.
a) Corrective Maintenance b) Scheduled Maintenance
c) Preventive d) Timely

3) Value analysis examines the _____.
a) Design of every component b) Method of manufacturing
c) Material used d) All of the above

4) The aim of Just-In-Time manufacturing principle is to eliminate _____.
a) time wastage d) labour wastage
c) cost of excessive inventory d) all of the above

5) Mass production is characterized by _____.
a) Low volume high variety b) High volume low variety
c) High volume high variety d) Low volume low variety

6) Select the locational form of operation _____.
a) manufacturing operations
b) transportation and warehouse operations
c) retail operations
d) health care

7) What is the measure of forecast error which calculates the average forecast error over n time periods known as?
a) Mean absolute deviation
b) Mean absolute percentage error
c) Mean error
d) Mean-square error

8) The forecasting model that is based upon salesperson's estimates of expected sales is _____.
a) consumer market survey
b) sales force composite
c) delphi method
d) jury of executive opinion

9) Net present value [NPV] used to evaluate an investment _____.
a) uses relevant cash flow
b) does not require an estimate of the cost of capital
c) does not allow for the time value of money
d) is shown as a percentage

10) A company invested $ 5000000 on project and net return from the project is $ 500000 per year find out the payback period _____.
a) 50 years
b) 25 years
c) 5 years
d) 10 years

11) Dispatching authorizes the start of production operations by _____.
a) Release of material and components from stores to first process
b) Release of material from process to process
c) Issue of drawings instruction sheets
d) All of these

12) Gantt chart is mostly used for _____.
a) Routing
b) Scheduling
c) Follow up
d) Inspection and quality control

13) Using the ABC classification system for inventory, which of the following is a true statement?
a) The "C" items are of moderate dollar value
b) You should allocate about 15 % of the dollar volume to "B" items
c) The “A” items are of low dollar value
d) The "A” items are of high dollar value

14) Which of the following is not an inventory _____?
a) Machines
b) Raw materials
c) Finished Product
d) Consumable tools

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicates full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2 **a)** Explain Job production and Batch production system in detail. **07**

b) With the help of following data, project the trend for next 3 years using least square method. **07**

Years	2015	2016	2017	2018	2019	2020
Sales ('000 units)	200	220	230	240	270	280

Q.3 **a)** Explain in detail Aggregate Planning. **07**

b) Discuss measurement of Capacity. Explain the measures of Capacity. **07**

Q.4 **Write notes on. (any two)** **14**

a) Routing and scheduling.

b) Exponential smoothing method

c) Line Balancing.

Section – II

Q.5 **a)** Explain the different costs associated with Inventory. **05**

b) Write components, advantages and limitation of ABC analysis. **05**

c) A company purchases 35,250 units of raw material at Rs 15 per unit to meet its entire annual requirement the order cost comes to Rs 52 per unit to order and inventory carrying cost Rs 2.25 per unit **04**

Find out-

1) EOQ
2) Total ordering cost
3) Total carrying cost
4) Total inventory cost

Q.6 **a)** Write the scope of maintenance department in organization. **05**

b) Write a short brief note on TPM (Total Productive Maintenance] in organization. **05**

c) Explain in brief the break down type of maintenance. **04**

Q.7 **a)** Explain the concept of KAIZAN. **05**

b) Explain the concept of Supply chain Management. **05**

c) Explain in brief about various phases of value analysis. **04**

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) A company invested $ 5000000 on project and net return from the project is $ 500000 per year find out the payback period _____.
a) 50 years b) 25 years
c) 5 years d) 10 years

2) Dispatching authorizes the start of production operations by _____.
a) Release of material and components from stores to first process
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3) Gantt chart is mostly used for _____.
a) Routing b) Scheduling
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4) Using the ABC classification system for inventory, which of the following is a true statement?
a) The "C" items are of moderate dollar value
b) You should allocate about 15 % of the dollar volume to "B" items
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d) The "A" items are of high dollar value

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a) Machines b) Raw materials
c) Finished Product d) Consumable tools

6) Which of the following is primary functions of maintenance department?
a) Maintenance of existing plant and equipments
b) Inspection and lubrication of equipments
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7) Belt of electric motor if broken it needs _____.
a) Corrective Maintenance b) Scheduled Maintenance
c) Preventive d) Timely

8) Value analysis examines the _____.
a) Design of every component b) Method of manufacturing
c) Material used d) All of the above

9) The aim of Just-In-Time manufacturing principle is to eliminate _____.
a) time wastage d) labour wastage
c) cost of excessive inventory d) all of the above

10) Mass production is characterized by _____.
a) Low volume high variety b) High volume low variety
c) High volume high variety d) Low volume low variety

11) Select the locational form of operation _____.
a) manufacturing operations
b) transportation and warehouse operations
c) retail operations
d) health care

12) What is the measure of forecast error which calculates the average forecast error over n time periods known as?
a) Mean absolute deviation
b) Mean absolute percentage error
c) Mean error
d) Mean-square error

13) The forecasting model that is based upon salesperson's estimates of expected sales is _____.
a) consumer market survey b) sales force composite
c) delphi method d) jury of executive opinion

14) Net present value [NPV] used to evaluate an investment _____.
a) uses relevant cash flow
b) does not require an estimate of the cost of capital
c) does not allow for the time value of money
d) is shown as a percentage

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (BTN02706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicates full marks.
3) Make suitable assumptions wherever necessary and state them clearly**.**
4) Draw neat diagram wherever necessary.

Section – I

Q.2 **a)** Explain Job production and Batch production system in detail. **07**
b) With the help of following data, project the trend for next 3 years using least square method. **07**

Years	2015	2016	2017	2018	2019	2020
Sales ('000 units)	200	220	230	240	270	280

Q.3 **a)** Explain in detail Aggregate Planning. **07**
b) Discuss measurement of Capacity. Explain the measures of Capacity. **07**

Q.4 **Write notes on. (any two)** **14**
a) Routing and scheduling.
b) Exponential smoothing method
c) Line Balancing.

Section – II

Q.5 **a)** Explain the different costs associated with Inventory. **05**
b) Write components, advantages and limitation of ABC analysis. **05**
c) A company purchases 35,250 units of raw material at Rs 15 per unit to meet its entire annual requirement the order cost comes to Rs 52 per unit to order and inventory carrying cost Rs 2.25 per unit **04**
Find out-
1) EOQ
2) Total ordering cost
3) Total carrying cost
4) Total inventory cost

Q.6 **a)** Write the scope of maintenance department in organization. **05**
b) Write a short brief note on TPM (Total Productive Maintenance] in organization. **05**
c) Explain in brief the break down type of maintenance. **04**

Q.7 **a)** Explain the concept of KAIZAN. **05**
b) Explain the concept of Supply chain Management. **05**
c) Explain in brief about various phases of value analysis. **04**

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem- I) (New) (CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) What is Artificial Intelligence?
a) A field that aims to make humans more intelligent
b) A field that aims to improve the security
c) A field that aims to develop intelligent machines
d) A field that aims to mine the data

2) Which of the following is the branch of Artificial Intelligence?
a) Machine Learning b) Cyber forensics
c) Full-Stack Developer d) Network Design

3) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

4) What is the form of Fuzzy logic?
a) Two-valued logic b) Crisp set logi
c) Many-valued logic d) Binary set logic

5) The values of the set membership is represented by _____.
a) Discrete Set
b) Degree of truth
c) Probabilities
d) Both Degree of truth & Probabilities

6) What is the field of Natural Language Processing (NLP)?
a) Computer Science b) Artificial Intelligence
c) Linguistics d) All of the mentioned

7) What is Machine Translation?
a) Converts one human language to another
b) Converts human language to machine language
c) Converts any human language to English
d) Converts Machine language to human language

8) Which of the factors affect the performance of learner system does not include?

a) Representation scheme used
b) Training scenario
c) Type of feedback
d) Good data structures

9) In language understanding, the levels of knowledge that does not include?

a) Phonological
b) Syntactic
c) Empirical
d) Logical

10) A model of language consists of the categories which does not include?

a) Language units
b) Role structure of units
c) System constraints
d) Structural units

11) What are the essential elements in a Markov Decision Process?

a) States, Model, Probabilities, Stations
b) States, Model, Actions, Rewards
c) Model, Lines, Decisions, Rewards
d) States, Actions

12) In reinforcement learning, the purpose or goal of the agent is formalized in terms of a special signal, called the _____.

a) Return
b) State
c) Action
d) Reward

13) What's the main point of difference between human & machine intelligence?

a) human perceive everything as a pattern while machine perceive it merely as data
b) human have emotions
c) human have more IQ & intellect
d) human have sense organs

14) What is plasticity in neural networks?

a) input pattern keeps on changing
b) input pattern has become static
c) output pattern keeps on changing
d) output is static

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem- I) (New) (CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section - I and Section - II.
2) Figures to the right indicates full marks.

Section – I

Q.2	**a)**	Explain applications of Artificial Intelligence.	**07**
	b)	Explain Depth First Search Technique.	**07**
Q.3	**a)**	Define fuzzy logic and explain basic elements of fuzzy logic.	**07**
	b)	Explain advantages and disadvantages of fuzzy logic.	**07**
Q.4	**a)**	What is Natural Language processing (NLP)? Explain applications of NLP in Mechanical Engineering.	**07**
	b)	Explain image processing steps with neat sketch.	**07**

Section – II

Q.5	**a)**	Define machine learning and explain various types of machine learning.	**07**
	b)	Explain applications of machine learning in Mechanical Engineering.	**07**
Q.6	**a)**	Compare between Supervised learning, Unsupervised learning and Reinforcement learning.	**07**
	b)	Explain various types of Supervised machine learning algorithms.	**07**
Q.7	**a)**	Define neural network. Explain various types of neural networks.	**07**
	b)	Explain applications of Artificial Neural Network (ANN) in Mechanical Engineering.	**07**

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem- I) (New) (CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of the factors affect the performance of learner system does not include?
a) Representation scheme used b) Training scenario
c) Type of feedback d) Good data structures

2) In language understanding, the levels of knowledge that does not include?
a) Phonological b) Syntactic
c) Empirical d) Logical

3) A model of language consists of the categories which does not include?
a) Language units b) Role structure of units
c) System constraints d) Structural units

4) What are the essential elements in a Markov Decision Process?
a) States, Model, Probabilities, Stations
b) States, Model, Actions, Rewards
c) Model, Lines, Decisions, Rewards
d) States, Actions

5) In reinforcement learning, the purpose or goal of the agent is formalized in terms of a special signal, called the _____.
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c) Action d) Reward

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c) Problem you design
d) Representing your problem with variable and parameter

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12) The values of the set membership is represented by _____.
a) Discrete Set
b) Degree of truth
c) Probabilities
d) Both Degree of truth & Probabilities

13) What is the field of Natural Language Processing (NLP)?
a) Computer Science
b) Artificial Intelligence
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d) All of the mentioned

14) What is Machine Translation?
a) Converts one human language to another
b) Converts human language to machine language
c) Converts any human language to English
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Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem- I) (New) (CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section - I and Section - II.
2) Figures to the right indicates full marks.

Section – I

Q.2	**a)**	Explain applications of Artificial Intelligence.	**07**
	b)	Explain Depth First Search Technique.	**07**
Q.3	**a)**	Define fuzzy logic and explain basic elements of fuzzy logic.	**07**
	b)	Explain advantages and disadvantages of fuzzy logic.	**07**
Q.4	**a)**	What is Natural Language processing (NLP)? Explain applications of NLP in Mechanical Engineering.	**07**
	b)	Explain image processing steps with neat sketch.	**07**

Section – II

Q.5	**a)**	Define machine learning and explain various types of machine learning.	**07**
	b)	Explain applications of machine learning in Mechanical Engineering.	**07**
Q.6	**a)**	Compare between Supervised learning, Unsupervised learning and Reinforcement learning.	**07**
	b)	Explain various types of Supervised machine learning algorithms.	**07**
Q.7	**a)**	Define neural network. Explain various types of neural networks.	**07**
	b)	Explain applications of Artificial Neural Network (ANN) in Mechanical Engineering.	**07**

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Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem- I) (New) (CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What are the essential elements in a Markov Decision Process?
a) States, Model, Probabilities, Stations
b) States, Model, Actions, Rewards
c) Model, Lines, Decisions, Rewards
d) States, Actions

2) In reinforcement learning, the purpose or goal of the agent is formalized in terms of a special signal, called the _____.
a) Return b) State
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c) Type of feedback
d) Good data structures

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d) Logical

14) A model of language consists of the categories which does not include?
a) Language units
b) Role structure of units
c) System constraints
d) Structural units

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Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem- I) (New) (CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section - I and Section - II.
2) Figures to the right indicates full marks.

Section – I

Q.2	**a)**	Explain applications of Artificial Intelligence.	**07**
	b)	Explain Depth First Search Technique.	**07**
Q.3	**a)**	Define fuzzy logic and explain basic elements of fuzzy logic.	**07**
	b)	Explain advantages and disadvantages of fuzzy logic.	**07**
Q.4	**a)**	What is Natural Language processing (NLP)? Explain applications of NLP in Mechanical Engineering.	**07**
	b)	Explain image processing steps with neat sketch.	**07**

Section – II

Q.5	**a)**	Define machine learning and explain various types of machine learning.	**07**
	b)	Explain applications of machine learning in Mechanical Engineering.	**07**
Q.6	**a)**	Compare between Supervised learning, Unsupervised learning and Reinforcement learning.	**07**
	b)	Explain various types of Supervised machine learning algorithms.	**07**
Q.7	**a)**	Define neural network. Explain various types of neural networks.	**07**
	b)	Explain applications of Artificial Neural Network (ANN) in Mechanical Engineering.	**07**

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem- I) (New) (CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What is the field of Natural Language Processing (NLP)?
a) Computer Science b) Artificial Intelligence
c) Linguistics d) All of the mentioned

2) What is Machine Translation?
a) Converts one human language to another
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b) Crisp set logi
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14) The values of the set membership is represented by _____.
a) Discrete Set
b) Degree of truth
c) Probabilities
d) Both Degree of truth & Probabilities

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Seat No.	

Set S

Fourth Y. (B.Tech.) (Sem- I) (New) (CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Artificial Intelligence and Machine Learning (BTN02707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section - I and Section - II.
2) Figures to the right indicates full marks.

Section – I

Q.2	**a)**	Explain applications of Artificial Intelligence.	**07**
	b)	Explain Depth First Search Technique.	**07**
Q.3	**a)**	Define fuzzy logic and explain basic elements of fuzzy logic.	**07**
	b)	Explain advantages and disadvantages of fuzzy logic.	**07**
Q.4	**a)**	What is Natural Language processing (NLP)? Explain applications of NLP in Mechanical Engineering.	**07**
	b)	Explain image processing steps with neat sketch.	**07**

Section – II

Q.5	**a)**	Define machine learning and explain various types of machine learning.	**07**
	b)	Explain applications of machine learning in Mechanical Engineering.	**07**
Q.6	**a)**	Compare between Supervised learning, Unsupervised learning and Reinforcement learning.	**07**
	b)	Explain various types of Supervised machine learning algorithms.	**07**
Q.7	**a)**	Define neural network. Explain various types of neural networks.	**07**
	b)	Explain applications of Artificial Neural Network (ANN) in Mechanical Engineering.	**07**

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Seat No.		Set	P

Fourth Year (B.Tech.) (Sem- I) (New)(CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Assume suitable data if required.
5) use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) By 2019 Indian Railways expected _____% bio-toilet coaches.
a) 50 b) 70
c) 40 d) 100

2) Weight of the passenger is categorized in _____.
a) sprung mass b) unsprang mass
c) non-sprung mass d) dummy mass

3) RFID means _____.
a) Radio Frequency Identification Tags
b) Radio frequency Indicative Tub
c) Resonance Frequency Identification Tags
d) None of these

4) Which of the following is an advantage of electric traction over other methods Of traction?
a) Faster acceleration b) No pollution problems
c) Better braking action d) All of the above

5) _____ is not a part of VCC used in A/C.
a) Evaporator b) Condenser
c) Compressor d) Deflector

6) In railway the green light indicates _____.
a) stop b) proceed
c) proceed cautiously d) none

7) For Fiat Bogie Break disc diameter is _____ mm.
a) 750 b) 650
c) 635 d) 640

8) Maintenance consist of the following action(s) _____.
a) Replace of component b) Repair of component
c) Service of component d) All of the above

9) Belt of an electric motor is broken, it needs _____.

a) Corrective maintenance b) Scheduled maintenance
c) Preventive maintenance d) Timely maintenance

10) POH period of maintenance for HHP-Loco is _____.

a) 6 years b) 4 years
c) 18 years d) 10 years

11) Which signals are used in shunting operations for low-speed movement?

a) Semaphore signal b) Warner signal
c) Starter signal d) Disc signal

12) _____ is not a stage for fire.

a) Propagation b) Period of decline
c) Flash over d) Fully developed

13) _____ is not a Digital Technology used in Traffic Control.

a) RFID b) LiDAR
c) Li-Fi d) Wi-Fi

14) _____ is not a coupling used in Railway Coaches.

a) Screw Coupling b) Side buffer coupling
c) Central buffer coupling d) Tie coupling

Seat No.	

Set **P**

Fourth Year (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Out of remaining questions, attempt any two questions from each Section.
2) Assume suitable data if necessary.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Solve

a)	What are the components of air suspension in the Indian Railway? Elaborate in details.	**04**
b)	Write a short note R.M.P.U in LHB coaches.	**05**
c)	What is Head on Generation (HOG) technology? Explain in details of HOG.	**05**

Q.3 Solve

a)	Classify in details the types of braking system in Indian Railway	**04**
b)	Explain in details the components of C.B.C coupler.	**05**
c)	Define tractive force. Write its effects on Diesel locomotives.	**05**

Q.4 Solve

a)	Describe D.C electric supply unit for EMU with neat Sketches.	**04**
b)	Write a short note R.M.P.U in LHB coaches.	**05**
c)	Classify in details the types of Power supply units.	**05**

Section – II

Q.5 Solve

a)	Describe the duties & Responsibilities of Senior section Engineer (Diesel locomotives)	**04**
b)	Explain with neat sketch the Bio-Vacuum toilet system used in Indian railway.	**05**
c)	Write Short note on RMS in Indian railway.	**05**

Q.6 Solve

a)	What are different components of Bio-Vacuum toilet system explain in detail.	**05**
b)	Write short note on Traffic management system in Indian railway.	**05**
c)	Describe all parts of D.C traction Motor with neat Sketches.	**04**

Q.7 Solve

a)	Write in details the Scrap management system in Indian Railway.	**04**
b)	What is mean by rolling stock management. which types of rolling stock management used in Indian railway?	**05**
c)	Which digital technologies used in traffic control. explain RFID in details.	**05**

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Seat No.	

Set Q

Fourth Year (B.Tech.) (Sem- I) (New)(CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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1) Maintenance consist of the following action(s) _____.
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3) POH period of maintenance for HHP-Loco is _____.
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4) Which signals are used in shunting operations for low-speed movement?
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SLR-GF-160

Seat No.	

Set Q

Fourth Year (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
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Instructions: 1) Out of remaining questions, attempt any two questions from each Section.
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Section – I

Q.2 Solve

a)	What are the components of air suspension in the Indian Railway? Elaborate in details.	**04**
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Section – II

Q.5 Solve

a)	Describe the duties & Responsibilities of Senior section Engineer (Diesel locomotives)	**04**
b)	Explain with neat sketch the Bio-Vacuum toilet system used in Indian railway.	**05**
c)	Write Short note on RMS in Indian railway.	**05**

Q.6 Solve

a)	What are different components of Bio-Vacuum toilet system explain in detail.	**05**
b)	Write short note on Traffic management system in Indian railway.	**05**
c)	Describe all parts of D.C traction Motor with neat Sketches.	**04**

Q.7 Solve

a)	Write in details the Scrap management system in Indian Railway.	**04**
b)	What is mean by rolling stock management. which types of rolling stock management used in Indian railway?	**05**
c)	Which digital technologies used in traffic control. explain RFID in details.	**05**

SLR-GF-160

Seat No.	

Set R

Fourth Year (B.Tech.) (Sem- I) (New)(CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Assume suitable data if required.
5) use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which signals are used in shunting operations for low-speed movement?
a) Semaphore signal b) Warner signal
c) Starter signal d) Disc signal

2) _____ is not a stage for fire.
a) Propagation b) Period of decline
c) Flash over d) Fully developed

3) _____ is not a Digital Technology used in Traffic Control.
a) RFID b) LiDAR
c) Li-Fi d) Wi-Fi

4) _____ is not a coupling used in Railway Coaches.
a) Screw Coupling b) Side buffer coupling
c) Central buffer coupling d) Tie coupling

5) By 2019 Indian Railways expected _____% bio-toilet coaches.
a) 50 b) 70
c) 40 d) 100

6) Weight of the passenger is categorized in _____.
a) sprung mass b) unsprang mass
c) non-sprung mass d) dummy mass

7) RFID means _____.
a) Radio Frequency Identification Tags
b) Radio frequency Indicative Tub
c) Resonance Frequency Identification Tags
d) None of these

8) Which of the following is an advantage of electric traction over other methods Of traction?
a) Faster acceleration b) No pollution problems
c) Better braking action d) All of the above

9) _____ is not a part of VCC used in A/C.
a) Evaporator b) Condenser
c) Compressor d) Deflector

10) In railway the green light indicates _____.
a) stop b) proceed
c) proceed cautiously d) none

11) For Fiat Bogie Break disc diameter is _____ mm.
a) 750 b) 650
c) 635 d) 640

12) Maintenance consist of the following action(s) _____.
a) Replace of component b) Repair of component
c) Service of component d) All of the above

13) Belt of an electric motor is broken, it needs _____.
a) Corrective maintenance b) Scheduled maintenance
c) Preventive maintenance d) Timely maintenance

14) POH period of maintenance for HHP-Loco is _____.
a) 6 years b) 4 years
c) 18 years d) 10 years

SLR-GF-160

Seat No.	

Set R

Fourth Year (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Out of remaining questions, attempt any two questions from each Section.
2) Assume suitable data if necessary.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Solve

a) What are the components of air suspension in the Indian Railway? Elaborate in details. **04**

b) Write a short note R.M.P.U in LHB coaches. **05**

c) What is Head on Generation (HOG) technology? Explain in details of HOG. **05**

Q.3 Solve

a) Classify in details the types of braking system in Indian Railway **04**

b) Explain in details the components of C.B.C coupler. **05**

c) Define tractive force. Write its effects on Diesel locomotives. **05**

Q.4 Solve

a) Describe D.C electric supply unit for EMU with neat Sketches. **04**

b) Write a short note R.M.P.U in LHB coaches. **05**

c) Classify in details the types of Power supply units. **05**

Section – II

Q.5 Solve

a) Describe the duties & Responsibilities of Senior section Engineer (Diesel locomotives) **04**

b) Explain with neat sketch the Bio-Vacuum toilet system used in Indian railway. **05**

c) Write Short note on RMS in Indian railway. **05**

Q.6 Solve

a) What are different components of Bio-Vacuum toilet system explain in detail. **05**

b) Write short note on Traffic management system in Indian railway. **05**

c) Describe all parts of D.C traction Motor with neat Sketches. **04**

Q.7 Solve

a) Write in details the Scrap management system in Indian Railway. **04**

b) What is mean by rolling stock management. which types of rolling stock management used in Indian railway? **05**

c) Which digital technologies used in traffic control. explain RFID in details. **05**

SLR-GF-160

Seat No.		Set	S

Fourth Year (B.Tech.) (Sem- I) (New)(CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicate full marks.
4) Assume suitable data if required.
5) use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) In railway the green light indicates _____.
a) stop b) proceed
c) proceed cautiously d) none

2) For Fiat Bogie Break disc diameter is _____ mm.
a) 750 b) 650
c) 635 d) 640

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a) Replace of component b) Repair of component
c) Service of component d) All of the above

4) Belt of an electric motor is broken, it needs _____.
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c) Preventive maintenance d) Timely maintenance

5) POH period of maintenance for HHP-Loco is _____.
a) 6 years b) 4 years
c) 18 years d) 10 years

6) Which signals are used in shunting operations for low-speed movement?
a) Semaphore signal b) Warner signal
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7) _____ is not a stage for fire.
a) Propagation b) Period of decline
c) Flash over d) Fully developed

8) _____ is not a Digital Technology used in Traffic Control.
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c) Li-Fi d) Wi-Fi

9) _____ is not a coupling used in Railway Coaches.
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10) By 2019 Indian Railways expected _____% bio-toilet coaches.
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11) Weight of the passenger is categorized in _____.
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c) non-sprung mass d) dummy mass

12) RFID means _____.
a) Radio Frequency Identification Tags
b) Radio frequency Indicative Tub
c) Resonance Frequency Identification Tags
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13) Which of the following is an advantage of electric traction over other methods Of traction?
a) Faster acceleration b) No pollution problems
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14) _____ is not a part of VCC used in A/C.
a) Evaporator b) Condenser
c) Compressor d) Deflector

SLR-GF-160

Seat No.		Set	S

Fourth Year (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov – 2023
MECHANICAL ENGINEERING
Railway Systems Management (BTN02708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Out of remaining questions, attempt any two questions from each Section.
2) Assume suitable data if necessary.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Solve

a)	What are the components of air suspension in the Indian Railway? Elaborate in details.	**04**
b)	Write a short note R.M.P.U in LHB coaches.	**05**
c)	What is Head on Generation (HOG) technology? Explain in details of HOG.	**05**

Q.3 Solve

a)	Classify in details the types of braking system in Indian Railway	**04**
b)	Explain in details the components of C.B.C coupler.	**05**
c)	Define tractive force. Write its effects on Diesel locomotives.	**05**

Q.4 Solve

a)	Describe D.C electric supply unit for EMU with neat Sketches.	**04**
b)	Write a short note R.M.P.U in LHB coaches.	**05**
c)	Classify in details the types of Power supply units.	**05**

Section – II

Q.5 Solve

a)	Describe the duties & Responsibilities of Senior section Engineer (Diesel locomotives)	**04**
b)	Explain with neat sketch the Bio-Vacuum toilet system used in Indian railway.	**05**
c)	Write Short note on RMS in Indian railway.	**05**

Q.6 Solve

a)	What are different components of Bio-Vacuum toilet system explain in detail.	**05**
b)	Write short note on Traffic management system in Indian railway.	**05**
c)	Describe all parts of D.C traction Motor with neat Sketches.	**04**

Q.7 Solve

a)	Write in details the Scrap management system in Indian Railway.	**04**
b)	What is mean by rolling stock management. which types of rolling stock management used in Indian railway?	**05**
c)	Which digital technologies used in traffic control. explain RFID in details.	**05**

SLR-GF-162

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) If two products are substitutes, their CPED will be _____.
a) Positive b) Negative
c) Zero d) infinity

2) If demand for a product is elastic, _____.
a) PED=1 b) PED < 1
c) PED >1 d) PED=0

3) If supply curve shifts leftwards for the same demand curve, equilibrium quantity will _____.
a) Decrease b) remain same
c) increase or decrease d) Increase

4) Cost that cannot be shown in a statement is known as _____.
a) opportunity cost b) incremental cost
c) direct cost d) current cost

5) Which of the following is an example of indirect material cost for a foundry?
a) cost of main metal b) cost of resin
c) cost of building d) cost of advertising

6) Which of the following is not included in production cost?
a) factory overhead
b) administrative overhead
c) selling and distribution overhead
d) indirect expenses

7) Finding the current value from future sum is known as _____.
a) future worth method b) present worth method
c) rate of return method d) annual equivalent method

8) _____ favours make decision.
a) Low fixed cost b) High fixed cost
c) Availability of vendors d) Low production volume

9) Raw material needs to be substituted due to _____.
a) its unavailability b) its higher cost
c) difficulty in its processing d) Any of the above

10) _____ is the intangible fixed asset of the company.
a) Plant and machinery b) Goodwill
c) Patent d) Royalty

11) For an asset,
a) economic Life < useful life b) useful life < economic life
c) physical life < useful life d) physical life < economic life

12) Which of the following is unplanned maintenance?
a) Preventive b) Predictive
c) Breakdown d) Routine

13) Project cost & benefits are analysed in _____ appraisal.
a) technical b) economic
c) financial d) market

14) Aesthetics of a product are considered in _____ value.
a) esteem b) functional
c) cost d) exchange

SLR-GF-162

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section-I and Section-II.
2) Use of scientific calculator is allowed.
3) Figures to the right indicates full marks.
4) Assume additional suitable data if necessary and state it clearly.

Section – I

Q.2 **a)** Define PED and explain its types with graphs. **08**

b) Nandini is currently investing money in a bank account having a nominal 8% interest compounded annually. If she invests Rs. 25000 today, how many years will it take for her account to grow to Rs. 100000? **06**

Q.3 **a)** A company purchases an article at Rs 10 / unit. The rent for the space is Rs 20000. Articles are sold at Rs 15 / unit. Calculate the number of articles that must be sold, **08**
1) to break even
2) to earn a profit of Rs 5000
3) to incur a loss of Rs 3000
4) if company sells 6000 articles, calculate percentage safety margin.

b) Manish wants his savings to yield Rs. 500000 at the end of five years. How much should he deposit today if interest rate is fixed at 9 % compounded annually. **06**

Q.4 **a)** Explain in brief the following terms. **08**
1) fixed cost
2) variable cost
3) marginal cost
4) sunk cost

b) What do you mean by ‘Consumer’s Surplus’ & ‘Producer’s Surplus’? Discuss with the help of graphs. **06**

Section – II

Q.5 **a)** What do you mean by make or buy decision? Explain its importance in an industry. **08**

b) What do you mean by a project? What are the essential features of a project? **06**

Q.6 **a)** Explain value engineering procedure stepwise. **08**

b) Explain graphically ‘Cost of Maintenance’. **06**

Q.7 **a)** Explain various lives of an asset. **08**

b) What do you mean by design modification and why is it needed? **06**

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) _____ favours make decision.
a) Low fixed cost b) High fixed cost
c) Availability of vendors d) Low production volume

2) Raw material needs to be substituted due to _____.
a) its unavailability b) its higher cost
c) difficulty in its processing d) Any of the above

3) _____ is the intangible fixed asset of the company.
a) Plant and machinery b) Goodwill
c) Patent d) Royalty

4) For an asset,
a) economic Life < useful life b) useful life < economic life
c) physical life < useful life d) physical life < economic life

5) Which of the following is unplanned maintenance?
a) Preventive b) Predictive
c) Breakdown d) Routine

6) Project cost & benefits are analysed in _____ appraisal.
a) technical b) economic
c) financial d) market

7) Aesthetics of a product are considered in _____ value.
a) esteem b) functional
c) cost d) exchange

8) If two products are substitutes, their CPED will be _____.
a) Positive b) Negative
c) Zero d) infinity

9) If demand for a product is elastic, _____.
a) PED=1 b) PED < 1
c) PED >1 d) PED=0

10) If supply curve shifts leftwards for the same demand curve, equilibrium quantity will _____.

a) Decrease
b) remain same
c) increase or decrease
d) Increase

11) Cost that cannot be shown in a statement is known as _____.

a) opportunity cost
b) incremental cost
c) direct cost
d) current cost

12) Which of the following is an example of indirect material cost for a foundry?

a) cost of main metal
b) cost of resin
c) cost of building
d) cost of advertising

13) Which of the following is not included in production cost?

a) factory overhead
b) administrative overhead
c) selling and distribution overhead
d) indirect expenses

14) Finding the current value from future sum is known as _____.

a) future worth method
b) present worth method
c) rate of return method
d) annual equivalent method

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section-I and Section-II.
2) Use of scientific calculator is allowed.
3) Figures to the right indicates full marks.
4) Assume additional suitable data if necessary and state it clearly.

Section – I

Q.2 **a)** Define PED and explain its types with graphs. **08**

b) Nandini is currently investing money in a bank account having a nominal 8% interest compounded annually. If she invests Rs. 25000 today, how many years will it take for her account to grow to Rs. 100000? **06**

Q.3 **a)** A company purchases an article at Rs 10 / unit. The rent for the space is Rs 20000. Articles are sold at Rs 15 / unit. Calculate the number of articles that must be sold, **08**
1) to break even
2) to earn a profit of Rs 5000
3) to incur a loss of Rs 3000
4) if company sells 6000 articles, calculate percentage safety margin.

b) Manish wants his savings to yield Rs. 500000 at the end of five years. How much should he deposit today if interest rate is fixed at 9 % compounded annually. **06**

Q.4 **a)** Explain in brief the following terms. **08**
1) fixed cost
2) variable cost
3) marginal cost
4) sunk cost

b) What do you mean by ‘Consumer’s Surplus’ & ‘Producer’s Surplus’? Discuss with the help of graphs. **06**

Section – II

Q.5 **a)** What do you mean by make or buy decision? Explain its importance in an industry. **08**

b) What do you mean by a project? What are the essential features of a project? **06**

Q.6 **a)** Explain value engineering procedure stepwise. **08**

b) Explain graphically ‘Cost of Maintenance’. **06**

Q.7	**a)**	Explain various lives of an asset.	**08**
	b)	What do you mean by design modification and why is it needed?	**06**

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) For an asset,
a) economic Life < useful life b) useful life < economic life
c) physical life < useful life d) physical life < economic life

2) Which of the following is unplanned maintenance?
a) Preventive b) Predictive
c) Breakdown d) Routine

3) Project cost & benefits are analysed in _____ appraisal.
a) technical b) economic
c) financial d) market

4) Aesthetics of a product are considered in _____ value.
a) esteem b) functional
c) cost d) exchange

5) If two products are substitutes, their CPED will be _____.
a) Positive b) Negative
c) Zero d) infinity

6) If demand for a product is elastic, _____.
a) PED=1 b) PED < 1
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7) If supply curve shifts leftwards for the same demand curve, equilibrium quantity will _____.
a) Decrease b) remain same
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8) Cost that cannot be shown in a statement is known as _____.
a) opportunity cost b) incremental cost
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9) Which of the following is an example of indirect material cost for a foundry?
a) cost of main metal b) cost of resin
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10) Which of the following is not included in production cost?
a) factory overhead
b) administrative overhead
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11) Finding the current value from future sum is known as _____.
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12) _____ favours make decision.
a) Low fixed cost
b) High fixed cost
c) Availability of vendors
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13) Raw material needs to be substituted due to _____.
a) its unavailability
b) its higher cost
c) difficulty in its processing
d) Any of the above

14) _____ is the intangible fixed asset of the company.
a) Plant and machinery
b) Goodwill
c) Patent
d) Royalty

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section-I and Section-II.
2) Use of scientific calculator is allowed.
3) Figures to the right indicates full marks.
4) Assume additional suitable data if necessary and state it clearly.

Section – I

Q.2 **a)** Define PED and explain its types with graphs. **08**

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Section – II

Q.5 **a)** What do you mean by make or buy decision? Explain its importance in an industry. **08**

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Q.6 **a)** Explain value engineering procedure stepwise. **08**

b) Explain graphically ‘Cost of Maintenance’. **06**

Q.7	**a)**	Explain various lives of an asset.	**08**
	b)	What do you mean by design modification and why is it needed?	**06**

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

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c) financial d) market

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c) cost d) exchange

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13) Cost that cannot be shown in a statement is known as _____.

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c) cost of building d) cost of advertising

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (BTN02710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section-I and Section-II.
2) Use of scientific calculator is allowed.
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Section – I

Q.2 **a)** Define PED and explain its types with graphs. **08**

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3) marginal cost
4) sunk cost

b) What do you mean by ‘Consumer’s Surplus’ & ‘Producer’s Surplus’? Discuss with the help of graphs. **06**

Section – II

Q.5 **a)** What do you mean by make or buy decision? Explain its importance in an industry. **08**

b) What do you mean by a project? What are the essential features of a project? **06**

Q.6 **a)** Explain value engineering procedure stepwise. **08**

b) Explain graphically ‘Cost of Maintenance’. **06**

Q.7	**a)**	Explain various lives of an asset.	**08**
	b)	What do you mean by design modification and why is it needed?	**06**

SLR-GF-164

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of a non-programmable scientific calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Select the correct alternative. **14**

1) In which industries are collaborative robots (cobots) expected to play a pivotal role in the future?
a) Agriculture and farming b) Construction and mining
c) Entertainment and gaming d) Manufacturing and healthcare

2) In the service industry, how are robots being utilized for tasks such as customer service and hospitality?
a) By providing personalized human interaction
b) By replacing human workers
c) By operating exclusively in back-end operation
d) By avoiding customer interaction

3) In the service industry, robots are often used for tasks like:
a) Manufacturing b) Healthcare
c) Agriculture d) Mining

4) Unmanned Ground Vehicles (UGV) are primarily designed for:
a) Aerial surveillance
b) Underwater exploration
c) Ground-based tasks without human intervention
d) Space exploration

5) What does HMI stand for in the context of robotics?
a) Human machine integration b) Human machine interface
c) Human machine inhibitor d) Human machine insulator

6) What is the term for the undesired interaction between multiple robots or machines working in close proximity?
a) Cooperation b) Interference
c) Isolation d) Synchronization

7) Slip in the context of WMR refers to:
a) Smooth motion on flat surfaces
b) The loss of traction and wheel slippage
c) Precise positioning on uneven terrain
d) Reducing the wheel diameter

8) For Spot welding operation, _____ control is preferred.
a) Pont-to-point b) Continuous
c) Real-time d) Offline

9) For Spray coating application, _____ control is preferred.
a) Pont-to-point b) Continuous
c) Real-time d) offline

10) In ROI method of economic analysis, the rate of return is compared with _____.
a) Bank interest on FD b) Bank Interest on Loan
c) MARR d) EUAC

11) MARR stands for _____ in economic analysis.
a) Mean Annual Rate of Return
b) Minimum Annual Rate of Return
c) Minimum Attractive Rate of Return
d) Maximum Annual Rate of Return

12) What should organizations consider when planning and engineering the installation of robotics systems?
a) Ignoring the need for ongoing maintenance
b) Ensuring the system's compatibility with existing infrastructure
c) Reducing investment in training and skill development
d) Maximizing complexity without regard for system reliability

13) _____ maintenance of robot is the case when the maintenance is done at periodic intervals.
a) Preventive b) Predictive
c) Remedial d) All of the above

14) NACF in economic analysis stands for _____.
a) Natural Annual Cash Flow b) National Annual Cash Flow
c) Net Annual Cash Flow d) None of these

SLR-GF-164

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any 2 questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary.

Section – I

Q.2 **a)** Elaborate more on the characteristics of "Future Robot" tasks assessing the feasibility of deploying them. **07**

b) Analyze how has the robotics market evolved over the past decade, and what factors have contributed to this evolution. **07**

Q.3 **a)** What are the considerations involved in work cell design for robot programming? Discuss the factors related to work cell layout, control, safety, and operator interface. **07**

b) Compare and contrast the different types of robot cell layouts. **07**

Q.4 **a)** Define Mobile robots and enlist the types of land-based mobile robots. Explain the key issues for the locomotion of mobile robots. **07**

b) What is slip in the context of WMR? Model the WMR for rolling without slip on flat terrain. **07**

Section – II

Q.5 **a)** Elaborate on the features of the arc welding robot. **08**

b) Enlist the potential hazards faced by human operator during spray coating. Explain how a robot can solve this problem stating the advantages of robot for spray coating. **06**

Q.6 **a)** Prepare a checklist of activities included in the robot installation phase. **06**

b) A robot installation project has an initial cost of $1,00,000 and expected annual costs for operation and maintenance are estimated to be $24,000. The project is expected to generate revenues of $60,000 annually for four years, at which time the project will be retired. The estimated salvage value of the robot at the end of 4 years is $ 30,000. **08**

i) Determine the payback period for the project.
ii) Determine the Equivalent uniform annual cost for the project using a 25% MARR.
iii) Determine the expected Return on investment to be derived from the investment.

Evaluate by all the methods separately, whether the robot project is economically feasible.

Given: Capital recovery factor and Sinking fund factor for 4 years are given below for various interest rates.

Interest Rates (%)	Capital Recovery factor	Sinking Fund factor
20	0.3863	0.1863
25	0.4234	0.1734
30	0.4616	0.1616
35	0.5008	0.1508

Q.7 **a)** What are the general characteristics during plant survey that would make a potential robot application technically practical and economically feasible? **06**

b) The cost of the robot is $60,000 and the user company wants to establish an optimum level of spare parts inventory. The company knows which components of robot are likely to fail and it wants to build its spare parts to a stock level at which total cost of inventory plus lost total production time is minimized. When a breakdown occurs, the repair time will average 3 hours if the required spare part is available. If it is not available, it will lose an average of 15 hours of production while the part is being ordered and delivered. In addition, rush delivery of the part will cost $50 per order. The company estimates that the cost of downtime is $150 per hour. The robot operates one shift per day of 8 hours for 250 days per year. The mean time between failure is 250 hours. The cost of inventory is 15% per year of the value of spare parts in stock. The following level indicates various alternative spare parts level and the corresponding probability that the robot can be repaired using parts available in stock. **08**

Spare Parts level ($)	Pr (Coverage)	Pr (no coverage)
0	0	1
5000	0.25	0.75
10000	0.4	0.6
20000	0.65	0.35
30000	0.8	0.2
40000	0.9	0.1
60000	1	0

i) Based on the data provided, determine the optimum level of spare parts inventory to maintain.

ii) At the level of inventory determined in part (a), determine the ‘availability’ of the robot.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of a non-programmable scientific calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Select the correct alternative. **14**

1) For Spot welding operation, _____ control is preferred.
a) Pont-to-point b) Continuous
c) Real-time d) Offline

2) For Spray coating application, _____ control is preferred.
a) Pont-to-point b) Continuous
c) Real-time d) offline

3) In ROI method of economic analysis, the rate of return is compared with _____.
a) Bank interest on FD b) Bank Interest on Loan
c) MARR d) EUAC

4) MARR stands for _____ in economic analysis.
a) Mean Annual Rate of Return
b) Minimum Annual Rate of Return
c) Minimum Attractive Rate of Return
d) Maximum Annual Rate of Return

5) What should organizations consider when planning and engineering the installation of robotics systems?
a) Ignoring the need for ongoing maintenance
b) Ensuring the system's compatibility with existing infrastructure
c) Reducing investment in training and skill development
d) Maximizing complexity without regard for system reliability

6) _____ maintenance of robot is the case when the maintenance is done at periodic intervals.
a) Preventive b) Predictive
c) Remedial d) All of the above

7) NACF in economic analysis stands for _____.
a) Natural Annual Cash Flow b) National Annual Cash Flow
c) Net Annual Cash Flow d) None of these

8) In which industries are collaborative robots (cobots) expected to play a pivotal role in the future?
a) Agriculture and farming b) Construction and mining
c) Entertainment and gaming d) Manufacturing and healthcare

9) In the service industry, how are robots being utilized for tasks such as customer service and hospitality?
a) By providing personalized human interaction
b) By replacing human workers
c) By operating exclusively in back-end operation
d) By avoiding customer interaction

10) In the service industry, robots are often used for tasks like:
a) Manufacturing b) Healthcare
c) Agriculture d) Mining

11) Unmanned Ground Vehicles (UGV) are primarily designed for:
a) Aerial surveillance
b) Underwater exploration
c) Ground-based tasks without human intervention
d) Space exploration

12) What does HMI stand for in the context of robotics?
a) Human machine integration b) Human machine interface
c) Human machine inhibitor d) Human machine insulator

13) What is the term for the undesired interaction between multiple robots or machines working in close proximity?
a) Cooperation b) Interference
c) Isolation d) Synchronization

14) Slip in the context of WMR refers to:
a) Smooth motion on flat surfaces
b) The loss of traction and wheel slippage
c) Precise positioning on uneven terrain
d) Reducing the wheel diameter

Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any 2 questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary.

Section – I

Q.2 **a)** Elaborate more on the characteristics of "Future Robot" tasks assessing the feasibility of deploying them. **07**

b) Analyze how has the robotics market evolved over the past decade, and what factors have contributed to this evolution. **07**

Q.3 **a)** What are the considerations involved in work cell design for robot programming? Discuss the factors related to work cell layout, control, safety, and operator interface. **07**

b) Compare and contrast the different types of robot cell layouts. **07**

Q.4 **a)** Define Mobile robots and enlist the types of land-based mobile robots. Explain the key issues for the locomotion of mobile robots. **07**

b) What is slip in the context of WMR? Model the WMR for rolling without slip on flat terrain. **07**

Section – II

Q.5 **a)** Elaborate on the features of the arc welding robot. **08**

b) Enlist the potential hazards faced by human operator during spray coating. Explain how a robot can solve this problem stating the advantages of robot for spray coating. **06**

Q.6 **a)** Prepare a checklist of activities included in the robot installation phase. **06**

b) A robot installation project has an initial cost of $1,00,000 and expected annual costs for operation and maintenance are estimated to be $24,000. The project is expected to generate revenues of $60,000 annually for four years, at which time the project will be retired. The estimated salvage value of the robot at the end of 4 years is $ 30,000. **08**

i) Determine the payback period for the project.
ii) Determine the Equivalent uniform annual cost for the project using a 25% MARR.
iii) Determine the expected Return on investment to be derived from the investment.

Evaluate by all the methods separately, whether the robot project is economically feasible.

Given: Capital recovery factor and Sinking fund factor for 4 years are given below for various interest rates.

Interest Rates (%)	Capital Recovery factor	Sinking Fund factor
20	0.3863	0.1863
25	0.4234	0.1734
30	0.4616	0.1616
35	0.5008	0.1508

Q.7 **a)** What are the general characteristics during plant survey that would make a potential robot application technically practical and economically feasible? **06**

b) The cost of the robot is $60,000 and the user company wants to establish an optimum level of spare parts inventory. The company knows which components of robot are likely to fail and it wants to build its spare parts to a stock level at which total cost of inventory plus lost total production time is minimized. When a breakdown occurs, the repair time will average 3 hours if the required spare part is available. If it is not available, it will lose an average of 15 hours of production while the part is being ordered and delivered. In addition, rush delivery of the part will cost $50 per order. The company estimates that the cost of downtime is $150 per hour. The robot operates one shift per day of 8 hours for 250 days per year. The mean time between failure is 250 hours. The cost of inventory is 15% per year of the value of spare parts in stock. The following level indicates various alternative spare parts level and the corresponding probability that the robot can be repaired using parts available in stock. **08**

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5000	0.25	0.75
10000	0.4	0.6
20000	0.65	0.35
30000	0.8	0.2
40000	0.9	0.1
60000	1	0

i) Based on the data provided, determine the optimum level of spare parts inventory to maintain.

ii) At the level of inventory determined in part (a), determine the 'availability' of the robot.

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of a non-programmable scientific calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Select the correct alternative. **14**

1) MARR stands for _____ in economic analysis.
a) Mean Annual Rate of Return
b) Minimum Annual Rate of Return
c) Minimum Attractive Rate of Return
d) Maximum Annual Rate of Return

2) What should organizations consider when planning and engineering the installation of robotics systems?
a) Ignoring the need for ongoing maintenance
b) Ensuring the system's compatibility with existing infrastructure
c) Reducing investment in training and skill development
d) Maximizing complexity without regard for system reliability

3) _____ maintenance of robot is the case when the maintenance is done at periodic intervals.
a) Preventive b) Predictive
c) Remedial d) All of the above

4) NACF in economic analysis stands for _____.
a) Natural Annual Cash Flow b) National Annual Cash Flow
c) Net Annual Cash Flow d) None of these

5) In which industries are collaborative robots (cobots) expected to play a pivotal role in the future?
a) Agriculture and farming b) Construction and mining
c) Entertainment and gaming d) Manufacturing and healthcare

6) In the service industry, how are robots being utilized for tasks such as customer service and hospitality?
a) By providing personalized human interaction
b) By replacing human workers
c) By operating exclusively in back-end operation
d) By avoiding customer interaction

7) In the service industry, robots are often used for tasks like:
a) Manufacturing b) Healthcare
c) Agriculture d) Mining

8) Unmanned Ground Vehicles (UGV) are primarily designed for:
a) Aerial surveillance
b) Underwater exploration
c) Ground-based tasks without human intervention
d) Space exploration

9) What does HMI stand for in the context of robotics?
a) Human machine integration b) Human machine interface
c) Human machine inhibitor d) Human machine insulator

10) What is the term for the undesired interaction between multiple robots or machines working in close proximity?
a) Cooperation b) Interference
c) Isolation d) Synchronization

11) Slip in the context of WMR refers to:
a) Smooth motion on flat surfaces
b) The loss of traction and wheel slippage
c) Precise positioning on uneven terrain
d) Reducing the wheel diameter

12) For Spot welding operation, _____ control is preferred.
a) Pont-to-point b) Continuous
c) Real-time d) Offline

13) For Spray coating application, _____ control is preferred.
a) Pont-to-point b) Continuous
c) Real-time d) offline

14) In ROI method of economic analysis, the rate of return is compared with _____.
a) Bank interest on FD b) Bank Interest on Loan
c) MARR d) EUAC

Seat No.		Set	R

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any 2 questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable scientific calculator is allowed.
4) Assume suitable data if necessary.

Section – I

Q.2 **a)** Elaborate more on the characteristics of "Future Robot" tasks assessing the feasibility of deploying them. **07**

b) Analyze how has the robotics market evolved over the past decade, and what factors have contributed to this evolution. **07**

Q.3 **a)** What are the considerations involved in work cell design for robot programming? Discuss the factors related to work cell layout, control, safety, and operator interface. **07**

b) Compare and contrast the different types of robot cell layouts. **07**

Q.4 **a)** Define Mobile robots and enlist the types of land-based mobile robots. Explain the key issues for the locomotion of mobile robots. **07**

b) What is slip in the context of WMR? Model the WMR for rolling without slip on flat terrain. **07**

Section – II

Q.5 **a)** Elaborate on the features of the arc welding robot. **08**

b) Enlist the potential hazards faced by human operator during spray coating. Explain how a robot can solve this problem stating the advantages of robot for spray coating. **06**

Q.6 **a)** Prepare a checklist of activities included in the robot installation phase. **06**

b) A robot installation project has an initial cost of $1,00,000 and expected annual costs for operation and maintenance are estimated to be $24,000. The project is expected to generate revenues of $60,000 annually for four years, at which time the project will be retired. The estimated salvage value of the robot at the end of 4 years is $ 30,000. **08**

i) Determine the payback period for the project.
ii) Determine the Equivalent uniform annual cost for the project using a 25% MARR.
iii) Determine the expected Return on investment to be derived from the investment.

Evaluate by all the methods separately, whether the robot project is economically feasible.

Given: Capital recovery factor and Sinking fund factor for 4 years are given below for various interest rates.

Interest Rates (%)	Capital Recovery factor	Sinking Fund factor
20	0.3863	0.1863
25	0.4234	0.1734
30	0.4616	0.1616
35	0.5008	0.1508

Q.7 **a)** What are the general characteristics during plant survey that would make a potential robot application technically practical and economically feasible? **06**

b) The cost of the robot is $60,000 and the user company wants to establish an optimum level of spare parts inventory. The company knows which components of robot are likely to fail and it wants to build its spare parts to a stock level at which total cost of inventory plus lost total production time is minimized. When a breakdown occurs, the repair time will average 3 hours if the required spare part is available. If it is not available, it will lose an average of 15 hours of production while the part is being ordered and delivered. In addition, rush delivery of the part will cost $50 per order. The company estimates that the cost of downtime is $150 per hour. The robot operates one shift per day of 8 hours for 250 days per year. The mean time between failure is 250 hours. The cost of inventory is 15% per year of the value of spare parts in stock. The following level indicates various alternative spare parts level and the corresponding probability that the robot can be repaired using parts available in stock. **08**

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10000	0.4	0.6
20000	0.65	0.35
30000	0.8	0.2
40000	0.9	0.1
60000	1	0

i) Based on the data provided, determine the optimum level of spare parts inventory to maintain.

ii) At the level of inventory determined in part (a), determine the ‘availability’ of the robot.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of a non-programmable scientific calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Select the correct alternative. **14**

1) What is the term for the undesired interaction between multiple robots or machines working in close proximity?
a) Cooperation b) Interference
c) Isolation d) Synchronization

2) Slip in the context of WMR refers to:
a) Smooth motion on flat surfaces
b) The loss of traction and wheel slippage
c) Precise positioning on uneven terrain
d) Reducing the wheel diameter

3) For Spot welding operation, _____ control is preferred.
a) Pont-to-point b) Continuous
c) Real-time d) Offline

4) For Spray coating application, _____ control is preferred.
a) Pont-to-point b) Continuous
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5) In ROI method of economic analysis, the rate of return is compared with _____.
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6) MARR stands for _____ in economic analysis.
a) Mean Annual Rate of Return
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7) What should organizations consider when planning and engineering the installation of robotics systems?
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d) Maximizing complexity without regard for system reliability

8) _____ maintenance of robot is the case when the maintenance is done at periodic intervals.
a) Preventive b) Predictive
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c) Net Annual Cash Flow d) None of these

10) In which industries are collaborative robots (cobots) expected to play a pivotal role in the future?
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12) In the service industry, robots are often used for tasks like:
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a) Aerial surveillance
b) Underwater exploration
c) Ground-based tasks without human intervention
d) Space exploration

14) What does HMI stand for in the context of robotics?
a) Human machine integration b) Human machine interface
c) Human machine inhibitor d) Human machine insulator

SLR-GF-164

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics in robotics (BTN02718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any 2 questions from each section.
2) Figures to the right indicate full marks.
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4) Assume suitable data if necessary.

Section – I

Q.2 **a)** Elaborate more on the characteristics of "Future Robot" tasks assessing the feasibility of deploying them. **07**

b) Analyze how has the robotics market evolved over the past decade, and what factors have contributed to this evolution. **07**

Q.3 **a)** What are the considerations involved in work cell design for robot programming? Discuss the factors related to work cell layout, control, safety, and operator interface. **07**

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Q.4 **a)** Define Mobile robots and enlist the types of land-based mobile robots. Explain the key issues for the locomotion of mobile robots. **07**

b) What is slip in the context of WMR? Model the WMR for rolling without slip on flat terrain. **07**

Section – II

Q.5 **a)** Elaborate on the features of the arc welding robot. **08**

b) Enlist the potential hazards faced by human operator during spray coating. Explain how a robot can solve this problem stating the advantages of robot for spray coating. **06**

Q.6 **a)** Prepare a checklist of activities included in the robot installation phase. **06**

b) A robot installation project has an initial cost of $1,00,000 and expected annual costs for operation and maintenance are estimated to be $24,000. The project is expected to generate revenues of $60,000 annually for four years, at which time the project will be retired. The estimated salvage value of the robot at the end of 4 years is $ 30,000. **08**

i) Determine the payback period for the project.
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Q.7 **a)** What are the general characteristics during plant survey that would make a potential robot application technically practical and economically feasible? **06**

b) The cost of the robot is $60,000 and the user company wants to establish an optimum level of spare parts inventory. The company knows which components of robot are likely to fail and it wants to build its spare parts to a stock level at which total cost of inventory plus lost total production time is minimized. When a breakdown occurs, the repair time will average 3 hours if the required spare part is available. If it is not available, it will lose an average of 15 hours of production while the part is being ordered and delivered. In addition, rush delivery of the part will cost $50 per order. The company estimates that the cost of downtime is $150 per hour. The robot operates one shift per day of 8 hours for 250 days per year. The mean time between failure is 250 hours. The cost of inventory is 15% per year of the value of spare parts in stock. The following level indicates various alternative spare parts level and the corresponding probability that the robot can be repaired using parts available in stock. **08**

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10000	0.4	0.6
20000	0.65	0.35
30000	0.8	0.2
40000	0.9	0.1
60000	1	0

i) Based on the data provided, determine the optimum level of spare parts inventory to maintain.

ii) At the level of inventory determined in part (a), determine the ‘availability’ of the robot.

SLR-GF-165

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page. Answer MCQ/Objective type questions on Page No.3 only.
3) Figures to the right indicates full marks.
4) Use of scientific calculator is allowed.
5) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) What does CAD stand for?
a) Computer-Aided Design b) Computer-Aided Development
c) Computer-Activated Drawing d) Computer-Appointed Diagram

2) In feature-based 3D CAD modeling, what are "features"?
a) Specific design elements with no parametric relations
b) Geometric shapes that cannot be edited
c) Parametric design elements like holes, fillets, and extrusions
d) 3D scans of physical objects

3) What is the primary goal of Rapid Tooling?
a) To produce high-quality, long-lasting molds
b) To create functional prototypes quickly
c) To handcraft tools for manufacturing
d) To minimize the use of technology in tooling

4) Rapid Tooling is often used in which phase of product development?
a) Conceptual design b) Mass production
c) Market research d) Distribution

5) Which of the following is NOT a key advantage of Rapid Tooling?
a) Cost-effectiveness b) High tool durability
c) Short lead times d) Increased design flexibility

6) What does "STL" stand for in the context of 3D printing?
a) Stereolithography b) Standard Triangle Language
c) Structured Text Language d) Solid Transition Layer

7) What is the primary purpose of an STL file in 3D printing?
a) Storing color information for 3D models
b) Defining the dimensions of a 3D printer
c) Describing the geometry of a 3D object
d) Managing printer firmware

8) What is post-processing in the context of 3D printing?
a) The initial setup of a 3D printer
b) The process of designing 3D models
c) Additional treatments or finishing steps after 3D printing
d) The method of slicing 3D models for printing

9) Which phase of 3D printing involves post-processing?
a) Modeling
b) Printing
c) Design
d) Finishing

10) What is the primary goal of automation in manufacturing?
a) Reduce workforce
b) Increase production speed and efficiency
c) Decrease product quality
d) Increase manual labour

11) Which of the following is an example of a basic automated process?
a) Handcrafting
b) 3D printing
c) Wood carving
d) Sewing by hand

12) What is the purpose of 3D CAD modeling in the manufacturing process?
a) Creating physical prototypes
b) Designing user interfaces
c) Modeling 2D graphics
d) Drafting blueprints

13) Which 3D printing technology is associated with the acronym "SLA"?
a) Solid Ground Curing (SGC) System
b) Solid Creation System
c) 3D Systems SLA
d) EOS' Stereos System

14) What does "SGC" stand for in 3D printing technology?
a) Solid Ground Curing
d) Solid Creation System
c) Stereolithography
d) Selective Laser Sintering

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Assume suitable data if required
4) Use of scientific calculator is allowed.
5) Figure to the right indicates full marks.

Section – I

Q.2 Enlist the types of 3D printing technologies and illustrate any 01 with neat sketch. **10**

Q.3 Compare Automated processes in w.r.t 3D printing. **09**

Q.4 Elaborate the Stratasys's Fused Deposition Modeling process with applications. **09**

Q.5 Discuss Feature based 3D CAD modeling. **09**

Section – II

Q.6 Enlist different types of Indirect tooling. Explain any 01 with neat sketch. **10**

Q.7 What is meant by Rapid Tooling? Discuss Architecture of Rapid Tooling Integrated Manufacturing system. **09**

Q.8 Discuss common errors in CAD to STL conversion. **09**

Q.9 Describe techniques for improvement in surface finish and geometry in 3D Printing. **09**

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Use of scientific calculator is allowed.
5) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) What is post-processing in the context of 3D printing?
a) The initial setup of a 3D printer
b) The process of designing 3D models
c) Additional treatments or finishing steps after 3D printing
d) The method of slicing 3D models for printing

2) Which phase of 3D printing involves post-processing?
a) Modeling b) Printing
c) Design d) Finishing

3) What is the primary goal of automation in manufacturing?
a) Reduce workforce
b) Increase production speed and efficiency
c) Decrease product quality
d) Increase manual labour

4) Which of the following is an example of a basic automated process?
a) Handcrafting b) 3D printing
c) Wood carving d) Sewing by hand

5) What is the purpose of 3D CAD modeling in the manufacturing process?
a) Creating physical prototypes b) Designing user interfaces
c) Modeling 2D graphics d) Drafting blueprints

6) Which 3D printing technology is associated with the acronym "SLA"?
a) Solid Ground Curing (SGC) System
b) Solid Creation System
c) 3D Systems SLA
d) EOS' Stereos System

7) What does "SGC" stand for in 3D printing technology?
a) Solid Ground Curing d) Solid Creation System
c) Stereolithography d) Selective Laser Sintering

8) What does CAD stand for?
a) Computer-Aided Design
b) Computer-Aided Development
c) Computer-Activated Drawing
d) Computer-Appointed Diagram

9) In feature-based 3D CAD modeling, what are "features"?
a) Specific design elements with no parametric relations
b) Geometric shapes that cannot be edited
c) Parametric design elements like holes, fillets, and extrusions
d) 3D scans of physical objects

10) What is the primary goal of Rapid Tooling?
a) To produce high-quality, long-lasting molds
b) To create functional prototypes quickly
c) To handcraft tools for manufacturing
d) To minimize the use of technology in tooling

11) Rapid Tooling is often used in which phase of product development?
a) Conceptual design
b) Mass production
c) Market research
d) Distribution

12) Which of the following is NOT a key advantage of Rapid Tooling?
a) Cost-effectiveness
b) High tool durability
c) Short lead times
d) Increased design flexibility

13) What does "STL" stand for in the context of 3D printing?
a) Stereolithography
b) Standard Triangle Language
c) Structured Text Language
d) Solid Transition Layer

14) What is the primary purpose of an STL file in 3D printing?
a) Storing color information for 3D models
b) Defining the dimensions of a 3D printer
c) Describing the geometry of a 3D object
d) Managing printer firmware

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Assume suitable data if required
4) Use of scientific calculator is allowed.
5) Figure to the right indicates full marks.

Section – I

Q.2 Enlist the types of 3D printing technologies and illustrate any 01 with neat sketch. **10**

Q.3 Compare Automated processes in w.r.t 3D printing. **09**

Q.4 Elaborate the Stratasys's Fused Deposition Modeling process with applications. **09**

Q.5 Discuss Feature based 3D CAD modeling. **09**

Section – II

Q.6 Enlist different types of Indirect tooling. Explain any 01 with neat sketch. **10**

Q.7 What is meant by Rapid Tooling? Discuss Architecture of Rapid Tooling Integrated Manufacturing system. **09**

Q.8 Discuss common errors in CAD to STL conversion. **09**

Q.9 Describe techniques for improvement in surface finish and geometry in 3D Printing. **09**

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page. Answer MCQ/Objective type questions on Page No.3 only.
3) Figures to the right indicates full marks.
4) Use of scientific calculator is allowed.
5) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Which of the following is an example of a basic automated process?
a) Handcrafting b) 3D printing
c) Wood carving d) Sewing by hand

2) What is the purpose of 3D CAD modeling in the manufacturing process?
a) Creating physical prototypes b) Designing user interfaces
c) Modeling 2D graphics d) Drafting blueprints

3) Which 3D printing technology is associated with the acronym "SLA"?
a) Solid Ground Curing (SGC) System
b) Solid Creation System
c) 3D Systems SLA
d) EOS' Stereos System

4) What does "SGC" stand for in 3D printing technology?
a) Solid Ground Curing d) Solid Creation System
c) Stereolithography d) Selective Laser Sintering

5) What does CAD stand for?
a) Computer-Aided Design b) Computer-Aided Development
c) Computer-Activated Drawing d) Computer-Appointed Diagram

6) In feature-based 3D CAD modeling, what are "features"?
a) Specific design elements with no parametric relations
b) Geometric shapes that cannot be edited
c) Parametric design elements like holes, fillets, and extrusions
d) 3D scans of physical objects

7) What is the primary goal of Rapid Tooling?
a) To produce high-quality, long-lasting molds
b) To create functional prototypes quickly
c) To handcraft tools for manufacturing
d) To minimize the use of technology in tooling

8) Rapid Tooling is often used in which phase of product development?
a) Conceptual design b) Mass production
c) Market research d) Distribution

9) Which of the following is NOT a key advantage of Rapid Tooling?
a) Cost-effectiveness b) High tool durability
c) Short lead times d) Increased design flexibility

10) What does "STL" stand for in the context of 3D printing?
a) Stereolithography b) Standard Triangle Language
c) Structured Text Language d) Solid Transition Layer

11) What is the primary purpose of an STL file in 3D printing?
a) Storing color information for 3D models
b) Defining the dimensions of a 3D printer
c) Describing the geometry of a 3D object
d) Managing printer firmware

12) What is post-processing in the context of 3D printing?
a) The initial setup of a 3D printer
b) The process of designing 3D models
c) Additional treatments or finishing steps after 3D printing
d) The method of slicing 3D models for printing

13) Which phase of 3D printing involves post-processing?
a) Modeling b) Printing
c) Design d) Finishing

14) What is the primary goal of automation in manufacturing?
a) Reduce workforce
b) Increase production speed and efficiency
c) Decrease product quality
d) Increase manual labour

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Assume suitable data if required
4) Use of scientific calculator is allowed.
5) Figure to the right indicates full marks.

Section – I

Q.2 Enlist the types of 3D printing technologies and illustrate any 01 with neat sketch. **10**

Q.3 Compare Automated processes in w.r.t 3D printing. **09**

Q.4 Elaborate the Stratasys's Fused Deposition Modeling process with applications. **09**

Q.5 Discuss Feature based 3D CAD modeling. **09**

Section – II

Q.6 Enlist different types of Indirect tooling. Explain any 01 with neat sketch. **10**

Q.7 What is meant by Rapid Tooling? Discuss Architecture of Rapid Tooling Integrated Manufacturing system. **09**

Q.8 Discuss common errors in CAD to STL conversion. **09**

Q.9 Describe techniques for improvement in surface finish and geometry in 3D Printing. **09**

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page. Answer MCQ/Objective type questions on Page No.3 only.
3) Figures to the right indicates full marks.
4) Use of scientific calculator is allowed.
5) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) What does "STL" stand for in the context of 3D printing?
a) Stereolithography b) Standard Triangle Language
c) Structured Text Language d) Solid Transition Layer

2) What is the primary purpose of an STL file in 3D printing?
a) Storing color information for 3D models
b) Defining the dimensions of a 3D printer
c) Describing the geometry of a 3D object
d) Managing printer firmware

3) What is post-processing in the context of 3D printing?
a) The initial setup of a 3D printer
b) The process of designing 3D models
c) Additional treatments or finishing steps after 3D printing
d) The method of slicing 3D models for printing

4) Which phase of 3D printing involves post-processing?
a) Modeling b) Printing
c) Design d) Finishing

5) What is the primary goal of automation in manufacturing?
a) Reduce workforce
b) Increase production speed and efficiency
c) Decrease product quality
d) Increase manual labour

6) Which of the following is an example of a basic automated process?
a) Handcrafting b) 3D printing
c) Wood carving d) Sewing by hand

7) What is the purpose of 3D CAD modeling in the manufacturing process?
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c) Modeling 2D graphics d) Drafting blueprints

8) Which 3D printing technology is associated with the acronym "SLA"?
a) Solid Ground Curing (SGC) System
b) Solid Creation System
c) 3D Systems SLA
d) EOS' Stereos System

9) What does "SGC" stand for in 3D printing technology?
a) Solid Ground Curing
d) Solid Creation System
c) Stereolithography
d) Selective Laser Sintering

10) What does CAD stand for?
a) Computer-Aided Design
b) Computer-Aided Development
c) Computer-Activated Drawing
d) Computer-Appointed Diagram

11) In feature-based 3D CAD modeling, what are "features"?
a) Specific design elements with no parametric relations
b) Geometric shapes that cannot be edited
c) Parametric design elements like holes, fillets, and extrusions
d) 3D scans of physical objects

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a) To produce high-quality, long-lasting molds
b) To create functional prototypes quickly
c) To handcraft tools for manufacturing
d) To minimize the use of technology in tooling

13) Rapid Tooling is often used in which phase of product development?
a) Conceptual design
b) Mass production
c) Market research
d) Distribution

14) Which of the following is NOT a key advantage of Rapid Tooling?
a) Cost-effectiveness
b) High tool durability
c) Short lead times
d) Increased design flexibility

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced topics on 3D Printing (BTN02719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Assume suitable data if required
4) Use of scientific calculator is allowed.
5) Figure to the right indicates full marks.

Section – I

Q.2 Enlist the types of 3D printing technologies and illustrate any 01 with neat sketch. **10**

Q.3 Compare Automated processes in w.r.t 3D printing. **09**

Q.4 Elaborate the Stratasys's Fused Deposition Modeling process with applications. **09**

Q.5 Discuss Feature based 3D CAD modeling. **09**

Section – II

Q.6 Enlist different types of Indirect tooling. Explain any 01 with neat sketch. **10**

Q.7 What is meant by Rapid Tooling? Discuss Architecture of Rapid Tooling Integrated Manufacturing system. **09**

Q.8 Discuss common errors in CAD to STL conversion. **09**

Q.9 Describe techniques for improvement in surface finish and geometry in 3D Printing. **09**

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Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Which of the following Energy Resources is renewable?
a) Coal b) Hydropower plant
c) Natural gas d) Petroleum

2) The time taken by the Project to pay for itself is called as _____?
a) Pay hold period b) Payback period
c) a & b d) None of the Above

3) Source of energy in the biosphere is _____.
a) Producer b) Decomposer
c) Sunlight d) Heat of earth

4) The main Constitute of biogas is _____.
a) Methane b) Carbon dioxide
c) Hydrogen d) HCL

5) Which is the Following is Environmental impact?
a) Soil damage b) Gas leakage
c) Air pollution d) Temperature

6) NPV stands for _____?
a) Net Protect Value b) Net Present value
c) a & b d) None of the Above

7) Simon-Erich bet on planet was formalized on Sep.29,1980.
a) True b) False

8) Major Challenge in solar power plant?
a) Water b) Solar Panels
c) Land Acquisition d) Money

9) EIA Stands for Environmental Impact Assessment.
a) True b) False

10) Kyto Protocol launched in _____?
a) India b) Japan
c) China d) U.S.

11) “Bet on Climate change Was won by _____”

a) Eherlich b) Watson
c) Jorge d) Simon

12) Carbon Credits also called as?

a) Carbon b) Pollution
c) Emission d) Carbon Offset

13) Preferences are nothing but Choice given by person _____?

a) True b) False

14) National Solar Mission launched in _____?

a) Jan 2011 b) Jan 2023
c) Jan 2022 d) Jan 2010

SLR-GF-166

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Assume suitable data, diagrams if required.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Answer the following.

a) What are the Energy Resources? Explain the Energy flow diagram and primary Energy Analysis. **04**

b) Explain in detail the "National Solar Mission". **05**

c) What is the meaning of "Quality of Life"? How it is increases by Energy? **05**

Q.3 Answer the following.

a) Explain Following terms. **04**
i) Kaya identity
ii) Emisstion Factor

b) Explain the Linkage between "Energy & Development." **05**

c) Write a short note on "Global Energy Use in India." **05**

Q.4 Answer the following.

a) Write a short note on "Country Energy Balance". **04**

b) What is the Net present value? Explain positive & Negative NPV of energy Economics. **05**

c) Explain following terms. **05**
i) Energy Inequality
ii) Energy Security

Section – II

Q.5 Answer the following.

a) Explain the term "Carbon Credits" **04**

b) Explain the term "Climate Change from Green House Gases CO2 Emission." **05**

c) What is Hoteling rule? Explain the terms "Utility & Preferences of energy. **05**

Q.6 Answer the following.

a) Define Pollution and Explain Types of Pollution detailed. **04**

b) Write a short note on Kayto Protocol" of Energy & Environment. **05**

c) Write a short note on "Global Warming". **05**

Q.7 Answer the following.

a)	What is Energy Analysis? Explain in detailed “Future energy demand & Supply of energy Analysis.”	**04**
b)	Explain “Preferences & Utility” of energy.	**05**
c)	Write a Short note on “Betting on Planet Simons change.”	**05**

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Major Challenge in solar power plant?
a) Water b) Solar Panels
c) Land Acquisition d) Money

2) EIA Stands for Environmental Impact Assessment.
a) True b) False

3) Kyto Protocol launched in _____?
a) India b) Japan
c) China d) U.S.

4) "Bet on Climate change Was won by _____"
a) Eherlich b) Watson
c) Jorge d) Simon

5) Carbon Credits also called as?
a) Carbon b) Pollution
c) Emission d) Carbon Offset

6) Preferences are nothing but Choice given by person _____?
a) True b) False

7) National Solar Mission launched in _____?
a) Jan 2011 b) Jan 2023
c) Jan 2022 d) Jan 2010

8) Which of the following Energy Resources is renewable?
a) Coal b) Hydropower plant
c) Natural gas d) Petroleum

9) The time taken by the Project to pay for itself is called as _____?
a) Pay hold period b) Payback period
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10) Source of energy in the biosphere is _____.
a) Producer b) Decomposer
c) Sunlight d) Heat of earth

11) The main Constitute of biogas is _____.
a) Methane b) Carbon dioxide
c) Hydrogen d) HCL

12) Which is the Following is Environmental impact?
a) Soil damage b) Gas leakage
c) Air pollution d) Temperature

13) NPV stands for _____?
a) Net Protect Value b) Net Present value
c) a & b d) None of the Above

14) Simon-Erich bet on planet was formalized on Sep.29,1980.
a) True b) False

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Assume suitable data, diagrams if required.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Answer the following.

a) What are the Energy Resources? Explain the Energy flow diagram and primary Energy Analysis. **04**

b) Explain in detail the “National Solar Mission”. **05**

c) What is the meaning of “Quality of Life”? How it is increases by Energy? **05**

Q.3 Answer the following.

a) Explain Following terms. **04**
i) Kaya identity
ii) Emisstion Factor

b) Explain the Linkage between “Energy & Development.” **05**

c) Write a short note on “Global Energy Use in India.” **05**

Q.4 Answer the following.

a) Write a short note on “Country Energy Balance”. **04**

b) What is the Net present value? Explain positive & Negative NPV of energy Economics. **05**

c) Explain following terms. **05**
i) Energy Inequality
ii) Energy Security

Section – II

Q.5 Answer the following.

a) Explain the term “Carbon Credits” **04**

b) Explain the term “Climate Change from Green House Gases CO2 Emission.” **05**

c) What is Hoteling rule? Explain the terms “Utility & Preferences of energy. **05**

Q.6 Answer the following.

a) Define Pollution and Explain Types of Pollution detailed. **04**

b) Write a short note on Kayto Protocol” of Energy & Environment. **05**

c) Write a short note on “Global Warming”. **05**

Q.7 Answer the following.

a)	What is Energy Analysis? Explain in detailed “Future energy demand & Supply of energy Analysis.”	**04**
b)	Explain “Preferences & Utility” of energy.	**05**
c)	Write a Short note on “Betting on Planet Simons change.”	**05**

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) "Bet on Climate change Was won by _____"
a) Eherlich b) Watson
c) Jorge d) Simon

2) Carbon Credits also called as?
a) Carbon b) Pollution
c) Emission d) Carbon Offset

3) Preferences are nothing but Choice given by person _____?
a) True b) False

4) National Solar Mission launched in _____?
a) Jan 2011 b) Jan 2023
c) Jan 2022 d) Jan 2010

5) Which of the following Energy Resources is renewable?
a) Coal b) Hydropower plant
c) Natural gas d) Petroleum

6) The time taken by the Project to pay for itself is called as _____?
a) Pay hold period b) Payback period
c) a & b d) None of the Above

7) Source of energy in the biosphere is _____.
a) Producer b) Decomposer
c) Sunlight d) Heat of earth

8) The main Constitute of biogas is _____.
a) Methane b) Carbon dioxide
c) Hydrogen d) HCL

9) Which is the Following is Environmental impact?
a) Soil damage b) Gas leakage
c) Air pollution d) Temperature

10) NPV stands for _____?
a) Net Protect Value b) Net Present value
c) a & b d) None of the Above

11) Simon-Erich bet on planet was formalized on Sep.29,1980.
a) True b) False

12) Major Challenge in solar power plant?
a) Water b) Solar Panels
c) Land Acquisition d) Money

13) EIA Stands for Environmental Impact Assessment.
a) True b) False

14) Kyto Protocol launched in _____?
a) India b) Japan
c) China d) U.S.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Assume suitable data, diagrams if required.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Answer the following.

a) What are the Energy Resources? Explain the Energy flow diagram and primary Energy Analysis. **04**

b) Explain in detail the “National Solar Mission”. **05**

c) What is the meaning of “Quality of Life”? How it is increases by Energy? **05**

Q.3 Answer the following.

a) Explain Following terms. **04**
i) Kaya identity
ii) Emisstion Factor

b) Explain the Linkage between “Energy & Development.” **05**

c) Write a short note on “Global Energy Use in India.” **05**

Q.4 Answer the following.

a) Write a short note on “Country Energy Balance”. **04**

b) What is the Net present value? Explain positive & Negative NPV of energy Economics. **05**

c) Explain following terms. **05**
i) Energy Inequality
ii) Energy Security

Section – II

Q.5 Answer the following.

a) Explain the term “Carbon Credits” **04**

b) Explain the term “Climate Change from Green House Gases CO2 Emission.” **05**

c) What is Hoteling rule? Explain the terms “Utility & Preferences of energy. **05**

Q.6 Answer the following.

a) Define Pollution and Explain Types of Pollution detailed. **04**

b) Write a short note on Kayto Protocol” of Energy & Environment. **05**

c) Write a short note on “Global Warming”. **05**

Q.7 Answer the following.

a)	What is Energy Analysis? Explain in detailed “Future energy demand & Supply of energy Analysis.”	**04**
b)	Explain “Preferences & Utility” of energy.	**05**
c)	Write a Short note on “Betting on Planet Simons change.”	**05**

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) NPV stands for _____?
a) Net Protect Value b) Net Present value
c) a & b d) None of the Above

2) Simon-Erich bet on planet was formalized on Sep.29,1980.
a) True b) False

3) Major Challenge in solar power plant?
a) Water b) Solar Panels
c) Land Acquisition d) Money

4) EIA Stands for Environmental Impact Assessment.
a) True b) False

5) Kyto Protocol launched in _____?
a) India b) Japan
c) China d) U.S.

6) "Bet on Climate change Was won by _____"
a) Eherlich b) Watson
c) Jorge d) Simon

7) Carbon Credits also called as?
a) Carbon b) Pollution
c) Emission d) Carbon Offset

8) Preferences are nothing but Choice given by person _____?
a) True b) False

9) National Solar Mission launched in _____?
a) Jan 2011 b) Jan 2023
c) Jan 2022 d) Jan 2010

10) Which of the following Energy Resources is renewable?
a) Coal b) Hydropower plant
c) Natural gas d) Petroleum

11) The time taken by the Project to pay for itself is called as _____?
a) Pay hold period b) Payback period
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12) Source of energy in the biosphere is _____.
a) Producer b) Decomposer
c) Sunlight d) Heat of earth

13) The main Constitute of biogas is _____.
a) Methane b) Carbon dioxide
c) Hydrogen d) HCL

14) Which is the Following is Environmental impact?
a) Soil damage b) Gas leakage
c) Air pollution d) Temperature

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Energy Resources, Economics and Environment (BTN02716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Assume suitable data, diagrams if required.
3) Use of scientific calculator is allowed.

Section – I

Q.2 Answer the following.

a) What are the Energy Resources? Explain the Energy flow diagram and primary Energy Analysis. **04**

b) Explain in detail the "National Solar Mission". **05**

c) What is the meaning of "Quality of Life"? How it is increases by Energy? **05**

Q.3 Answer the following.

a) Explain Following terms. **04**
i) Kaya identity
ii) Emisstion Factor

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c) Write a short note on "Global Energy Use in India." **05**

Q.4 Answer the following.

a) Write a short note on "Country Energy Balance". **04**

b) What is the Net present value? Explain positive & Negative NPV of energy Economics. **05**

c) Explain following terms. **05**
i) Energy Inequality
ii) Energy Security

Section – II

Q.5 Answer the following.

a) Explain the term "Carbon Credits" **04**

b) Explain the term "Climate Change from Green House Gases CO2 Emission." **05**

c) What is Hoteling rule? Explain the terms "Utility & Preferences of energy. **05**

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b) Write a short note on Kayto Protocol" of Energy & Environment. **05**

c) Write a short note on "Global Warming". **05**

Q.7 Answer the following.

a)	What is Energy Analysis? Explain in detailed “Future energy demand & Supply of energy Analysis.”	**04**
b)	Explain “Preferences & Utility” of energy.	**05**
c)	Write a Short note on “Betting on Planet Simons change.”	**05**

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Fuel cell converts chemical energy to electrical energy using a reaction that _____.
a) eliminates combustion of fuel b) requires combustion of fuel
c) requires no ignition of fuel d) fuel is not required

2) For which of these devices does negative charge carriers flow from anode to cathode in the external circuit?
a) MHD generator b) Thermionic generator
c) Thermoelectric generator d) Fuel cell

3) The fuel cell is considered a battery in which _____ is continuously replaced.
a) Fuel only b) Oxidizer
c) Both fuel and oxidizer d) None of the mentioned

4) Rader sensor is used in _____.
a) Adaptive cruise control
b) Automatic Emergency Braking system
c) Anti- collision system
d) All of the above

5) Adaptive cruise control helps in _____.
a) Maintain a speed as set by driver.
b) Adapt this speed and maintain a safe distance from the vehicles in front
c) Provide a warning if there is a risk of collision
d) All of the above

6) Active safety system includes _____.
a) Anti-lock braking system b) Air bags
c) Headrest d) All of above

7) Which of the following electronic devices is known as a "bipolar junction transistor"?
a) BJT b) MOSFET
c) IGBT d) Thyristor

8) Immobilizers in vehicles are primarily designed to:
a) Provide Wi-Fi in the vehicle
b) Prevent the vehicle from moving when it shouldn't be
c) Enhance audio quality
d) Control the vehicle's suspension

9) In autonomous electric vehicles, what type of sensor is commonly used for object detection and collision avoidance?
a) Ultrasonic sensor
b) Temperature sensor
c) Pressure sensor
d) Microphone sensor

10) What is a potential security risk associated with self-driven cars and their sensors?
a) Risk of engine failure
b) Risk of sensor interference or hacking
c) Risk of oil leakage
d) Risk of tire punctures

11) What does Auto-crypt V2G stand for in the context of electric vehicles?
a) Advanced Vehicle Charging Technology Version 2.0
b) Automated Crypto-currency for Vehicle-to-Grid
c) Autonomous Communication for Vehicle-to-Grid
d) Accelerated Voltage-to-Grid

12) What does "Intra vehicle security" focus on in the context of electric vehicles?
a) Protecting the vehicle from external cyber threats
b) Securing communication within the vehicle's systems
c) Safeguarding the vehicle against physical theft
d) Ensuring the driver's personal data is secure

13) Battery Swap is a technology that allows EV users to:
a) Convert their batteries into hybrid power sources
b) Exchange depleted batteries for fully charged ones
c) Charge their batteries wirelessly
d) Upgrade their batteries for increased capacity

14) When charging an EV from renewables, what environmental benefit is often associated with this approach?
a) Increased air pollution
b) Lower carbon footprint
c) Depletion of ozone layer
d) Accumulation of electronic waste

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Use of non-programmable calculator is allowed.
3) Assume suitable data if necessary.
4) Figures to right indicate full marks.

Section – I

Q.2	**a)**	Illustrate why fuel cell vehicles are not yet practical for the average consumer.	**08**
	b)	Draw a neat labeled sketch of working of PEM fuel cell.	**06**
Q.3	**a)**	Elaborate Adaptive cruise control with block diagram.	**08**
	b)	Propose concept of Solar Powered Hybrid vehicle.	**06**
Q.4	**a)**	Analyze the applications of BJTs and MOSFETs in modern electronic circuits, highlighting, their distinct roles and advantages.	**08**
	b)	Elaborate how to self-driven cars utilize sensors for navigation and safety?	**06**

Section – II

Q.5	**a)**	Describe the Layers of Autonomy in the context of autonomous systems?	**07**
	b)	Illustrate Unmanned Ground Vehicle (UGV) and how does it contribute to autonomy in various applications?	**07**
Q.6	**a)**	Describe is Autocrypt V2G, and how does it contribute to the functionality of electric vehicles?	**06**
	b)	What is the significance of intra-vehicle security, and how does it protect the various systems within an Electric Vehicle from cyber threats?	**08**
Q.7	**a)**	Explain the concept of wireless charging for electric vehicles and how it differs from traditional wired charging methods.	**08**
	b)	Compare and contrast the advantages and disadvantages of battery swap technology with traditional charging methods for electric vehicles.	**06**

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Immobilizers in vehicles are primarily designed to:
a) Provide Wi-Fi in the vehicle
b) Prevent the vehicle from moving when it shouldn't be
c) Enhance audio quality
d) Control the vehicle's suspension

2) In autonomous electric vehicles, what type of sensor is commonly used for object detection and collision avoidance?
a) Ultrasonic sensor b) Temperature sensor
c) Pressure sensor d) Microphone sensor

3) What is a potential security risk associated with self-driven cars and their sensors?
a) Risk of engine failure
b) Risk of sensor interference or hacking
c) Risk of oil leakage
d) Risk of tire punctures

4) What does Auto-crypt V2G stand for in the context of electric vehicles?
a) Advanced Vehicle Charging Technology Version 2.0
b) Automated Crypto-currency for Vehicle-to-Grid
c) Autonomous Communication for Vehicle-to-Grid
d) Accelerated Voltage-to-Grid

5) What does "Intra vehicle security" focus on in the context of electric vehicles?
a) Protecting the vehicle from external cyber threats
b) Securing communication within the vehicle's systems
c) Safeguarding the vehicle against physical theft
d) Ensuring the driver's personal data is secure

6) Battery Swap is a technology that allows EV users to:
a) Convert their batteries into hybrid power sources
b) Exchange depleted batteries for fully charged ones
c) Charge their batteries wirelessly
d) Upgrade their batteries for increased capacity

7) When charging an EV from renewables, what environmental benefit is often associated with this approach?
a) Increased air pollution
b) Lower carbon footprint
c) Depletion of ozone layer
d) Accumulation of electronic waste

8) Fuel cell converts chemical energy to electrical energy using a reaction that _____.
a) eliminates combustion of fuel
b) requires combustion of fuel
c) requires no ignition of fuel
d) fuel is not required

9) For which of these devices does negative charge carriers flow from anode to cathode in the external circuit?
a) MHD generator
b) Thermionic generator
c) Thermoelectric generator
d) Fuel cell

10) The fuel cell is considered a battery in which _____ is continuously replaced.
a) Fuel only
b) Oxidizer
c) Both fuel and oxidizer
d) None of the mentioned

11) Rader sensor is used in _____.
a) Adaptive cruise control
b) Automatic Emergency Braking system
c) Anti- collision system
d) All of the above

12) Adaptive cruise control helps in _____.
a) Maintain a speed as set by driver.
b) Adapt this speed and maintain a safe distance from the vehicles in front
c) Provide a warning if there is a risk of collision
d) All of the above

13) Active safety system includes _____.
a) Anti-lock braking system
b) Air bags
c) Headrest
d) All of above

14) Which of the following electronic devices is known as a “bipolar junction transistor”?
a) BJT
b) MOSFET
c) IGBT
d) Thyristor

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Use of non-programmable calculator is allowed.
3) Assume suitable data if necessary.
4) Figures to right indicate full marks.

Section – I

Q.2	**a)**	Illustrate why fuel cell vehicles are not yet practical for the average consumer.	**08**
	b)	Draw a neat labeled sketch of working of PEM fuel cell.	**06**
Q.3	**a)**	Elaborate Adaptive cruise control with block diagram.	**08**
	b)	Propose concept of Solar Powered Hybrid vehicle.	**06**
Q.4	**a)**	Analyze the applications of BJTs and MOSFETs in modern electronic circuits, highlighting, their distinct roles and advantages.	**08**
	b)	Elaborate how to self-driven cars utilize sensors for navigation and safety?	**06**

Section – II

Q.5	**a)**	Describe the Layers of Autonomy in the context of autonomous systems?	**07**
	b)	Illustrate Unmanned Ground Vehicle (UGV) and how does it contribute to autonomy in various applications?	**07**
Q.6	**a)**	Describe is Autocrypt V2G, and how does it contribute to the functionality of electric vehicles?	**06**
	b)	What is the significance of intra-vehicle security, and how does it protect the various systems within an Electric Vehicle from cyber threats?	**08**
Q.7	**a)**	Explain the concept of wireless charging for electric vehicles and how it differs from traditional wired charging methods.	**08**
	b)	Compare and contrast the advantages and disadvantages of battery swap technology with traditional charging methods for electric vehicles.	**06**

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) What does Auto-crypt V2G stand for in the context of electric vehicles?
a) Advanced Vehicle Charging Technology Version 2.0
b) Automated Crypto-currency for Vehicle-to-Grid
c) Autonomous Communication for Vehicle-to-Grid
d) Accelerated Voltage-to-Grid

2) What does "Intra vehicle security" focus on in the context of electric vehicles?
a) Protecting the vehicle from external cyber threats
b) Securing communication within the vehicle's systems
c) Safeguarding the vehicle against physical theft
d) Ensuring the driver's personal data is secure

3) Battery Swap is a technology that allows EV users to:
a) Convert their batteries into hybrid power sources
b) Exchange depleted batteries for fully charged ones
c) Charge their batteries wirelessly
d) Upgrade their batteries for increased capacity

4) When charging an EV from renewables, what environmental benefit is often associated with this approach?
a) Increased air pollution
b) Lower carbon footprint
c) Depletion of ozone layer
d) Accumulation of electronic waste

5) Fuel cell converts chemical energy to electrical energy using a reaction that _____.
a) eliminates combustion of fuel b) requires combustion of fuel
c) requires no ignition of fuel d) fuel is not required

6) For which of these devices does negative charge carriers flow from anode to cathode in the external circuit?
a) MHD generator b) Thermionic generator
c) Thermoelectric generator d) Fuel cell

7) The fuel cell is considered a battery in which _____ is continuously replaced.
a) Fuel only
b) Oxidizer
c) Both fuel and oxidizer
d) None of the mentioned

8) Rader sensor is used in _____.
a) Adaptive cruise control
b) Automatic Emergency Braking system
c) Anti- collision system
d) All of the above

9) Adaptive cruise control helps in _____.
a) Maintain a speed as set by driver.
b) Adapt this speed and maintain a safe distance from the vehicles in front
c) Provide a warning if there is a risk of collision
d) All of the above

10) Active safety system includes _____.
a) Anti-lock braking system
b) Air bags
c) Headrest
d) All of above

11) Which of the following electronic devices is known as a “bipolar junction transistor”?
a) BJT
b) MOSFET
c) IGBT
d) Thyristor

12) Immobilizers in vehicles are primarily designed to:
a) Provide Wi-Fi in the vehicle
b) Prevent the vehicle from moving when it shouldn’t be
c) Enhance audio quality
d) Control the vehicle's suspension

13) In autonomous electric vehicles, what type of sensor is commonly used for object detection and collision avoidance?
a) Ultrasonic sensor
b) Temperature sensor
c) Pressure sensor
d) Microphone sensor

14) What is a potential security risk associated with self-driven cars and their sensors?
a) Risk of engine failure
b) Risk of sensor interference or hacking
c) Risk of oil leakage
d) Risk of tire punctures

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Use of non-programmable calculator is allowed.
3) Assume suitable data if necessary.
4) Figures to right indicate full marks.

Section – I

Q.2	**a)**	Illustrate why fuel cell vehicles are not yet practical for the average consumer.	**08**
	b)	Draw a neat labeled sketch of working of PEM fuel cell.	**06**
Q.3	**a)**	Elaborate Adaptive cruise control with block diagram.	**08**
	b)	Propose concept of Solar Powered Hybrid vehicle.	**06**
Q.4	**a)**	Analyze the applications of BJTs and MOSFETs in modern electronic circuits, highlighting, their distinct roles and advantages.	**08**
	b)	Elaborate how to self-driven cars utilize sensors for navigation and safety?	**06**

Section – II

Q.5	**a)**	Describe the Layers of Autonomy in the context of autonomous systems?	**07**
	b)	Illustrate Unmanned Ground Vehicle (UGV) and how does it contribute to autonomy in various applications?	**07**
Q.6	**a)**	Describe is Autocrypt V2G, and how does it contribute to the functionality of electric vehicles?	**06**
	b)	What is the significance of intra-vehicle security, and how does it protect the various systems within an Electric Vehicle from cyber threats?	**08**
Q.7	**a)**	Explain the concept of wireless charging for electric vehicles and how it differs from traditional wired charging methods.	**08**
	b)	Compare and contrast the advantages and disadvantages of battery swap technology with traditional charging methods for electric vehicles.	**06**

Seat No.	

Set S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Active safety system includes _____.
a) Anti-lock braking system b) Air bags
c) Headrest d) All of above

2) Which of the following electronic devices is known as a "bipolar junction transistor"?
a) BJT b) MOSFET
c) IGBT d) Thyristor

3) Immobilizers in vehicles are primarily designed to:
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b) requires combustion of fuel
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d) fuel is not required

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c) Both fuel and oxidizer
d) None of the mentioned

13) Rader sensor is used in _____.
a) Adaptive cruise control
b) Automatic Emergency Braking system
c) Anti- collision system
d) All of the above

14) Adaptive cruise control helps in _____.
a) Maintain a speed as set by driver.
b) Adapt this speed and maintain a safe distance from the vehicles in front
c) Provide a warning if there is a risk of collision
d) All of the above

SLR-GF-167

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Advanced Topics in Electric Vehicles (BTN02717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from each section.
2) Use of non-programmable calculator is allowed.
3) Assume suitable data if necessary.
4) Figures to right indicate full marks.

Section – I

Q.2	**a)**	Illustrate why fuel cell vehicles are not yet practical for the average consumer.	**08**
	b)	Draw a neat labeled sketch of working of PEM fuel cell.	**06**
Q.3	**a)**	Elaborate Adaptive cruise control with block diagram.	**08**
	b)	Propose concept of Solar Powered Hybrid vehicle.	**06**
Q.4	**a)**	Analyze the applications of BJTs and MOSFETs in modern electronic circuits, highlighting, their distinct roles and advantages.	**08**
	b)	Elaborate how to self-driven cars utilize sensors for navigation and safety?	**06**

Section – II

Q.5	**a)**	Describe the Layers of Autonomy in the context of autonomous systems?	**07**
	b)	Illustrate Unmanned Ground Vehicle (UGV) and how does it contribute to autonomy in various applications?	**07**
Q.6	**a)**	Describe is Autocrypt V2G, and how does it contribute to the functionality of electric vehicles?	**06**
	b)	What is the significance of intra-vehicle security, and how does it protect the various systems within an Electric Vehicle from cyber threats?	**08**
Q.7	**a)**	Explain the concept of wireless charging for electric vehicles and how it differs from traditional wired charging methods.	**08**
	b)	Compare and contrast the advantages and disadvantages of battery swap technology with traditional charging methods for electric vehicles.	**06**

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Refusal to adopt and use opportunities to make changes in production _____ entrepreneurs.
a) Fabian b) Imitative
c) Innovative d) Drone

2) Business risks can be _____.
a) Avoided b) Reduced
c) Erased d) None of the above

3) Which of the following is not an aspect of appraisal of term loans by commercial banks?
a) Financial feasibility b) Technical feasibility
c) Economical feasibility d) Societal feasibility

4) To provide financial assistance to entrepreneurs the government has set up a number of _____.
a) Financial advisors b) Financial intermediaries
c) Industrial estates d) Financial institutions

5) Individuals are motivated by psychological and economic rewards ____.
a) Pure b) Induced
c) Motivated d) Spontaneous

6) Which of the following is the reason for business failure?
a) Lack of market research b) Poor financial control
c) Poor management d) All the above

7) A business arrangement where one party allows another party to use a business name and sell its products or services is known as _____.
a) A cooperative b) A franchise
c) A owner-manager business d) A limited company

8) Good source of information for an entrepreneur about competitors can be obtained from _____.
a) Websites
b) Product information leaflets
c) Company reports about published accounts
d) All the above

9) Entrepreneurs are motivated by _____.
a) Money
b) Personal values
c) Pull influences
d) All the above

10) EDPs course content contains _____.
a) General introduction to entrepreneurs
b) Motivation training
c) Managerial Skills
d) All of the above

11) Decision taken by entrepreneur on behalf of his enterprise are known as ____.
a) Organization decisions
b) Personal decisions
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12) One of the disadvantages of a franchise business for a franchisee is _____.
a) Lack of independence
b) Franchise businesses typically have a high failure data
c) Lack of brand identity
d) Training is not normally provided by the franchiser

13) Which of the following is a psychological factor affecting entrepreneurial growth?
a) Legitimacy of Entrepreneurship
b) Social status
c) Need for achievement
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b) IFCI
c) ICICI
d) SFC

SLR-GF-168

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt the following questions

a) Explain the evolution of entrepreneurship. **07**

b) Distinguish between entrepreneur and entrepreneurship. **07**

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b) Explain the contents and phases of Entrepreneurship Development Programs (EDP). **07**

Q.4 Attempt the following questions

a) Explain different definitions of entrepreneur. **07**

b) Write a short not on **07**

1. Franchising
2. Ancillarisation

Section – II

Q.5 Attempt the following questions

a) Explain the sources and methods of idea generation. **07**

b) What is project appraisal? Bring out its importance. **07**

Q.6 Attempt the following questions

a) Write steps in setting up a small unit in details. **07**

b) Explain ‘Partnership’ type of Business ownership its characteristics, advantages, and disadvantages. **07**

Q.7 Attempt the following questions

a) Write a note on Micro Small Medium Enterprises (MSMEs) and Tax benefits to SMEs. **07**

b) Explain the sources of financial institution for SME’s. **07**

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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Entrepreneurship Development (BTN02711)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

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SLR-GF-168

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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Entrepreneurship Development (BTN02711)

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a) Explain the factors influencing the entrepreneurial development. **07**

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Q.4 Attempt the following questions

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1. Franchising
2. Ancillarisation

Section – II

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a) Explain the sources and methods of idea generation. **07**

b) What is project appraisal? Bring out its importance. **07**

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a) Write steps in setting up a small unit in details. **07**

b) Explain ‘Partnership’ type of Business ownership its characteristics, advantages, and disadvantages. **07**

Q.7 Attempt the following questions

a) Write a note on Micro Small Medium Enterprises (MSMEs) and Tax benefits to SMEs. **07**

b) Explain the sources of financial institution for SME’s. **07**

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Decision taken by entrepreneur on behalf of his enterprise are known as ____.
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Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Attempt the following questions
- **a)** Explain the evolution of entrepreneurship. **07**
- **b)** Distinguish between entrepreneur and entrepreneurship. **07**

Q.3 Attempt the following questions
- **a)** Explain the factors influencing the entrepreneurial development. **07**
- **b)** Explain the contents and phases of Entrepreneurship Development Programs (EDP). **07**

Q.4 Attempt the following questions
- **a)** Explain different definitions of entrepreneur. **07**
- **b)** Write a short not on **07**
  1. Franchising
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Section – II

Q.5 Attempt the following questions
- **a)** Explain the sources and methods of idea generation. **07**
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Q.6 Attempt the following questions
- **a)** Write steps in setting up a small unit in details. **07**
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Q.7 Attempt the following questions
- **a)** Write a note on Micro Small Medium Enterprises (MSMEs) and Tax benefits to SMEs. **07**
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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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Duration: 30 Minutes Marks: 14

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SLR-GF-168

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (BTN02711)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Q.2 Attempt the following questions

a) Explain the evolution of entrepreneurship. **07**

b) Distinguish between entrepreneur and entrepreneurship. **07**

Q.3 Attempt the following questions

a) Explain the factors influencing the entrepreneurial development. **07**

b) Explain the contents and phases of Entrepreneurship Development Programs (EDP). **07**

Q.4 Attempt the following questions

a) Explain different definitions of entrepreneur. **07**

b) Write a short not on **07**
1. Franchising
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Section – II

Q.5 Attempt the following questions

a) Explain the sources and methods of idea generation. **07**

b) What is project appraisal? Bring out its importance. **07**

Q.6 Attempt the following questions

a) Write steps in setting up a small unit in details. **07**

b) Explain ‘Partnership’ type of Business ownership its characteristics, advantages, and disadvantages. **07**

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a) Write a note on Micro Small Medium Enterprises (MSMEs) and Tax benefits to SMEs. **07**

b) Explain the sources of financial institution for SME’s. **07**

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Operations research is the application of _____ methods to arrive at the optimal solutions to the problem.
a) economical b) scientific
c) a and b both d) artistic

2) In operations research, the _____are prepared for situations.
a) mathematical models b) physical models diagrammatic
c) diagrammatic models d) None of above

3) Operations management can be defined as the application of _____ to a problem within a system to yield the optimal solution.
a) Suitable manpower
b) mathematical techniques, models, and tools
c) Financial operations
d) None of above

4) OR can evaluate only the effects of _____.
a) Personnel factors
b) Financial factors
c) Numeric and quantifiable factors
d) None of above

5) The objective function and constraints are functions of two types of variables, _____ variables and _____ variables.
a) Positive and negative
b) Controllable and uncontrollable
c) Strong and weak
d) None of the above

6) OR has a characteristic that it is done by a team of _____.
a) Scientists b) Mathematicians
c) Academics d) All the above

7) Which technique is used in finding a solution for optimizing a given objective, such as profit maximization or cost reduction under certain constraints?
a) Quailing Theory b) Waiting Line
c) Both a and b d) Linear Programming

8) The Operations research technique which helps in minimizing total waiting and service costs is _____.
a) Queuing Theory b) Decision Theory
c) Both a and b d) None of the above

9) In graphical representation the bounded region is known as _____ region.
a) solution b) basic solution
c) feasible solution d) optimal

10) Graphical optimal value for Z can be obtained from _____.
a) Corner points of feasible region
b) Both a and c
c) corner points of the solution region
d) none of the above

11) In assignment problem of maximization, the objective is to maximize ____.
a) Profit b) Optimization
c) Cost d) None of the above

12) With the transportation technique, the initial solution can be generated in any fashion one chooses. The only restriction is that _____.
a) the edge constraints for supply and demand are satisfied
b) the solution is not degenerate
c) the solution must be optimal
d) one must use the northwest-corner method

13) _____ or _____ are used to "balance" an assignment or transportation problem.
a) Destinations; sources
b) Units supplied; units demanded
c) Dummy rows; dummy columns
d) Large cost coefficients; small cost coefficients

14) The method of finding an initial solution based upon opportunity costs is called _____.
a) the northwest corner rule b) Vogel's approximation
c) Johansson’s theorem d) Flood's technique

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
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Section – I

Q.2 a) An engineering company is planning to diversify its operations during the year 2007-08. The company has allocated capital expenditure budget equal to ₹ 5.15 lakhs in the year 2007 and ₹ 6.50 lakhs in the year 2008. The company has five investment projects under consideration. The estimated net returns at the present value and expected cash expenditures on each project in the two years are as follows: **07**

Project	Estimated net returns (‘000 ₹)	Cash expenditure (‘000₹)	
		Year 2007	Year 2008
A	240	120	320
B	390	550	594
C	80	118	202
D	150	250	340
E	182	324	474

Formulate this capital budgeting problem as the L.P. model to maximize the net return.

b) Solve by Graphical Method **07**
Maximize $Z = 2x_1 + x_2$
subject to $x_1 + 2x_2 \leq 10$,
$x_1 + x_2 \leq 6$,
$x_1 - x_2 \leq 2$,
$x_1 - 2x_2 \leq 1$,
$x_1, x_2 \geq 0$

Q.3 **a)** Maximize the profit **07**

Garments

Tailors	1	2	3	4	5
A	14	27	8	24	24
B	8	27	10	21	32
C	16	15	4	27	32
D	12	15	16	30	40
E	14	24	20	27	36

Profit matrix

b) Solve the following assignment problem. The matrix entries are processing times in hours. **07**

TABLE 4.132

Operator

Job	1	2	3	4	5
1	20	22	35	22	18
2	4	26	24	24	7
3	23	14	17	19	19
4	17	15	16	18	15
5	16	19	21	19	25

Q.4 **a)** Solve by NWCR method **07**

	To					*Available*
From	3	4	6	8	9	20
	2	10	1	5	8	30
	7	11	20	40	3	15
	2	1	9	14	16	13
Demand	40	6	8	18	6	

b) Find an initial basic feasible solution to the following T.P. using Vogel's approximation method: **07**

TABLE 3.234

Destination

Origin	1	2	3	4	*Availability*
A	7	2	5	5	30
B	4	4	6	5	15
C	5	3	3	2	10
D	4	-1	4	2	20
Requirement	20	25	15	15	

Section – II

Q.5 **a)** There are seven jobs, each of which has to go through the machines A and B in the order AB. Processing times in hours are given as: **07**

Job:	1	2	3	4	5	6	7
Machine A:	3	12	15	6	10	11	9
Machine B:	8	10	10	6	12	1	3

Determine a sequence of these jobs that will minimize the total elapsed time T. Also find T and idle time for machine A and B.

b) A branch of Punjab National Bank has only one typist. Since the typing work varies in length (number of pages to be typed), the typing rate is randomly distributed approximating a Poisson distribution with mean service rate of 8 letters per hour. The letters arrive at a rate of 5 per hour during the entire 8-hour work day. If the typewriter is valued at ₹ 1.50 per hour, determine **07**

i) Equipment utilization
ii) The per cent time that an arriving letter has to wait
iii) Average system time
vi) Average cost due to waiting on the part of typewriter i.e., it remaining idle

Q.6 **a)** Find critical path **07**

Activity:	1-2	1-3	2-3	2-5	3-4	3-6	4-5	4-6	5-6	6-7
Duration (weeks):	15	15	3	5	8	12	1	14	3	14

b) A project schedule has the following characteristics: **07**

Activity	Time (weeks)	Activity	Times (weeks)
1 - 2	4	5 - 6	4
1 - 3	1	5 - 7	8
2 - 4	1	6 - 8	1
3 - 4	1	7 - 8	2
3 - 5	6	8 - 10	5
4 - 9	5	9 - 10	7

i) Construct the network
ii) Computer E and L for each event, and
iii) Find the critical path

Q.7 **Write a short note on (Any Three)** **14**

a) Demand and supply
b) Types of costs
c) Interest- simple, compound, continuous, and effective interest
d) Tangible and Intangible factors
e) Introduction to inflations

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

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a) mathematical models b) physical models diagrammatic
c) diagrammatic models d) None of above

10) Operations management can be defined as the application of _____ to a problem within a system to yield the optimal solution.
a) Suitable manpower
b) mathematical techniques, models, and tools
c) Financial operations
d) None of above

11) OR can evaluate only the effects of _____.
a) Personnel factors
b) Financial factors
c) Numeric and quantifiable factors
d) None of above

12) The objective function and constraints are functions of two types of variables, _____ variables and _____ variables.
a) Positive and negative
b) Controllable and uncontrollable
c) Strong and weak
d) None of the above

13) OR has a characteristic that it is done by a team of _____.
a) Scientists b) Mathematicians
c) Academics d) All the above

14) Which technique is used in finding a solution for optimizing a given objective, such as profit maximization or cost reduction under certain constraints?
a) Quailing Theory b) Waiting Line
c) Both a and b d) Linear Programming

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to right indicate full marks.
3) Draw neat-labelled diagrams wherever necessary.

Section – I

Q.2 a) An engineering company is planning to diversify its operations during the year 2007-08. The company has allocated capital expenditure budget equal to ₹ 5.15 lakhs in the year 2007 and ₹ 6.50 lakhs in the year 2008. The company has five investment projects under consideration. The estimated net returns at the present value and expected cash expenditures on each project in the two years are as follows: **07**

Project	Estimated net returns (‘000 ₹)	Cash expenditure (‘000₹)	
		Year 2007	Year 2008
A	240	120	320
B	390	550	594
C	80	118	202
D	150	250	340
E	182	324	474

Formulate this capital budgeting problem as the L.P. model to maximize the net return.

b) Solve by Graphical Method **07**
Maximize $Z = 2x_1 + x_2$
subject to $x_1 + 2x_2 \leq 10$,
$x_1 + x_2 \leq 6$,
$x_1 - x_2 \leq 2$,
$x_1 - 2x_2 \leq 1$,
$x_1, x_2 \geq 0$

Q.3 **a)** Maximize the profit **07**

Garments

Tailors	1	2	3	4	5
A	14	27	8	24	24
B	8	27	10	21	32
C	16	15	4	27	32
D	12	15	16	30	40
E	14	24	20	27	36

Profit matrix

b) Solve the following assignment problem. The matrix entries are processing times in hours. **07**

TABLE 4.132

Operator

Job	1	2	3	4	5
1	20	22	35	22	18
2	4	26	24	24	7
3	23	14	17	19	19
4	17	15	16	18	15
5	16	19	21	19	25

Q.4 **a)** Solve by NWCR method **07**

		To				*Available*
From	3	4	6	8	9	20
	2	10	1	5	8	30
	7	11	20	40	3	15
	2	1	9	14	16	13
Demand	40	6	8	18	6	

b) Find an initial basic feasible solution to the following T.P. using Vogel's approximation method: **07**

TABLE 3.234

Destination

Origin	1	2	3	4	*Availability*
A	7	2	5	5	30
B	4	4	6	5	15
C	5	3	3	2	10
D	4	-1	4	2	20
Requirement	20	25	15	15	

Section – II

Q.5 **a)** There are seven jobs, each of which has to go through the machines A and B in the order AB. Processing times in hours are given as: **07**

Job:	1	2	3	4	5	6	7
Machine A:	3	12	15	6	10	11	9
Machine B:	8	10	10	6	12	1	3

Determine a sequence of these jobs that will minimize the total elapsed time T. Also find T and idle time for machine A and B.

b) A branch of Punjab National Bank has only one typist. Since the typing work varies in length (number of pages to be typed), the typing rate is randomly distributed approximating a Poisson distribution with mean service rate of 8 letters per hour. The letters arrive at a rate of 5 per hour during the entire 8-hour work day. If the typewriter is valued at ₹ 1.50 per hour, determine **07**

i) Equipment utilization
ii) The per cent time that an arriving letter has to wait
iii) Average system time
vi) Average cost due to waiting on the part of typewriter i.e., it remaining idle

Q.6 **a)** Find critical path **07**

Activity:	1-2	1-3	2-3	2-5	3-4	3-6	4-5	4-6	5-6	6-7
Duration (weeks):	15	15	3	5	8	12	1	14	3	14

b) A project schedule has the following characteristics: **07**

Activity	Time (weeks)	Activity	Times (weeks)
1 - 2	4	5 - 6	4
1 - 3	1	5 - 7	8
2 - 4	1	6 - 8	1
3 - 4	1	7 - 8	2
3 - 5	6	8 - 10	5
4 - 9	5	9 - 10	7

i) Construct the network
ii) Computer E and L for each event, and
iii) Find the critical path

Q.7 **Write a short note on (Any Three)** **14**

a) Demand and supply
b) Types of costs
c) Interest- simple, compound, continuous, and effective interest
d) Tangible and Intangible factors
e) Introduction to inflations

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) In assignment problem of maximization, the objective is to maximize ____.
a) Profit b) Optimization
c) Cost d) None of the above

2) With the transportation technique, the initial solution can be generated in any fashion one chooses. The only restriction is that _____.
a) the edge constraints for supply and demand are satisfied
b) the solution is not degenerate
c) the solution must be optimal
d) one must use the northwest-corner method

3) _____ or _____ are used to "balance" an assignment or transportation problem.
a) Destinations; sources
b) Units supplied; units demanded
c) Dummy rows; dummy columns
d) Large cost coefficients; small cost coefficients

4) The method of finding an initial solution based upon opportunity costs is called _____.
a) the northwest corner rule b) Vogel's approximation
c) Johansson's theorem d) Flood's technique

5) Operations research is the application of _____ methods to arrive at the optimal solutions to the problem.
a) economical b) scientific
c) a and b both d) artistic

6) In operations research, the _____are prepared for situations.
a) mathematical models b) physical models diagrammatic
c) diagrammatic models d) None of above

7) Operations management can be defined as the application of _____ to a problem within a system to yield the optimal solution.
a) Suitable manpower
b) mathematical techniques, models, and tools
c) Financial operations
d) None of above

8) OR can evaluate only the effects of _____.
a) Personnel factors
b) Financial factors
c) Numeric and quantifiable factors
d) None of above

9) The objective function and constraints are functions of two types of variables, _____ variables and _____ variables.
a) Positive and negative
b) Controllable and uncontrollable
c) Strong and weak
d) None of the above

10) OR has a characteristic that it is done by a team of _____.
a) Scientists b) Mathematicians
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11) Which technique is used in finding a solution for optimizing a given objective, such as profit maximization or cost reduction under certain constraints?
a) Quailing Theory b) Waiting Line
c) Both a and b d) Linear Programming

12) The Operations research technique which helps in minimizing total waiting and service costs is _____.
a) Queuing Theory b) Decision Theory
c) Both a and b d) None of the above

13) In graphical representation the bounded region is known as _____ region.
a) solution b) basic solution
c) feasible solution d) optimal

14) Graphical optimal value for Z can be obtained from _____.
a) Corner points of feasible region
b) Both a and c
c) corner points of the solution region
d) none of the above

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to right indicate full marks.
3) Draw neat-labelled diagrams wherever necessary.

Section – I

Q.2 a) An engineering company is planning to diversify its operations during the year 2007-08. The company has allocated capital expenditure budget equal to ₹ 5.15 lakhs in the year 2007 and ₹ 6.50 lakhs in the year 2008. The company has five investment projects under consideration. The estimated net returns at the present value and expected cash expenditures on each project in the two years are as follows: **07**

Project	Estimated net returns (‘000 ₹)	Cash expenditure (‘000₹)	
		Year 2007	Year 2008
A	240	120	320
B	390	550	594
C	80	118	202
D	150	250	340
E	182	324	474

Formulate this capital budgeting problem as the L.P. model to maximize the net return.

b) Solve by Graphical Method **07**
Maximize $Z = 2x_1 + x_2$
subject to $x_1 + 2x_2 \leq 10$,
$x_1 + x_2 \leq 6$,
$x_1 - x_2 \leq 2$,
$x_1 - 2x_2 \leq 1$,
$x_1, x_2 \geq 0$

Q.3 **a)** Maximize the profit **07**

Garments

Tailors	1	2	3	4	5
A	14	27	8	24	24
B	8	27	10	21	32
C	16	15	4	27	32
D	12	15	16	30	40
E	14	24	20	27	36

Profit matrix

b) Solve the following assignment problem. The matrix entries are processing times in hours. **07**

TABLE 4.132

Operator

Job	1	2	3	4	5
1	20	22	35	22	18
2	4	26	24	24	7
3	23	14	17	19	19
4	17	15	16	18	15
5	16	19	21	19	25

Q.4 **a)** Solve by NWCR method **07**

	To					*Available*
From	3	4	6	8	9	20
	2	10	1	5	8	30
	7	11	20	40	3	15
	2	1	9	14	16	13
Demand	40	6	8	18	6	

b) Find an initial basic feasible solution to the following T.P. using Vogel's approximation method: **07**

TABLE 3.234

Destination

Origin	1	2	3	4	*Availability*
A	7	2	5	5	30
B	4	4	6	5	15
C	5	3	3	2	10
D	4	-1	4	2	20
Requirement	20	25	15	15	

Section – II

Q.5 **a)** There are seven jobs, each of which has to go through the machines A and B in the order AB. Processing times in hours are given as: **07**

Job:	1	2	3	4	5	6	7
Machine A:	3	12	15	6	10	11	9
Machine B:	8	10	10	6	12	1	3

Determine a sequence of these jobs that will minimize the total elapsed time T. Also find T and idle time for machine A and B.

b) A branch of Punjab National Bank has only one typist. Since the typing work varies in length (number of pages to be typed), the typing rate is randomly distributed approximating a Poisson distribution with mean service rate of 8 letters per hour. The letters arrive at a rate of 5 per hour during the entire 8-hour work day. If the typewriter is valued at ₹ 1.50 per hour, determine **07**

i) Equipment utilization
ii) The per cent time that an arriving letter has to wait
iii) Average system time
vi) Average cost due to waiting on the part of typewriter i.e., it remaining idle

Q.6 **a)** Find critical path **07**

Activity:	1-2	1-3	2-3	2-5	3-4	3-6	4-5	4-6	5-6	6-7
Duration (weeks):	15	15	3	5	8	12	1	14	3	14

b) A project schedule has the following characteristics: **07**

Activity	Time (weeks)	Activity	Times (weeks)
1 - 2	4	5 - 6	4
1 - 3	1	5 - 7	8
2 - 4	1	6 - 8	1
3 - 4	1	7 - 8	2
3 - 5	6	8 - 10	5
4 - 9	5	9 - 10	7

i) Construct the network
ii) Computer E and L for each event, and
iii) Find the critical path

Q.7 **Write a short note on (Any Three)** **14**

a) Demand and supply
b) Types of costs
c) Interest- simple, compound, continuous, and effective interest
d) Tangible and Intangible factors
e) Introduction to inflations

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) OR has a characteristic that it is done by a team of _____.
a) Scientists b) Mathematicians
c) Academics d) All the above

2) Which technique is used in finding a solution for optimizing a given objective, such as profit maximization or cost reduction under certain constraints?
a) Quailing Theory b) Waiting Line
c) Both a and b d) Linear Programming

3) The Operations research technique which helps in minimizing total waiting and service costs is _____.
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4) In graphical representation the bounded region is known as _____ region.
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c) feasible solution d) optimal

5) Graphical optimal value for Z can be obtained from _____.
a) Corner points of feasible region
b) Both a and c
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6) In assignment problem of maximization, the objective is to maximize ____.
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7) With the transportation technique, the initial solution can be generated in any fashion one chooses. The only restriction is that _____.
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14) The objective function and constraints are functions of two types of variables, _____ variables and _____ variables.
a) Positive and negative
b) Controllable and uncontrollable
c) Strong and weak
d) None of the above

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Operations Research (BTN02712)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to right indicate full marks.
3) Draw neat-labelled diagrams wherever necessary.

Section – I

Q.2 a) An engineering company is planning to diversify its operations during the year 2007-08. The company has allocated capital expenditure budget equal to ₹ 5.15 lakhs in the year 2007 and ₹ 6.50 lakhs in the year 2008. The company has five investment projects under consideration. The estimated net returns at the present value and expected cash expenditures on each project in the two years are as follows: **07**

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		Year 2007	Year 2008
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Formulate this capital budgeting problem as the L.P. model to maximize the net return.

b) Solve by Graphical Method **07**
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subject to $x_1 + 2x_2 \leq 10$,
$x_1 + x_2 \leq 6$,
$x_1 - x_2 \leq 2$,
$x_1 - 2x_2 \leq 1$,
$x_1, x_2 \geq 0$

Q.3 **a)** Maximize the profit **07**

Garments

Tailors	1	2	3	4	5
A	14	27	8	24	24
B	8	27	10	21	32
C	16	15	4	27	32
D	12	15	16	30	40
E	14	24	20	27	36

Profit matrix

b) Solve the following assignment problem. The matrix entries are processing times in hours. **07**

TABLE 4.132

Operator

Job	1	2	3	4	5
1	20	22	35	22	18
2	4	26	24	24	7
3	23	14	17	19	19
4	17	15	16	18	15
5	16	19	21	19	25

Q.4 **a)** Solve by NWCR method **07**

	To					*Available*
From	3	4	6	8	9	20
	2	10	1	5	8	30
	7	11	20	40	3	15
	2	1	9	14	16	13
Demand	40	6	8	18	6	

b) Find an initial basic feasible solution to the following T.P. using Vogel's approximation method: **07**

TABLE 3.234

Destination

Origin	1	2	3	4	*Availability*
A	7	2	5	5	30
B	4	4	6	5	15
C	5	3	3	2	10
D	4	-1	4	2	20
Requirement	20	25	15	15	

Section – II

Q.5 **a)** There are seven jobs, each of which has to go through the machines A and B in the order AB. Processing times in hours are given as: **07**

Job:	1	2	3	4	5	6	7
Machine A:	3	12	15	6	10	11	9
Machine B:	8	10	10	6	12	1	3

Determine a sequence of these jobs that will minimize the total elapsed time T. Also find T and idle time for machine A and B.

b) A branch of Punjab National Bank has only one typist. Since the typing work varies in length (number of pages to be typed), the typing rate is randomly distributed approximating a Poisson distribution with mean service rate of 8 letters per hour. The letters arrive at a rate of 5 per hour during the entire 8-hour work day. If the typewriter is valued at ₹ 1.50 per hour, determine **07**

i) Equipment utilization
ii) The per cent time that an arriving letter has to wait
iii) Average system time
vi) Average cost due to waiting on the part of typewriter i.e., it remaining idle

Q.6 **a)** Find critical path **07**

Activity:	1-2	1-3	2-3	2-5	3-4	3-6	4-5	4-6	5-6	6-7
Duration (weeks):	15	15	3	5	8	12	1	14	3	14

b) A project schedule has the following characteristics: **07**

Activity	Time (weeks)	Activity	Times (weeks)
1 - 2	4	5 - 6	4
1 - 3	1	5 - 7	8
2 - 4	1	6 - 8	1
3 - 4	1	7 - 8	2
3 - 5	6	8 - 10	5
4 - 9	5	9 - 10	7

i) Construct the network
ii) Computer E and L for each event, and
iii) Find the critical path

Q.7 **Write a short note on (Any Three)** **14**

a) Demand and supply
b) Types of costs
c) Interest- simple, compound, continuous, and effective interest
d) Tangible and Intangible factors
e) Introduction to inflations

SLR-GF-170

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Research Methodology (BTN02713)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What is the main role of research in education?
a) To upsurge one's social status
b) To increase one's job prospects
c) To augment one's personal growth
d) To help an applicant in becoming a renowned educationalist

2) Which of the following features are considered as critical in qualitative research?
a) Collecting data with the help of standardized research tools
b) Design sampling with probability sample techniques
c) Collecting data with bottom-up empirical evidence
d) Gathering data with top-down schematic evidence

3) How is random sampling helpful?
a) Reasonably accurate
b) An economical method of data collection
c) Free from personal biases
d) All the above

4) To pursue the research, which of the following is priorly required?
a) Developing a research design
b) Formulating a research question
c) Deciding about the data analysis procedure
d) Formulating a research hypothesis

5) The format of thesis writing is the same as in _____.
a) Writing of Seminar representation
b) Preparation of research paper/article
c) A research dissertation
d) Presenting a workshop/conference paper

6) Research and Development become the index of development of the country. Which of the following reasons are true with regards to this statement?
a) R&D targets human development
b) R&D can enhance people's standard of living in the country
c) R&D reflects the actual economic and social conditions being prevailed in the country
d) All the above

7) Which of the following does not correspond to characteristics of research?
a) Research is not passive
b) Research is systematic
c) Research is not a problem-oriented
d) Research is not a process

8) Which of the following options are the main tasks of research in modern society?
a) To learn new things
b) To keep pace with the advancement in knowledge
c) To systematically examine and critically analyse the investigations / sources with the objective
d) All the above

9) How to judge the depth of any research?
a) By research title
b) By research duration
c) By research objectives
d) By total expenditure on research

10) Which of the following is not the method of Research?
a) Survey
b) Historical
c) Observation
d) Philosophical

11) What are the core elements of a dissertation?
a) Introduction; Data Collection; Data Analysis; Conclusions and Recommendations
b) Executive Summary; Literature Review; Data Gathered; Conclusions; Bibliography
c) Research Plan; Research Data; Analysis; References
d) Introduction; Literature Review; Research Methodology; Results; Discussions and Conclusions

12) What is the use of Factorial Analysis?
a) For setting the hypotheses
b) To understand the difference between two variables
c) To understand the relationship between two variables
d) To understand the difference between various variables

13) The F-test:
a) Is essentially a two-tailed test
b) Is essentially a one-tailed test
c) Can be one-tailed as well as two-tailed depending on the hypotheses
d) Can never be one tailed test

14) How can we enhance the research objective?
a) By making it more valid
b) By making it more reliable
c) By making it more impartial
d) All the above

Seat No.	

Set | P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Research Methodology (BTN02713)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

Section – I

Q.2	**a)**	Explain Research - Meaning, Importance and Objectives.	**05**
	b)	Explain Types of Research - Descriptive, Analytical.	**04**
Q.3	**a)**	Explain Importance of literature review in defining a problem.	**05**
	b)	Explain primary and secondary sources in literature review.	**05**
Q.4	**a)**	Explain Sampling method and Questionnaire.	**05**
	b)	Explain Delphi method and Brainstorming Techniques.	**04**
Q.5	**Write short note on any three**		**09**
	a)	Selection and formulation of Research Problem	
	b)	Design Motivation and objectives	
	c)	Critical literature review	
	d)	Case Study method	
	e)	Interview method and Focus Group discussion	

Section – II

Q.6	**a)**	Explain Basic Principles & Need of research design.	**05**
	b)	Explain any two types of research designs.	**05**
Q.7	**a)**	Explain in detail - Collection of data.	**05**
	b)	Define mean, median, mode, variance, and deviation.	**04**
Q.8	**a)**	Enlist types of report and explain any one in detail.	**05**
	b)	Explain structure and components of scientific reports.	**04**
Q.9	**Write short note on any three**		**09**
	a)	Developing a research plan	
	b)	Laws and Theories in research design	
	c)	Diagrammatic & graphical presentation of data	
	d)	Regression analysis	
	e)	Research proposal	

Seat No.	

Set | Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Research Methodology (BTN02713)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which of the following options are the main tasks of research in modern society?
a) To learn new things
b) To keep pace with the advancement in knowledge
c) To systematically examine and critically analyse the investigations / sources with the objective
d) All the above

2) How to judge the depth of any research?
a) By research title b) By research duration
c) By research objectives d) By total expenditure on research

3) Which of the following is not the method of Research?
a) Survey b) Historical
c) Observation d) Philosophical

4) What are the core elements of a dissertation?
a) Introduction; Data Collection; Data Analysis; Conclusions and Recommendations
b) Executive Summary; Literature Review; Data Gathered; Conclusions; Bibliography
c) Research Plan; Research Data; Analysis; References
d) Introduction; Literature Review; Research Methodology; Results; Discussions and Conclusions

5) What is the use of Factorial Analysis?
a) For setting the hypotheses
b) To understand the difference between two variables
c) To understand the relationship between two variables
d) To understand the difference between various variables

6) The F-test:
a) Is essentially a two-tailed test
b) Is essentially a one-tailed test
c) Can be one-tailed as well as two-tailed depending on the hypotheses
d) Can never be one tailed test

7) How can we enhance the research objective?
a) By making it more valid b) By making it more reliable
c) By making it more impartial d) All the above

8) What is the main role of research in education?
a) To upsurge one's social status
b) To increase one's job prospects
c) To augment one's personal growth
d) To help an applicant in becoming a renowned educationalist

9) Which of the following features are considered as critical in qualitative research?
a) Collecting data with the help of standardized research tools
b) Design sampling with probability sample techniques
c) Collecting data with bottom-up empirical evidence
d) Gathering data with top-down schematic evidence

10) How is random sampling helpful?
a) Reasonably accurate
b) An economical method of data collection
c) Free from personal biases
d) All the above

11) To pursue the research, which of the following is priorly required?
a) Developing a research design
b) Formulating a research question
c) Deciding about the data analysis procedure
d) Formulating a research hypothesis

12) The format of thesis writing is the same as in _____.
a) Writing of Seminar representation
b) Preparation of research paper/article
c) A research dissertation
d) Presenting a workshop/conference paper

13) Research and Development become the index of development of the country. Which of the following reasons are true with regards to this statement?
a) R&D targets human development
b) R&D can enhance people's standard of living in the country
c) R&D reflects the actual economic and social conditions being prevailed in the country
d) All the above

14) Which of the following does not correspond to characteristics of research?
a) Research is not passive
b) Research is systematic
c) Research is not a problem-oriented
d) Research is not a process

SLR-GF-170

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Research Methodology (BTN02713)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

Section – I

Q.2	**a)**	Explain Research - Meaning, Importance and Objectives.	**05**
	b)	Explain Types of Research - Descriptive, Analytical.	**04**
Q.3	**a)**	Explain Importance of literature review in defining a problem.	**05**
	b)	Explain primary and secondary sources in literature review.	**05**
Q.4	**a)**	Explain Sampling method and Questionnaire.	**05**
	b)	Explain Delphi method and Brainstorming Techniques.	**04**
Q.5	**Write short note on any three**		**09**
	a)	Selection and formulation of Research Problem	
	b)	Design Motivation and objectives	
	c)	Critical literature review	
	d)	Case Study method	
	e)	Interview method and Focus Group discussion	

Section – II

Q.6	**a)**	Explain Basic Principles & Need of research design.	**05**
	b)	Explain any two types of research designs.	**05**
Q.7	**a)**	Explain in detail - Collection of data.	**05**
	b)	Define mean, median, mode, variance, and deviation.	**04**
Q.8	**a)**	Enlist types of report and explain any one in detail.	**05**
	b)	Explain structure and components of scientific reports.	**04**
Q.9	**Write short note on any three**		**09**
	a)	Developing a research plan	
	b)	Laws and Theories in research design	
	c)	Diagrammatic & graphical presentation of data	
	d)	Regression analysis	
	e)	Research proposal	

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Research Methodology (BTN02713)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) What are the core elements of a dissertation?
a) Introduction; Data Collection; Data Analysis; Conclusions and Recommendations
b) Executive Summary; Literature Review; Data Gathered; Conclusions; Bibliography
c) Research Plan; Research Data; Analysis; References
d) Introduction; Literature Review; Research Methodology; Results; Discussions and Conclusions

2) What is the use of Factorial Analysis?
a) For setting the hypotheses
b) To understand the difference between two variables
c) To understand the relationship between two variables
d) To understand the difference between various variables

3) The F-test:
a) Is essentially a two-tailed test
b) Is essentially a one-tailed test
c) Can be one-tailed as well as two-tailed depending on the hypotheses
d) Can never be one tailed test

4) How can we enhance the research objective?
a) By making it more valid b) By making it more reliable
c) By making it more impartial d) All the above

5) What is the main role of research in education?
a) To upsurge one's social status
b) To increase one's job prospects
c) To augment one's personal growth
d) To help an applicant in becoming a renowned educationalist

6) Which of the following features are considered as critical in qualitative research?
a) Collecting data with the help of standardized research tools
b) Design sampling with probability sample techniques
c) Collecting data with bottom-up empirical evidence
d) Gathering data with top-down schematic evidence

7) How is random sampling helpful?
a) Reasonably accurate
b) An economical method of data collection
c) Free from personal biases
d) All the above

8) To pursue the research, which of the following is priorly required?
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9) The format of thesis writing is the same as in _____.
a) Writing of Seminar representation
b) Preparation of research paper/article
c) A research dissertation
d) Presenting a workshop/conference paper

10) Research and Development become the index of development of the country. Which of the following reasons are true with regards to this statement?
a) R&D targets human development
b) R&D can enhance people's standard of living in the country
c) R&D reflects the actual economic and social conditions being prevailed in the country
d) All the above

11) Which of the following does not correspond to characteristics of research?
a) Research is not passive
b) Research is systematic
c) Research is not a problem-oriented
d) Research is not a process

12) Which of the following options are the main tasks of research in modern society?
a) To learn new things
b) To keep pace with the advancement in knowledge
c) To systematically examine and critically analyse the investigations / sources with the objective
d) All the above

13) How to judge the depth of any research?
a) By research title
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d) By total expenditure on research

14) Which of the following is not the method of Research?
a) Survey
b) Historical
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d) Philosophical

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Research Methodology (BTN02713)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Draw neat-labelled diagrams wherever necessary.
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Section – I

Q.2	**a)**	Explain Research - Meaning, Importance and Objectives.	**05**
	b)	Explain Types of Research - Descriptive, Analytical.	**04**
Q.3	**a)**	Explain Importance of literature review in defining a problem.	**05**
	b)	Explain primary and secondary sources in literature review.	**05**
Q.4	**a)**	Explain Sampling method and Questionnaire.	**05**
	b)	Explain Delphi method and Brainstorming Techniques.	**04**
Q.5	**Write short note on any three**		**09**
	a)	Selection and formulation of Research Problem	
	b)	Design Motivation and objectives	
	c)	Critical literature review	
	d)	Case Study method	
	e)	Interview method and Focus Group discussion	

Section – II

Q.6	**a)**	Explain Basic Principles & Need of research design.	**05**
	b)	Explain any two types of research designs.	**05**
Q.7	**a)**	Explain in detail - Collection of data.	**05**
	b)	Define mean, median, mode, variance, and deviation.	**04**
Q.8	**a)**	Enlist types of report and explain any one in detail.	**05**
	b)	Explain structure and components of scientific reports.	**04**
Q.9	**Write short note on any three**		**09**
	a)	Developing a research plan	
	b)	Laws and Theories in research design	
	c)	Diagrammatic & graphical presentation of data	
	d)	Regression analysis	
	e)	Research proposal	

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Research Methodology (BTN02713)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Research and Development become the index of development of the country. Which of the following reasons are true with regards to this statement?
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c) Deciding about the data analysis procedure
d) Formulating a research hypothesis

14) The format of thesis writing is the same as in _____.
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b) Preparation of research paper/article
c) A research dissertation
d) Presenting a workshop/conference paper

SLR-GF-170

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Research Methodology (BTN02713)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and calculators is allowed.

Section – I

Q.2	**a)**	Explain Research - Meaning, Importance and Objectives.	**05**
	b)	Explain Types of Research - Descriptive, Analytical.	**04**
Q.3	**a)**	Explain Importance of literature review in defining a problem.	**05**
	b)	Explain primary and secondary sources in literature review.	**05**
Q.4	**a)**	Explain Sampling method and Questionnaire.	**05**
	b)	Explain Delphi method and Brainstorming Techniques.	**04**
Q.5	**Write short note on any three**		**09**
	a)	Selection and formulation of Research Problem	
	b)	Design Motivation and objectives	
	c)	Critical literature review	
	d)	Case Study method	
	e)	Interview method and Focus Group discussion	

Section – II

Q.6	**a)**	Explain Basic Principles & Need of research design.	**05**
	b)	Explain any two types of research designs.	**05**
Q.7	**a)**	Explain in detail - Collection of data.	**05**
	b)	Define mean, median, mode, variance, and deviation.	**04**
Q.8	**a)**	Enlist types of report and explain any one in detail.	**05**
	b)	Explain structure and components of scientific reports.	**04**
Q.9	**Write short note on any three**		**09**
	a)	Developing a research plan	
	b)	Laws and Theories in research design	
	c)	Diagrammatic & graphical presentation of data	
	d)	Regression analysis	
	e)	Research proposal	

SLR-GF-171

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Supply Chain Management (BTN02714)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The purpose of supply chain management is _____.
a) provide customer satisfaction
b) improve quality of a product
c) integrating supply and demand management
d) increase production

2) VMI stands for _____.
a) vendor material inventory b) vendor managed inventory
c) variable material inventory d) valuable material inventory

3) The major decision areas in supply chain management are _____.
a) planning, production, distribution, inventory
b) location, production, scheduling, inventory
c) location, production, inventory
d) location, production, distribution, marketing

4) Distribution requirements planning is a system for _____.
a) inventory management b) distribution planning
c) both 'a' and 'b' d) none of the above

5) Which of the following is not a typical supply chain member?
a) retailer's creditor b) wholesaler
c) reseller d) producer

6) The trend in organizations is to place the SCM function:
a) Under the manufacturing function
b) Under the finance function
c) Under the engineering function
d) At the same level as the other major functions

7) In a SC, Material flows in one direction while from in both direction
a) Process b) Information
c) Product d) Semi-finished Goods

8) Which of the following are not key attributes of supply chain management?
a) Inventory control b) leveraging technology
c) customer power d) all are key attributes

9) The supply chain concept originated in what discipline?
a) marketing b) operations
c) logistics d) production

10) Which of the following statements is/are correct?
a) Efficient supply chain focuses in cost minimization
b) Responsive supply chain focuses on service and delivery
c) Efficient supply chain is for functional products
d) Responsive supply chain is for innovative products

11) Which of the following is low in a responsive supply chain compared to a functional supply chain?
a) Volume b) Profit margin
c) Forecast error d) Risk

12) Which of the following is a strategic decision in a supply chain?
a) Location decision b) Production decision
c) Inventory decision d) Transportation decision

13) To reduce the Bullwhip effect, which of the following data should be shared among the supply chain entities?
a) Sales data b) Capacity data
c) Inventory data d) All of the above

14) Operational issues in a supply chain are handled using _____.
a) Simulation-based approach b) Heuristic approach
c) Rough cut approach d) None of the above

SLR-GF-171

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Supply Chain Management (BTN02714)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram whenever necessary.

Section – I

Q.2	**a)**	What is supply chain management? Explain the key drivers of supply chain management.	**07**
	b)	Describe the problems in supply chain management with solutions.	**07**
Q.3	**a)**	Elaborate the Strategies to achieve coordination in supply chain management.	**07**
	b)	Discuss in detail the supply chain strategy development framework.	**07**
Q.4	**a)**	What is the significance of coordination in supply chain? Explain the Bullwhip Effect.	**07**
	b)	Explain in detail how the Corporate Strategy is aligned with the Supply Chain Strategy.	**07**

Section – II

Q.5	**a)**	What are the approaches to Inventory Management in Global Supply Chain Management? Explain the Distribution Resource Planning.	**07**
	b)	Elaborate in detail the Trends in International supply chain management.	**07**
Q.6	**a)**	Explain in detail the symptoms of poor Inventory Management.	**07**
	b)	Discuss the role of E-Commerce in Supply Chain Management.	**07**
Q.7	**a)**	Explain the tools for performance measurement in supply chain management.	**07**
	b)	What is the outsourcing Supply Chain Operations? Explain the Co-Maker ship in detail.	**07**

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Supply Chain Management (BTN02714)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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a) Volume b) Profit margin
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5) Which of the following is a strategic decision in a supply chain?
a) Location decision b) Production decision
c) Inventory decision d) Transportation decision

6) To reduce the Bullwhip effect, which of the following data should be shared among the supply chain entities?
a) Sales data b) Capacity data
c) Inventory data d) All of the above

7) Operational issues in a supply chain are handled using _____.
a) Simulation-based approach b) Heuristic approach
c) Rough cut approach d) None of the above

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9) VMI stands for _____.
a) vendor material inventory b) vendor managed inventory
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10) The major decision areas in supply chain management are _____.
a) planning, production, distribution, inventory
b) location, production, scheduling, inventory
c) location, production, inventory
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11) Distribution requirements planning is a system for _____.
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a) Under the manufacturing function
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14) In a SC, Material flows in one direction while from in both direction
a) Process b) Information
c) Product d) Semi-finished Goods

SLR-GF-171

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Supply Chain Management (BTN02714)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
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Section – I

Q.2	**a)**	What is supply chain management? Explain the key drivers of supply chain management.	**07**
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	b)	Explain in detail how the Corporate Strategy is aligned with the Supply Chain Strategy.	**07**

Section – II

Q.5	**a)**	What are the approaches to Inventory Management in Global Supply Chain Management? Explain the Distribution Resource Planning.	**07**
	b)	Elaborate in detail the Trends in International supply chain management.	**07**
Q.6	**a)**	Explain in detail the symptoms of poor Inventory Management.	**07**
	b)	Discuss the role of E-Commerce in Supply Chain Management.	**07**
Q.7	**a)**	Explain the tools for performance measurement in supply chain management.	**07**
	b)	What is the outsourcing Supply Chain Operations? Explain the Co-Maker ship in detail.	**07**

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Supply Chain Management (BTN02714)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of the following is low in a responsive supply chain compared to a functional supply chain?
a) Volume b) Profit margin
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9) Which of the following is not a typical supply chain member?
a) retailer's creditor b) wholesaler
c) reseller d) producer

10) The trend in organizations is to place the SCM function:
a) Under the manufacturing function
b) Under the finance function
c) Under the engineering function
d) At the same level as the other major functions

11) In a SC, Material flows in one direction while from in both direction
a) Process b) Information
c) Product d) Semi-finished Goods

12) Which of the following are not key attributes of supply chain management?
a) Inventory control b) leveraging technology
c) customer power d) all are key attributes

13) The supply chain concept originated in what discipline?
a) marketing b) operations
c) logistics d) production

14) Which of the following statements is/are correct?
a) Efficient supply chain focuses in cost minimization
b) Responsive supply chain focuses on service and delivery
c) Efficient supply chain is for functional products
d) Responsive supply chain is for innovative products

SLR-GF-171

Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Supply Chain Management (BTN02714)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram whenever necessary.

Section – I

Q.2	**a)**	What is supply chain management? Explain the key drivers of supply chain management.	**07**
	b)	Describe the problems in supply chain management with solutions.	**07**
Q.3	**a)**	Elaborate the Strategies to achieve coordination in supply chain management.	**07**
	b)	Discuss in detail the supply chain strategy development framework.	**07**
Q.4	**a)**	What is the significance of coordination in supply chain? Explain the Bullwhip Effect.	**07**
	b)	Explain in detail how the Corporate Strategy is aligned with the Supply Chain Strategy.	**07**

Section – II

Q.5	**a)**	What are the approaches to Inventory Management in Global Supply Chain Management? Explain the Distribution Resource Planning.	**07**
	b)	Elaborate in detail the Trends in International supply chain management.	**07**
Q.6	**a)**	Explain in detail the symptoms of poor Inventory Management.	**07**
	b)	Discuss the role of E-Commerce in Supply Chain Management.	**07**
Q.7	**a)**	Explain the tools for performance measurement in supply chain management.	**07**
	b)	What is the outsourcing Supply Chain Operations? Explain the Co-Maker ship in detail.	**07**

SLR-GF-171

Seat No.	

Set S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Supply Chain Management (BTN02714)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The trend in organizations is to place the SCM function:
a) Under the manufacturing function
b) Under the finance function
c) Under the engineering function
d) At the same level as the other major functions

2) In a SC, Material flows in one direction while from in both direction
a) Process b) Information
c) Product d) Semi-finished Goods

3) Which of the following are not key attributes of supply chain management?
a) Inventory control b) leveraging technology
c) customer power d) all are key attributes

4) The supply chain concept originated in what discipline?
a) marketing b) operations
c) logistics d) production

5) Which of the following statements is/are correct?
a) Efficient supply chain focuses in cost minimization
b) Responsive supply chain focuses on service and delivery
c) Efficient supply chain is for functional products
d) Responsive supply chain is for innovative products

6) Which of the following is low in a responsive supply chain compared to a functional supply chain?
a) Volume b) Profit margin
c) Forecast error d) Risk

7) Which of the following is a strategic decision in a supply chain?
a) Location decision b) Production decision
c) Inventory decision d) Transportation decision

8) To reduce the Bullwhip effect, which of the following data should be shared among the supply chain entities?
a) Sales data b) Capacity data
c) Inventory data d) All of the above

9) Operational issues in a supply chain are handled using _____.
a) Simulation-based approach b) Heuristic approach
c) Rough cut approach d) None of the above

10) The purpose of supply chain management is _____.
a) provide customer satisfaction
b) improve quality of a product
c) integrating supply and demand management
d) increase production

11) VMI stands for _____.
a) vendor material inventory b) vendor managed inventory
c) variable material inventory d) valuable material inventory

12) The major decision areas in supply chain management are _____.
a) planning, production, distribution, inventory
b) location, production, scheduling, inventory
c) location, production, inventory
d) location, production, distribution, marketing

13) Distribution requirements planning is a system for _____.
a) inventory management b) distribution planning
c) both ‘a’ and ‘b’ d) none of the above

14) Which of the following is not a typical supply chain member?
a) retailer’s creditor b) wholesaler
c) reseller d) producer

SLR-GF-171

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Supply Chain Management (BTN02714)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
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4) Draw neat diagram whenever necessary.

Section – I

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	b)	Describe the problems in supply chain management with solutions.	**07**
Q.3	**a)**	Elaborate the Strategies to achieve coordination in supply chain management.	**07**
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Section – II

Q.5	**a)**	What are the approaches to Inventory Management in Global Supply Chain Management? Explain the Distribution Resource Planning.	**07**
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Q.6	**a)**	Explain in detail the symptoms of poor Inventory Management.	**07**
	b)	Discuss the role of E-Commerce in Supply Chain Management.	**07**
Q.7	**a)**	Explain the tools for performance measurement in supply chain management.	**07**
	b)	What is the outsourcing Supply Chain Operations? Explain the Co-Maker ship in detail.	**07**

SLR-GF-172

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable scientific calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) In an _____ element the value of the field variable remains unchanged in the circumferential direction.
a) 1D and 2D b) beam
c) solid d) axisymmetric

2) In thermal analysis problems the primary field variable is _____.
a) temperature b) heat flux
c) stress d) displacement

3) Formula for Galerkin method is _____.
a) $\int f(x)R(x)dx = 0$ b) $R(x) = 0$
c) $\int R(x)dx = 0$ d) $\int R^2(x)dx = 0$

4) Multiplex elements are those elements which _____.
a) have higher order interpolation polynomials
b) have sides parallel to coordinate system
c) have sides parallel to coordinate system and use higher order interpolation polynomials
d) have polynomials with only linear and constant terms

5) The potential energy in a spring is given by the equation _____.
a) $\pi = \frac{1}{2}KU^2_FU$ b) $\pi = Mg$
c) $\pi = Mc^2$ d) $\pi = Mk^2$

6) An element in which the order of the geometry interpolation function is higher than the order of the displacement interpolation function is called _____.
a) Iso-parametric element b) Super parametric element
c) Sub parametric element d) Laplacian element

7) The sum of the natural coordinates L_1, L_2, L_3 for triangular element is always _____.
a) equal to 1 b) zero
c) equal to -1 d) varies from -1 to 1

8) The variational method involves the concept of minimization of _____
a) kinetic energy b) thermal energy
c) strain energy d) potential energy

9) Interpolation function for a 2 noded simplex 1-D element is _____
a) $a_1 + a_2 x$ b) $a_1 + a_2 x + a_3 x^2$
c) $a_1 + a_2 x + a_3 y$ d) None of the above

10) Which of the following is a weighted residual method?
a) Galerkin's method b) Rayleigh-Ritz method
c) Potential energy method d) All the above

11) Improvement in the accuracy of finite element mesh by increasing the order of interpolation function used in the elements is _____
a) h-refinement b) p-refinement
c) mesh refinement d) p-h refinement

12) The analysis concerned with the prediction of natural frequencies is called _____.
a) harmonic analysis b) modal analysis
c) static analysis d) transient analysis

13) Post processing means _____.
a) Meshing b) Solving
c) Result analysis d) Discretization

14) In _____ element the value of field variable remains unchanged in the circumferential direction.
a) 1D and 2D b) Beam
c) Truss d) Axisymmetric

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from Sections I & Sections II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Obtain shape functions for 2 node 1-D truss element. **07**

b) Explain General FEM procedure. **07**

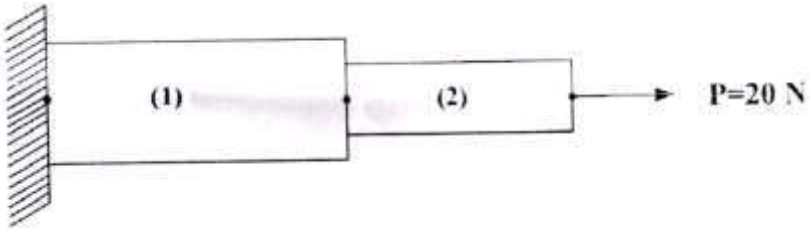
Q.3 **a)** Obtain solution of differential equation by using Galerkin's method. **07**

$$\frac{\partial^2 u}{\partial x^2} + 3x\frac{\partial u}{\partial x} - 6u = 0, \quad 0 \leqslant x \leqslant 1$$

Take boundary conditions as $u(0) = 1 \quad u'(0) = 0.1$

b) Explain Simplex, Complex and Multiplex elements. **07**

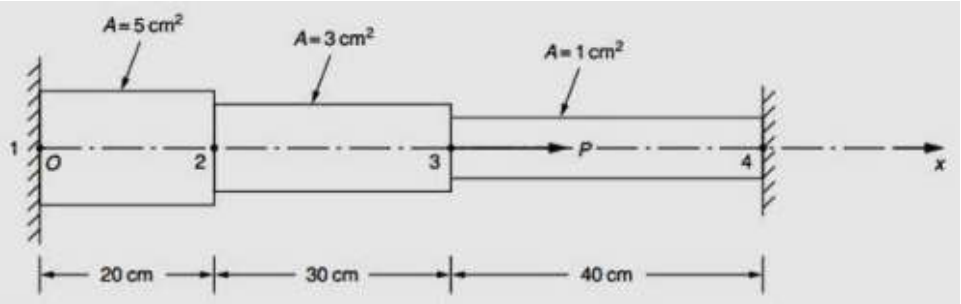
Q.4 **a)** Find nodal displacement in stepped bar as shown in figure 1. **07**
Take $A_1 = 40\ \text{mm}^2, A_2 = 20\ \text{mm}^2$
$L_1 = L_2 = 200\ \text{mm}, E = 200 \times 10^3\ \text{MPa}$



b) Explain properties of stiffness matrix. **07**

Section – II

Q.5 **a)** A stepped bar is subjected to an axial load of $P = 10\ \mathrm{KN}$ as shown in Figure below. If the material of the stepped bar is steel with a Young's modulus of $E = 2 \times 10^7\ \mathrm{N/cm^2}$, find the stresses developed in each of the steps. Apply Boundary conditions by Penalty method. **12**



b) Explain Brick elements. **02**

Q.6 **a)** Calculate the value of field variable at the point A (2.0, 2.0), which is located inside the triangle as shown in figure 3. **07**
The nodal values for field variable are $U_i = 2, U_j = 1$ and $U_k = 3$

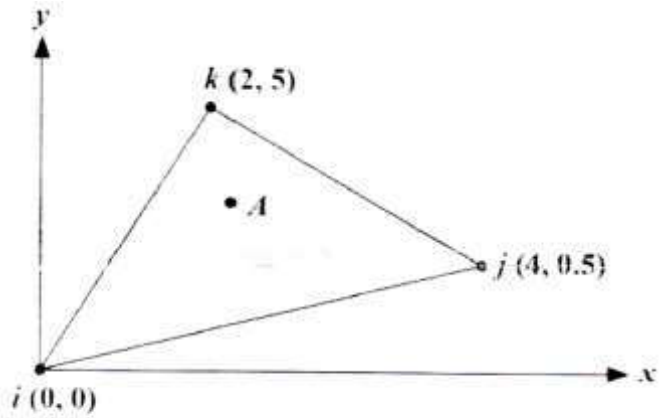


Figure 3:

b) What is convergence study? Why is it necessary to do a convergence study in FEA? **07**

Q.7 **Write short note on (Any Three)** **14**

a) Transient response analysis
b) Harmonic analysis
c) Explicit analysis
d) Distortion of elements

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Use of non-programmable scientific calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The variational method involves the concept of minimization of _____
a) kinetic energy b) thermal energy
c) strain energy d) potential energy

2) Interpolation function for a 2 noded simplex 1-D element is _____
a) $a_1 + a_2 x$ b) $a_1 + a_2 x + a_3 x^2$
c) $a_1 + a_2 x + a_3 y$ d) None of the above

3) Which of the following is a weighted residual method?
a) Galerkin's method b) Rayleigh-Ritz method
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4) Improvement in the accuracy of finite element mesh by increasing the order of interpolation function used in the elements is _____
a) h-refinement b) p-refinement
c) mesh refinement d) p-h refinement

5) The analysis concerned with the prediction of natural frequencies is called _____.
a) harmonic analysis b) modal analysis
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6) Post processing means _____.
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7) In _____ element the value of field variable remains unchanged in the circumferential direction.
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c) Truss d) Axisymmetric

8) In an _____ element the value of the field variable remains unchanged in the circumferential direction.
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c) $\pi = Mc^2$ d) $\pi = Mk^2$

13) An element in which the order of the geometry interpolation function is higher than the order of the displacement interpolation function is called _____.

a) Iso-parametric element b) Super parametric element
c) Sub parametric element d) Laplacian element

14) The sum of the natural coordinates L_1, L_2, L_3 for triangular element is always _____.

a) equal to 1 b) zero
c) equal to -1 d) varies from -1 to 1

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from Sections I & Sections II.
2) Figures to the right indicate full marks.
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Section – I

Q.2 **a)** Obtain shape functions for 2 node 1-D truss element. **07**

b) Explain General FEM procedure. **07**

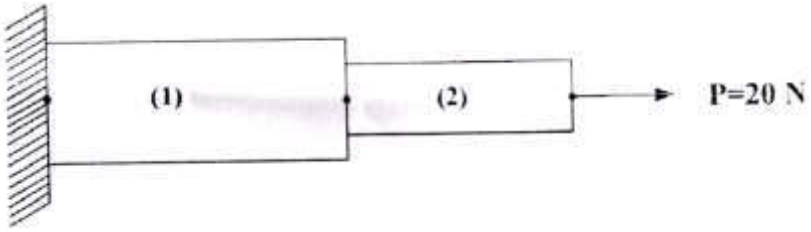
Q.3 **a)** Obtain solution of differential equation by using Galerkin's method. **07**

$$\frac{\partial^2 u}{\partial x^2} + 3x\frac{\partial u}{\partial x} - 6u = 0, \quad 0 \leqslant x \leqslant 1$$

Take boundary conditions as $u(0) = 1 \quad u'(0) = 0.1$

b) Explain Simplex, Complex and Multiplex elements. **07**

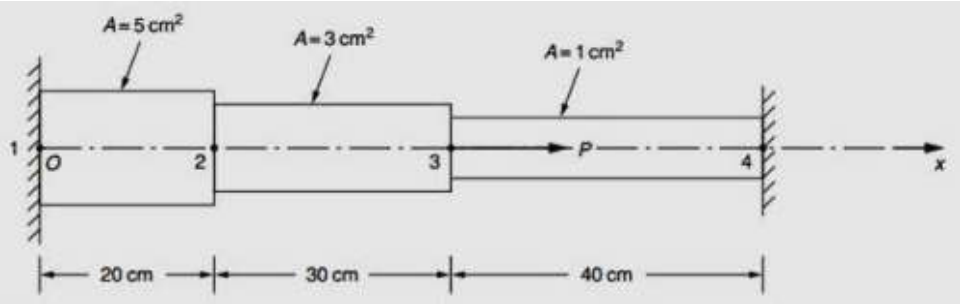
Q.4 **a)** Find nodal displacement in stepped bar as shown in figure 1. **07**
Take $A_1 = 40\ \text{mm}^2, A_2 = 20\ \text{mm}^2$
$L_1 = L_2 = 200\ \text{mm}, E = 200 \times 10^3\ \text{MPa}$



b) Explain properties of stiffness matrix. **07**

Section – II

Q.5 **a)** A stepped bar is subjected to an axial load of $P = 10\ \text{KN}$ as shown in Figure below. If the material of the stepped bar is steel with a Young's modulus of $E = 2 \times 10^7\ \text{N/cm}^2$, find the stresses developed in each of the steps. Apply Boundary conditions by Penalty method. **12**



b) Explain Brick elements. **02**

Q.6 **a)** Calculate the value of field variable at the point A (2.0, 2.0), which is located inside the triangle as shown in figure 3. **07**
The nodal values for field variable are $U_i = 2, U_j = 1$ and $U_k = 3$

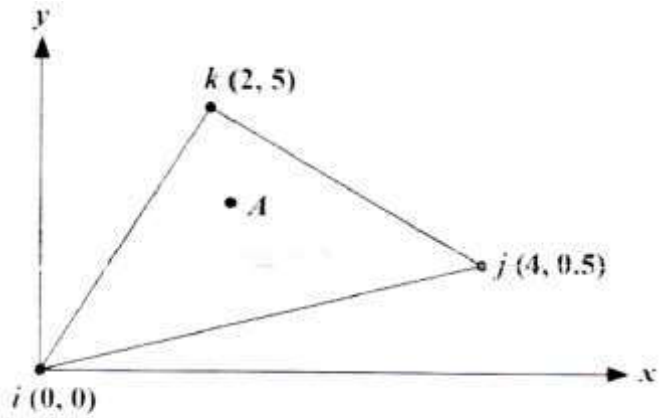


Figure 3:

b) What is convergence study? Why is it necessary to do a convergence study in FEA? **07**

Q.7 **Write short note on (Any Three)** **14**

a) Transient response analysis
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Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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Duration: 30 Minutes Marks: 14

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c) Potential energy method d) All the above

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from Sections I & Sections II.
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Section – I

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Take boundary conditions as $u(0) = 1 \quad u'(0) = 0.1$

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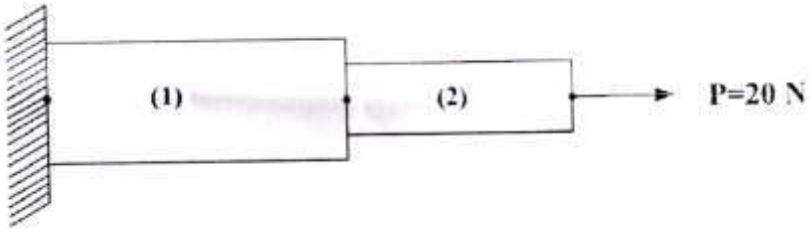

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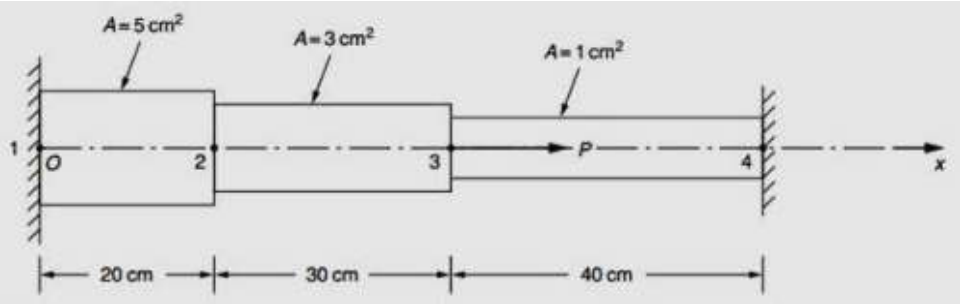
Section – II

Q.5 **a)** A stepped bar is subjected to an axial load of $P = 10\ \text{KN}$ as shown in Figure below. If the material of the stepped bar is steel with a Young's modulus of $E = 2 \times 10^7\ \text{N/cm}^2$, find the stresses developed in each of the steps. Apply Boundary conditions by Penalty method. **12**



b) Explain Brick elements. **02**

Q.6 **a)** Calculate the value of field variable at the point A (2.0, 2.0), which is located inside the triangle as shown in figure 3. **07**
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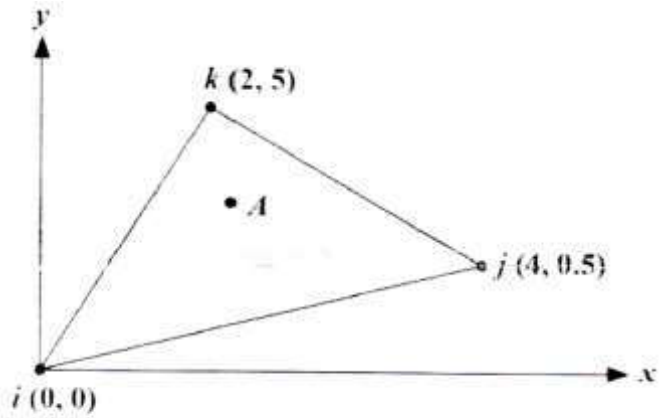


Figure 3:

b) What is convergence study? Why is it necessary to do a convergence study in FEA? **07**

Q.7 **Write short note on (Any Three)** **14**

a) Transient response analysis
b) Harmonic analysis
c) Explicit analysis
d) Distortion of elements

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable scientific calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) An element in which the order of the geometry interpolation function is higher than the order of the displacement interpolation function is called _____.
a) Iso-parametric element b) Super parametric element
c) Sub parametric element d) Laplacian element

2) The sum of the natural coordinates L_1, L_2, L_3 for triangular element is always _____.
a) equal to 1 b) zero
c) equal to -1 d) varies from -1 to 1

3) The variational method involves the concept of minimization of _____
a) kinetic energy b) thermal energy
c) strain energy d) potential energy

4) Interpolation function for a 2 noded simplex 1-D element is _____
a) $a_1 + a_2 x$ b) $a_1 + a_2 x + a_3 x^2$
c) $a_1 + a_2 x + a_3 y$ d) None of the above

5) Which of the following is a weighted residual method?
a) Galerkin's method b) Rayleigh-Ritz method
c) Potential energy method d) All the above

6) Improvement in the accuracy of finite element mesh by increasing the order of interpolation function used in the elements is _____
a) h-refinement b) p-refinement
c) mesh refinement d) p-h refinement

7) The analysis concerned with the prediction of natural frequencies is called _____.
a) harmonic analysis b) modal analysis
c) static analysis d) transient analysis

8) Post processing means _____.
a) Meshing b) Solving
c) Result analysis d) Discretization

9) In _____ element the value of field variable remains unchanged in the circumferential direction.

a) 1D and 2D
b) Beam
c) Truss
d) Axisymmetric

10) In an _____ element the value of the field variable remains unchanged in the circumferential direction.

a) 1D and 2D
b) beam
c) solid
d) axisymmetric

11) In thermal analysis problems the primary field variable is _____.

a) temperature
b) heat flux
c) stress
d) displacement

12) Formula for Galerkin method is _____.

a) $\int f(x)R(x)dx = 0$
b) $R(x) = 0$
c) $\int R(x)dx = 0$
d) $\int R^2(x)dx = 0$

13) Multiplex elements are those elements which _____.

a) have higher order interpolation polynomials
b) have sides parallel to coordinate system
c) have sides parallel to coordinate system and use higher order interpolation polynomials
d) have polynomials with only linear and constant terms

14) The potential energy in a spring is given by the equation _____.

a) $\pi = \frac{1}{2}KU^2_FU$
b) $\pi = Mg$
c) $\pi = Mc^2$
d) $\pi = Mk^2$

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (BTN02715)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from Sections I & Sections II.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.
4) Use of non-programmable scientific calculator is allowed.

Section – I

Q.2 **a)** Obtain shape functions for 2 node 1-D truss element. **07**

b) Explain General FEM procedure. **07**

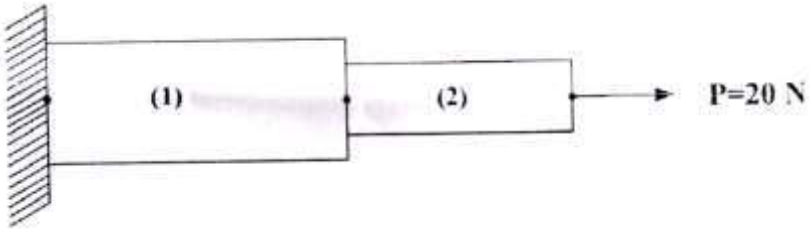
Q.3 **a)** Obtain solution of differential equation by using Galerkin's method. **07**

$$\frac{\partial^2 u}{\partial x^2} + 3x\frac{\partial u}{\partial x} - 6u = 0, \quad 0 \leqslant x \leqslant 1$$

Take boundary conditions as $u(0) = 1 \quad u'(0) = 0.1$

b) Explain Simplex, Complex and Multiplex elements. **07**

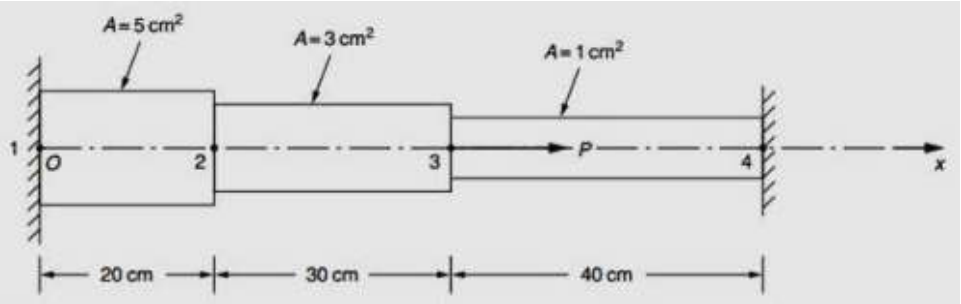
Q.4 **a)** Find nodal displacement in stepped bar as shown in figure 1. **07**
Take $A_1 = 40\ \text{mm}^2, A_2 = 20\ \text{mm}^2$
$L_1 = L_2 = 200\ \text{mm}, E = 200 \times 10^3\ \text{MPa}$



b) Explain properties of stiffness matrix. **07**

Section – II

Q.5 **a)** A stepped bar is subjected to an axial load of $P = 10\ \text{KN}$ as shown in Figure below. If the material of the stepped bar is steel with a Young's modulus of $E = 2 \times 10^7\ \text{N/cm}^2$, find the stresses developed in each of the steps. Apply Boundary conditions by Penalty method. **12**



b) Explain Brick elements. **02**

Q.6 **a)** Calculate the value of field variable at the point A (2.0, 2.0), which is located inside the triangle as shown in figure 3. **07**
The nodal values for field variable are $U_i = 2, U_j = 1$ and $U_k = 3$

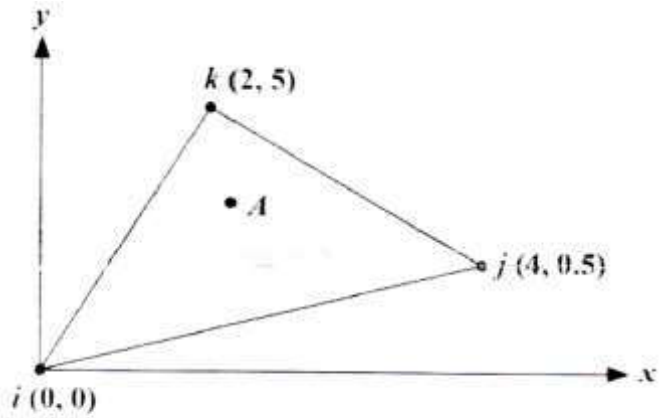


Figure 3:

b) What is convergence study? Why is it necessary to do a convergence study in FEA? **07**

Q.7 **Write short note on (Any Three)** **14**

a) Transient response analysis
b) Harmonic analysis
c) Explicit analysis
d) Distortion of elements

SLR-GF-173

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (197041701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No. 3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) A reversible Carnot cycle used for refrigeration comprises _____.
a) Two isentropic and two adiabatic processes
b) Two isentropic and two constant volume processes
c) Two isentropic and two constant pressure process
d) Two isentropic and two isothermal processes

2) In Lithium-Bromide absorption system _____.
a) Lithium-bromide used as refrigerant and water as absorbent
b) Ammonia used as refrigerant and Lithium-Bromide as absorbent
c) Water used as refrigerant and Lithium-Bromide as absorbent
d) None of the above

3) Linde system for liquefaction of air is also known as _____.
a) Hampson system b) Cascade system
c) Claude system d) Carnot system

4) For rectangular duct, the aspect ratio is equal to _____.
a) Sum of longer and shorter side
b) Ratio of longer to shorter side
c) Product of longer and shorter side
d) Difference of longer and shorter side

5) The difference between dry bulb temperature and wet bulb temperature, is called _____.
a) dry bulb depression b) wet bulb depression
c) dew point depression d) degree of saturation

6) In a psychrometric process, the sensible heat added is 30 kJ/s and the latent heat added is 20 kJ/s. The sensible heat factor for the process will be _____.
a) 0.6 b) 0.3
c) 0.67 d) 1.5

7) A boot-strap air cooling system has _____.
a) One heat exchanger b) Three heat exchanger
c) Two heat exchanger d) Four and water

8) The Freon group of refrigerants are also called as _____.
a) Azeotrope refrigerants b) Inorganic refrigerants
c) Hydro-carbon refrigerants d) Halo-carbon refrigerants

9) The conditioned air supplied to the room must have the capacity to take up _____.
a) Room sensible heat load only
b) Both room sensible heat and latent heat loads
c) Room latent heat load only
d) None of the above

10) Rectangular ducts are generally preferred over circular ducts in buildings as _____.
a) For a given flow rate, the pressure drop is less compared to a circular duct
b) Rectangular ducts match well with building profile
c) For a given pressure drop, it requires less material compared to a circular duct
d) Rectangular ducts are easier to fabricate

11) Absorption of the refrigerant by the absorbent in a vapour absorption refrigeration system is accompanied by _____.
a) Release of heat b) No thermal effects
c) Absorption of heat d) Reduction in volume

12) During Sensible Cooling of air, the wet bulb temperature _____.
a) Increase b) Decreases
c) Remains same d) Can't predict

13) The temperature at which moisture in air starts condensing is known as _____.
a) Dry bulb temperature b) Dew point temperature
c) Super dry temperature d) Wet bulb temperature

14) CFC based refrigerants are being replaced as they are found to _____.
a) React with several materials of construction
b) Consume more energy
c) Cause ozone layer depletion
d) Expensive

SLR-GF-173

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (197041701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve **Any Two** questions from each section out of remaining questions.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary.
4) Use of Refrigerant property tables, Psychrometric chart and non-programmable calculator is allowed.

Section – I

Q.2 **a)** An air refrigerator operates between pressure limits of 1 bar and 5 bar on Bell Coleman Cycle. Its initial temperature is 10°C and after compression the air is cooled up to 20°C. Determine the theoretical COP and net refrigerating effect. Take c_p = 1.005 KJ/Kg K and c_v = 0.718 KJ/Kg K. **05**

b) Describe with neat sketch a boot strap air refrigeration system. **05**

c) Explain with the help of neat diagram Electrolux Refrigeration System. **04**

Q.3 **a)** Explain necessity of air conditioning in air craft's. **05**

b) Describe the Vapour Compression Refrigeration System with the help of neat diagram. **05**

c) State desirable properties of refrigerants. **04**

Q.4 **a)** A vapour compression refrigerator works between the pressure limits of 60 bar and 25 bar. The working fluid is just dry at the end of compression and there is no under-cooling of the liquid before the expansion valve. Determine: **08**

i) C.O.P of the cycle;
ii) Dryness Fraction of refrigerant at the inlet of compressor;
iii) Capacity of refrigerator in KW and in TR, if the fluid flow is at the rate of 5 kg/min.

Pressure (bar)	Saturation Temperature (K)	Enthalpy (KJ/Kg)		Entropy (KJ/Kg K)	
		Liquid	Vapour	Liquid	Vapour
60	295	151.96	293.29	0.554	1.0332
25	261	56.32	322.58	0.226	1.2464

b) Explain the effect of CFC on Ozone depletion. **06**

Section – II

Q.5 **a)** Derive an expression for Equivalent diameter of rectangular duct for equal discharge and equal velocity through both ducts. **05**

b) Write a short note on BPF. **05**

c) Explain the thermal exchange of human body with environment. **04**

Q.6 **a)** Explain different types of pressures in ducts. **05**

b) Define the following: **05**

i) DPT
ii) Relative Humidity
iii) SHF
iv) WBD
v) GSHF

c) State and explain the factors affecting human comfort. **04**

Q.7 **a)** On a particular day, the atmospheric air was found to have dry bulb temperature of 30°C and a wet bulb temperature of 18°C. The barometric pressure was observed to be 756 mm of Hg. Determine relative humidity, specific humidity, dew point temperature and enthalpy of air per Kg of dry air. **08**

b) Explain with schematic diagram Linde system for liquefaction of air. **06**

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (197041701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The Freon group of refrigerants are also called as _____.
a) Azeotrope refrigerants b) Inorganic refrigerants
c) Hydro-carbon refrigerants d) Halo-carbon refrigerants

2) The conditioned air supplied to the room must have the capacity to take up _____.
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3) Rectangular ducts are generally preferred over circular ducts in buildings as _____.
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b) Rectangular ducts match well with building profile
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4) Absorption of the refrigerant by the absorbent in a vapour absorption refrigeration system is accompanied by _____.
a) Release of heat b) No thermal effects
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Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (197041701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve **Any Two** questions from each section out of remaining questions.
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Section – I

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b) Explain the effect of CFC on Ozone depletion. **06**

Section – II

Q.5 **a)** Derive an expression for Equivalent diameter of rectangular duct for equal discharge and equal velocity through both ducts. **05**

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b) Explain with schematic diagram Linde system for liquefaction of air. **06**

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (197041701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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SLR-GF-173

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (197041701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve **Any Two** questions from each section out of remaining questions.
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Section – I

Q.2 **a)** An air refrigerator operates between pressure limits of 1 bar and 5 bar on Bell Coleman Cycle. Its initial temperature is 10°C and after compression the air is cooled up to 20°C. Determine the theoretical COP and net refrigerating effect. Take c_p = 1.005 KJ/Kg K and c_v = 0.718 KJ/Kg K. **05**

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Section – II

Q.5 **a)** Derive an expression for Equivalent diameter of rectangular duct for equal discharge and equal velocity through both ducts. **05**

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b) Explain with schematic diagram Linde system for liquefaction of air. **06**

SLR-GF-173

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (197041701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No. 3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) In a psychrometric process, the sensible heat added is 30 kJ/s and the latent heat added is 20 kJ/s. The sensible heat factor for the process will be _____.
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6) Absorption of the refrigerant by the absorbent in a vapour absorption refrigeration system is accompanied by _____.
a) Release of heat b) No thermal effects
c) Absorption of heat d) Reduction in volume

7) During Sensible Cooling of air, the wet bulb temperature _____.
a) Increase b) Decreases
c) Remains same d) Can't predict

8) The temperature at which moisture in air starts condensing is known as _____.
a) Dry bulb temperature b) Dew point temperature
c) Super dry temperature d) Wet bulb temperature

9) CFC based refrigerants are being replaced as they are found to _____.
a) React with several materials of construction
b) Consume more energy
c) Cause ozone layer depletion
d) Expensive

10) A reversible Carnot cycle used for refrigeration comprises _____.
a) Two isentropic and two adiabatic processes
b) Two isentropic and two constant volume processes
c) Two isentropic and two constant pressure process
d) Two isentropic and two isothermal processes

11) In Lithium-Bromide absorption system _____.
a) Lithium-bromide used as refrigerant and water as absorbent
b) Ammonia used as refrigerant and Lithium-Bromide as absorbent
c) Water used as refrigerant and Lithium-Bromide as absorbent
d) None of the above

12) Linde system for liquefaction of air is also known as _____.
a) Hampson system b) Cascade system
c) Claude system d) Carnot system

13) For rectangular duct, the aspect ratio is equal to _____.
a) Sum of longer and shorter side
b) Ratio of longer to shorter side
c) Product of longer and shorter side
d) Difference of longer and shorter side

14) The difference between dry bulb temperature and wet bulb temperature, is called _____.
a) dry bulb depression b) wet bulb depression
c) dew point depression d) degree of saturation

SLR-GF-173

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Refrigeration and Air Conditioning (197041701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve **Any Two** questions from each section out of remaining questions.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary.
4) Use of Refrigerant property tables, Psychrometric chart and non-programmable calculator is allowed.

Section – I

Q.2 **a)** An air refrigerator operates between pressure limits of 1 bar and 5 bar on Bell Coleman Cycle. Its initial temperature is 10°C and after compression the air is cooled up to 20°C. Determine the theoretical COP and net refrigerating effect. Take c_p = 1.005 KJ/Kg K and c_v = 0.718 KJ/Kg K. **05**

b) Describe with neat sketch a boot strap air refrigeration system. **05**

c) Explain with the help of neat diagram Electrolux Refrigeration System. **04**

Q.3 **a)** Explain necessity of air conditioning in air craft's. **05**

b) Describe the Vapour Compression Refrigeration System with the help of neat diagram. **05**

c) State desirable properties of refrigerants. **04**

Q.4 **a)** A vapour compression refrigerator works between the pressure limits of 60 bar and 25 bar. The working fluid is just dry at the end of compression and there is no under-cooling of the liquid before the expansion valve. Determine: **08**

i) C.O.P of the cycle;
ii) Dryness Fraction of refrigerant at the inlet of compressor;
iii) Capacity of refrigerator in KW and in TR, if the fluid flow is at the rate of 5 kg/min.

Pressure (bar)	Saturation Temperature (K)	Enthalpy (KJ/Kg)		Entropy (KJ/Kg K)	
		Liquid	Vapour	Liquid	Vapour
60	295	151.96	293.29	0.554	1.0332
25	261	56.32	322.58	0.226	1.2464

b) Explain the effect of CFC on Ozone depletion. **06**

Section – II

Q.5 **a)** Derive an expression for Equivalent diameter of rectangular duct for equal discharge and equal velocity through both ducts. **05**

b) Write a short note on BPF. **05**

c) Explain the thermal exchange of human body with environment. **04**

Q.6 **a)** Explain different types of pressures in ducts. **05**

b) Define the following: **05**

i) DPT
ii) Relative Humidity
iii) SHF
iv) WBD
v) GSHF

c) State and explain the factors affecting human comfort. **04**

Q.7 **a)** On a particular day, the atmospheric air was found to have dry bulb temperature of 30°C and a wet bulb temperature of 18°C. The barometric pressure was observed to be 756 mm of Hg. Determine relative humidity, specific humidity, dew point temperature and enthalpy of air per Kg of dry air. **08**

b) Explain with schematic diagram Linde system for liquefaction of air. **06**

SLR-GF-174

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (197041702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In an Automobile body style, a Sedan with door at the back is _____.
a) Coupe b) Hatchback
c) Convertible d) All of the above

2) How many cells are used in a 12 volt car battery?
a) 2 b) 4
c) 6 d) 8

3) Air resistance expressed _____.
a) Kr.W b) $Ka.A.V^2$
c) W/G d) None of these

4) Battery life of a vehicle is reduced by _____.
a) Over charging b) Over heating
c) Atmospheric condition d) Power fluctuation

5) What is called the cornering force over the slip angle?
a) Castor trail b) Cornering power
c) Self-righting torque d) Pneumatic trail

6) The steering system gives the vehicle _____.
a) directional stability b) stable power
c) wheel alignment d) all of the above

7) While in motion, the vehicle suspension is subjected to _____.
a) bouncing b) pitching
c) rolling d) all of the above

8) A solar cell converts light energy into _____.
a) electrical energy b) thermal energy
c) sound energy d) heat energy

9) The device that permit variation in the distance between the spring eyes of leaf spring as the spring flexes is called _____.
a) Spring shackle b) Spring U Bolt
c) Spring hanger d) Spring leaf

10) The clutch is located between the transmission and the _____.
a) engine b) real axle
c) propeller shaft d) differential

11) Transfer box is required in case of _____.
a) front wheel drive b) rear wheel drive
c) four wheel drive vehicles d) all of the above

12) Following is not included in Automobile vehicles _____.
a) two wheelers b) three wheelers
c) naval ships d) railway trains

13) The brakes commonly used in motor cars _____.
a) shoe brake b) band brake
c) band and block brake d) internal expanding

14) Trucks and Buses are _____.
a) Heavy Transport Vehicles (HTV)
b) Light Transport Vehicles (LTV)
c) Light Motor Vehicles (LMV)
d) All of the above

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (197041702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section. (Descriptive)
2) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Explain in detail the all-wheel drive arrangement with a neat sketch and write its advantages and disadvantages. **08**

b) Explain types of car bodies (styles) with examples. **06**

Q.3 **a)** Explain Sliding mesh Gear Box and state its advantages and disadvantages. **08**

b) Find the power of a car weighing 11281.5 N including four passengers, luggage, fuel, lubricating oil & cooling water engine running in top gear at 5000 r.p.m. Size of the wheel tyre is 0.508 m. Pinion to crown wheel ratio = 4.3. Frontal area of body = 2.2. m^2. Taking coefficient of rolling friction & air resistance as 0.012 & 0.0007 respectively. **06**

Q.4 **Write short notes on any two.** **14**

a) Fluid Coupling

b) Over drive

c) Electrical fuel Gauge

Section – II

Q.5 **a)** List different types of steering gear boxes. Explain recirculating ball type of steering gear box with a neat sketch. **08**

b) Explain with neat sketch hydraulic braking system. List advantage and disadvantages of it. **06**

Q.6 **a)** Differentiate between Ackerman's and Davis Steering Gear Mechanisms. **08**

b) The front axle of a car has pivot centres 1.1 m apart. The length of each steering arm is 150 mm, while the track rod is of 1.0 metre length. Calculate the wheelbase for perfect rolling of the car wheels when the inner wheel stub axle is at 55° to the rear centre line. **06**

Q.7 **a)** Explain with neat sketch Hotch kiss drive. Differentiate between Hotch kiss drive and Torque tube drive. **08**

b) Explain with neat sketch Hybrid Vehicles. **06**

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (197041702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A solar cell converts light energy into _____.
a) electrical energy b) thermal energy
c) sound energy d) heat energy

2) The device that permit variation in the distance between the spring eyes of leaf spring as the spring flexes is called _____.
a) Spring shackle b) Spring U Bolt
c) Spring hanger d) Spring leaf

3) The clutch is located between the transmission and the _____.
a) engine b) real axle
c) propeller shaft d) differential

4) Transfer box is required in case of _____.
a) front wheel drive b) rear wheel drive
c) four wheel drive vehicles d) all of the above

5) Following is not included in Automobile vehicles _____.
a) two wheelers b) three wheelers
c) naval ships d) railway trains

6) The brakes commonly used in motor cars _____.
a) shoe brake b) band brake
c) band and block brake d) internal expanding

7) Trucks and Buses are _____.
a) Heavy Transport Vehicles (HTV)
b) Light Transport Vehicles (LTV)
c) Light Motor Vehicles (LMV)
d) All of the above

8) In an Automobile body style, a Sedan with door at the back is _____.
a) Coupe b) Hatchback
c) Convertible d) All of the above

9) How many cells are used in a 12 volt car battery?
a) 2 b) 4
c) 6 d) 8

10) Air resistance expressed _____.
a) Kr.W b) $Ka.A.V^2$
c) W/G d) None of these

11) Battery life of a vehicle is reduced by _____.
a) Over charging b) Over heating
c) Atmospheric condition d) Power fluctuation

12) What is called the cornering force over the slip angle?
a) Castor trail b) Cornering power
c) Self-righting torque d) Pneumatic trail

13) The steering system gives the vehicle _____.
a) directional stability b) stable power
c) wheel alignment d) all of the above

14) While in motion, the vehicle suspension is subjected to _____.
a) bouncing b) pitching
c) rolling d) all of the above

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (197041702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section. (Descriptive)
2) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Explain in detail the all-wheel drive arrangement with a neat sketch and write its advantages and disadvantages. **08**

b) Explain types of car bodies (styles) with examples. **06**

Q.3 **a)** Explain Sliding mesh Gear Box and state its advantages and disadvantages. **08**

b) Find the power of a car weighing 11281.5 N including four passengers, luggage, fuel, lubricating oil & cooling water engine running in top gear at 5000 r.p.m. Size of the wheel tyre is 0.508 m. Pinion to crown wheel ratio = 4.3. Frontal area of body = 2.2. m^2. Taking coefficient of rolling friction & air resistance as 0.012 & 0.0007 respectively. **06**

Q.4 **Write short notes on any two.** **14**

a) Fluid Coupling

b) Over drive

c) Electrical fuel Gauge

Section – II

Q.5 **a)** List different types of steering gear boxes. Explain recirculating ball type of steering gear box with a neat sketch. **08**

b) Explain with neat sketch hydraulic braking system. List advantage and disadvantages of it. **06**

Q.6 **a)** Differentiate between Ackerman's and Davis Steering Gear Mechanisms. **08**

b) The front axle of a car has pivot centres 1.1 m apart. The length of each steering arm is 150 mm, while the track rod is of 1.0 metre length. Calculate the wheelbase for perfect rolling of the car wheels when the inner wheel stub axle is at 55° to the rear centre line. **06**

Q.7 **a)** Explain with neat sketch Hotch kiss drive. Differentiate between Hotch kiss drive and Torque tube drive. **08**

b) Explain with neat sketch Hybrid Vehicles. **06**

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (197041702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Transfer box is required in case of _____.
a) front wheel drive b) rear wheel drive
c) four wheel drive vehicles d) all of the above

2) Following is not included in Automobile vehicles _____.
a) two wheelers b) three wheelers
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4) Trucks and Buses are _____.
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5) In an Automobile body style, a Sedan with door at the back is _____.
a) Coupe b) Hatchback
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6) How many cells are used in a 12 volt car battery?
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c) wheel alignment d) all of the above

11) While in motion, the vehicle suspension is subjected to _____.
a) bouncing b) pitching
c) rolling d) all of the above

12) A solar cell converts light energy into _____.
a) electrical energy b) thermal energy
c) sound energy d) heat energy

13) The device that permit variation in the distance between the spring eyes of leaf spring as the spring flexes is called _____.
a) Spring shackle b) Spring U Bolt
c) Spring hanger d) Spring leaf

14) The clutch is located between the transmission and the _____.
a) engine b) real axle
c) propeller shaft d) differential

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (197041702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section. (Descriptive)
2) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Explain in detail the all-wheel drive arrangement with a neat sketch and write its advantages and disadvantages. **08**

b) Explain types of car bodies (styles) with examples. **06**

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Q.4 **Write short notes on any two.** **14**

a) Fluid Coupling

b) Over drive

c) Electrical fuel Gauge

Section – II

Q.5 **a)** List different types of steering gear boxes. Explain recirculating ball type of steering gear box with a neat sketch. **08**

b) Explain with neat sketch hydraulic braking system. List advantage and disadvantages of it. **06**

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b) The front axle of a car has pivot centres 1.1 m apart. The length of each steering arm is 150 mm, while the track rod is of 1.0 metre length. Calculate the wheelbase for perfect rolling of the car wheels when the inner wheel stub axle is at 55° to the rear centre line. **06**

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b) Explain with neat sketch Hybrid Vehicles. **06**

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (197041702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

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d) All of the above

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a) Coupe b) Hatchback
c) Convertible d) All of the above

11) How many cells are used in a 12 volt car battery?
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c) 6 d) 8

12) Air resistance expressed _____.
a) Kr.W b) $Ka.A.V^2$
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13) Battery life of a vehicle is reduced by _____.
a) Over charging b) Over heating
c) Atmospheric condition d) Power fluctuation

14) What is called the cornering force over the slip angle?
a) Castor trail b) Cornering power
c) Self-righting torque d) Pneumatic trail

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Automobile Engineering (197041702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section. (Descriptive)
2) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Explain in detail the all-wheel drive arrangement with a neat sketch and write its advantages and disadvantages. **08**

b) Explain types of car bodies (styles) with examples. **06**

Q.3 **a)** Explain Sliding mesh Gear Box and state its advantages and disadvantages. **08**

b) Find the power of a car weighing 11281.5 N including four passengers, luggage, fuel, lubricating oil & cooling water engine running in top gear at 5000 r.p.m. Size of the wheel tyre is 0.508 m. Pinion to crown wheel ratio = 4.3. Frontal area of body = 2.2. m^2. Taking coefficient of rolling friction & air resistance as 0.012 & 0.0007 respectively. **06**

Q.4 **Write short notes on any two.** **14**

a) Fluid Coupling

b) Over drive

c) Electrical fuel Gauge

Section – II

Q.5 **a)** List different types of steering gear boxes. Explain recirculating ball type of steering gear box with a neat sketch. **08**

b) Explain with neat sketch hydraulic braking system. List advantage and disadvantages of it. **06**

Q.6 **a)** Differentiate between Ackerman's and Davis Steering Gear Mechanisms. **08**

b) The front axle of a car has pivot centres 1.1 m apart. The length of each steering arm is 150 mm, while the track rod is of 1.0 metre length. Calculate the wheelbase for perfect rolling of the car wheels when the inner wheel stub axle is at 55° to the rear centre line. **06**

Q.7 **a)** Explain with neat sketch Hotch kiss drive. Differentiate between Hotch kiss drive and Torque tube drive. **08**

b) Explain with neat sketch Hybrid Vehicles. **06**

SLR-GF-175

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) Work envelope generated by Cartesian coordinate robot is _____.
a) Sphere b) Cylinder
c) Rectangular box d) Triangle

2) The envelope or space within which robot can manipulate the wrist is known as _____.
a) Repeatability b) Accuracy
c) Accumulator d) Work Volume

3) A circular piece is to be inserted into a hole using a robot. The piece is quite heavy. Which of the grippers listed below is below is best suited for the task?
a) 2 finger angular gripper b) 3 finger angular gripper
c) 2 finger parallel d) 3 finger parallel

4) DC motors that are used in closed loop position control are called _____ motors.
a) Synchronous b) Steeper
c) Brushless d) Servo motors

5) Link coordinates for manipulators are expressed using _____.
a) Jacobian representation
b) Denavit-Hartenburg representation
c) Euler-Lagrangian representation
d) Newton-Euler representation

6) A _____ trajectory is a path with specified qualities of motion, such as velocities, acceleration at each point.
a) Knot-Point b) Via-Point
c) Trajectory d) Spline

7) The most widely used technique of control for industrial robots is _____ control.
a) PI b) PD
c) PID d) ID

8) What is Artificial Intelligence?
a) A field that aims to make humans more intelligent
b) A field that aims to improve the security
c) A field that aims to develop intelligent machines
d) A field that aims to mine the data

9) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

10) What is the form of Fuzzy logic?
a) Two-valued logic
b) Crisp set logic
c) Many-valued logic
d) Binary set logic

11) The fundamental unit of network is _____.
a) Brain
b) Nucleus
c) Neuron
d) Axon

12) Genetic algorithm involves which of the following phenomenon?
a) Mutation
b) Crossover
c) Selection
d) All of the above

13) The term CCD with regards to "CCD Camera" stands for _____.
a) Charged Coupled Device
b) Coupled Charged Device
c) Charged Calibrated Device
d) Calibrated Charged Device

14) Which of the following is digitizing component?
a) Camera
b) Controller
c) A/D converter
d) Lighting

SLR-GF-175

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section - I and Section - II.
2) Figures to the right indicates full marks.

Section – I

Q.2	**a)**	What is an AGV? Discuss different navigation techniques used for industrial AGVs.	**06**
	b)	Explain any four applications of mobile robot.	**08**
Q.3	**a)**	Discuss in detail different sensors used in robot work cells.	**08**
	b)	Compare Hydraulic, Pneumatic and Electric drives.	**06**
Q.4	**a)**	Explain forward and inverse kinematics of 2-Degree of freedom planer manipulator.	**08**
	b)	Explain adaptive control technique with neat sketch.	**06**

Section – II

Q.5	**a)**	Explain any four applications of Artificial Intelligence.	**08**
	b)	Explain Breadth first search technique with algorithm.	**06**
Q.6	**a)**	Explain Fuzzification and Defuzzification process.	**08**
	b)	Explain Feed Forward Neural Network with neat sketch.	**06**
Q.7	**a)**	Compare CCD and CMOS cameras for machine vision applications.	**06**
	b)	Explain camera calibration with neat sketch.	**08**

SLR-GF-175

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) What is Artificial Intelligence?
a) A field that aims to make humans more intelligent
b) A field that aims to improve the security
c) A field that aims to develop intelligent machines
d) A field that aims to mine the data

2) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

3) What is the form of Fuzzy logic?
a) Two-valued logic b) Crisp set logic
c) Many-valued logic d) Binary set logic

4) The fundamental unit of network is _____.
a) Brain b) Nucleus
c) Neuron d) Axon

5) Genetic algorithm involves which of the following phenomenon?
a) Mutation b) Crossover
c) Selection d) All of the above

6) The term CCD with regards to "CCD Camera" stands for _____.
a) Charged Coupled Device b) Coupled Charged Device
c) Charged Calibrated Device d) Calibrated Charged Device

7) Which of the following is digitizing component?
a) Camera b) Controller
c) A/D converter d) Lighting

8) Work envelope generated by Cartesian coordinate robot is _____.
a) Sphere b) Cylinder
c) Rectangular box d) Triangle

9) The envelope or space within which robot can manipulate the wrist is known as _____.

a) Repeatability
b) Accuracy
c) Accumulator
d) Work Volume

10) A circular piece is to be inserted into a hole using a robot. The piece is quite heavy. Which of the grippers listed below is below is best suited for the task?

a) 2 finger angular gripper
b) 3 finger angular gripper
c) 2 finger parallel
d) 3 finger parallel

11) DC motors that are used in closed loop position control are called _____ motors.

a) Synchronous
b) Steeper
c) Brushless
d) Servo motors

12) Link coordinates for manipulators are expressed using _____.

a) Jacobian representation
b) Denavit-Hartenburg representation
c) Euler-Lagrangian representation
d) Newton-Euler representation

13) A _____ trajectory is a path with specified qualities of motion, such as velocities, acceleration at each point.

a) Knot-Point
b) Via-Point
c) Trajectory
d) Spline

14) The most widely used technique of control for industrial robots is _____ control.

a) PI
b) PD
c) PID
d) ID

SLR-GF-175

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section - I and Section - II.
2) Figures to the right indicates full marks.

Section – I

Q.2	**a)**	What is an AGV? Discuss different navigation techniques used for industrial AGVs.	**06**
	b)	Explain any four applications of mobile robot.	**08**
Q.3	**a)**	Discuss in detail different sensors used in robot work cells.	**08**
	b)	Compare Hydraulic, Pneumatic and Electric drives.	**06**
Q.4	**a)**	Explain forward and inverse kinematics of 2-Degree of freedom planer manipulator.	**08**
	b)	Explain adaptive control technique with neat sketch.	**06**

Section – II

Q.5	**a)**	Explain any four applications of Artificial Intelligence.	**08**
	b)	Explain Breadth first search technique with algorithm.	**06**
Q.6	**a)**	Explain Fuzzification and Defuzzification process.	**08**
	b)	Explain Feed Forward Neural Network with neat sketch.	**06**
Q.7	**a)**	Compare CCD and CMOS cameras for machine vision applications.	**06**
	b)	Explain camera calibration with neat sketch.	**08**

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) The fundamental unit of network is _____.
a) Brain b) Nucleus
c) Neuron d) Axon

2) Genetic algorithm involves which of the following phenomenon?
a) Mutation b) Crossover
c) Selection d) All of the above

3) The term CCD with regards to "CCD Camera" stands for _____.
a) Charged Coupled Device b) Coupled Charged Device
c) Charged Calibrated Device d) Calibrated Charged Device

4) Which of the following is digitizing component?
a) Camera b) Controller
c) A/D converter d) Lighting

5) Work envelope generated by Cartesian coordinate robot is _____.
a) Sphere b) Cylinder
c) Rectangular box d) Triangle

6) The envelope or space within which robot can manipulate the wrist is known as _____.
a) Repeatability b) Accuracy
c) Accumulator d) Work Volume

7) A circular piece is to be inserted into a hole using a robot. The piece is quite heavy. Which of the grippers listed below is below is best suited for the task?
a) 2 finger angular gripper b) 3 finger angular gripper
c) 2 finger parallel d) 3 finger parallel

8) DC motors that are used in closed loop position control are called _____ motors.
a) Synchronous b) Steeper
c) Brushless d) Servo motors

9) Link coordinates for manipulators are expressed using _____.
a) Jacobian representation
b) Denavit-Hartenburg representation
c) Euler-Lagrangian representation
d) Newton-Euler representation

10) A _____ trajectory is a path with specified qualities of motion, such as velocities, acceleration at each point.
a) Knot-Point
b) Via-Point
c) Trajectory
d) Spline

11) The most widely used technique of control for industrial robots is _____ control.
a) PI
b) PD
c) PID
d) ID

12) What is Artificial Intelligence?
a) A field that aims to make humans more intelligent
b) A field that aims to improve the security
c) A field that aims to develop intelligent machines
d) A field that aims to mine the data

13) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

14) What is the form of Fuzzy logic?
a) Two-valued logic
b) Crisp set logic
c) Many-valued logic
d) Binary set logic

SLR-GF-175

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section - I and Section - II.
2) Figures to the right indicates full marks.

Section – I

Q.2	**a)**	What is an AGV? Discuss different navigation techniques used for industrial AGVs.	**06**
	b)	Explain any four applications of mobile robot.	**08**
Q.3	**a)**	Discuss in detail different sensors used in robot work cells.	**08**
	b)	Compare Hydraulic, Pneumatic and Electric drives.	**06**
Q.4	**a)**	Explain forward and inverse kinematics of 2-Degree of freedom planer manipulator.	**08**
	b)	Explain adaptive control technique with neat sketch.	**06**

Section – II

Q.5	**a)**	Explain any four applications of Artificial Intelligence.	**08**
	b)	Explain Breadth first search technique with algorithm.	**06**
Q.6	**a)**	Explain Fuzzification and Defuzzification process.	**08**
	b)	Explain Feed Forward Neural Network with neat sketch.	**06**
Q.7	**a)**	Compare CCD and CMOS cameras for machine vision applications.	**06**
	b)	Explain camera calibration with neat sketch.	**08**

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) A _____ trajectory is a path with specified qualities of motion, such as velocities, acceleration at each point.
a) Knot-Point b) Via-Point
c) Trajectory d) Spline

2) The most widely used technique of control for industrial robots is _____ control.
a) PI b) PD
c) PID d) ID

3) What is Artificial Intelligence?
a) A field that aims to make humans more intelligent
b) A field that aims to improve the security
c) A field that aims to develop intelligent machines
d) A field that aims to mine the data

4) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

5) What is the form of Fuzzy logic?
a) Two-valued logic b) Crisp set logic
c) Many-valued logic d) Binary set logic

6) The fundamental unit of network is _____.
a) Brain b) Nucleus
c) Neuron d) Axon

7) Genetic algorithm involves which of the following phenomenon?
a) Mutation b) Crossover
c) Selection d) All of the above

8) The term CCD with regards to "CCD Camera" stands for _____.
a) Charged Coupled Device b) Coupled Charged Device
c) Charged Calibrated Device d) Calibrated Charged Device

9) Which of the following is digitizing component?
a) Camera b) Controller
c) A/D converter d) Lighting

10) Work envelope generated by Cartesian coordinate robot is _____.
a) Sphere b) Cylinder
c) Rectangular box d) Triangle

11) The envelope or space within which robot can manipulate the wrist is known as _____.
a) Repeatability b) Accuracy
c) Accumulator d) Work Volume

12) A circular piece is to be inserted into a hole using a robot. The piece is quite heavy. Which of the grippers listed below is below is best suited for the task?
a) 2 finger angular gripper b) 3 finger angular gripper
c) 2 finger parallel d) 3 finger parallel

13) DC motors that are used in closed loop position control are called _____ motors.
a) Synchronous b) Steeper
c) Brushless d) Servo motors

14) Link coordinates for manipulators are expressed using _____.
a) Jacobian representation
b) Denavit-Hartenburg representation
c) Euler-Lagrangian representation
d) Newton-Euler representation

SLR-GF-175

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Robotics and Artificial Intelligence (197041703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from Section - I and Section - II.
2) Figures to the right indicates full marks.

Section – I

Q.2	**a)**	What is an AGV? Discuss different navigation techniques used for industrial AGVs.	**06**
	b)	Explain any four applications of mobile robot.	**08**
Q.3	**a)**	Discuss in detail different sensors used in robot work cells.	**08**
	b)	Compare Hydraulic, Pneumatic and Electric drives.	**06**
Q.4	**a)**	Explain forward and inverse kinematics of 2-Degree of freedom planer manipulator.	**08**
	b)	Explain adaptive control technique with neat sketch.	**06**

Section – II

Q.5	**a)**	Explain any four applications of Artificial Intelligence.	**08**
	b)	Explain Breadth first search technique with algorithm.	**06**
Q.6	**a)**	Explain Fuzzification and Defuzzification process.	**08**
	b)	Explain Feed Forward Neural Network with neat sketch.	**06**
Q.7	**a)**	Compare CCD and CMOS cameras for machine vision applications.	**06**
	b)	Explain camera calibration with neat sketch.	**08**

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Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (197041706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) In the organisation, Production planning and control department comes under _____.
a) Inventory department b) Manufacturing department
c) Personnel department d) Purchase department

2) Which one of the following is NOT a form of inventory?
a) Raw materials b) Work in Process materials
c) Finished goods d) CNC milling machines

3) Production planning in the intermediate range of time is termed as _____.
a) Production planning b) Short range production planning
c) Scheduling d) Aggregate planning

4) JIT is targeted for _____.
a) Average inventory b) Minimum inventory
c) High inventory d) None of above

5) Which of the following process types is used when a very highly standardised product is desired in high volumes?
a) Repetitive Process b) Batch Process
c) Project Process d) Continuous Process

6) Generally the size of the order of production for Job production is?
a) small b) large
c) medium d) very large

7) Value Analysis involves analyzing which elements of a product or service?
a) Function b) Quality
c) Cost d) All of the above

8) The length of time between placing an order and receipt of material is called as _____.
a) Order time b) Lead time
c) Cycle time d) Process time

9) MRP stands for?

a) Material Requirement Planning b) Material Reordering Planning
c) Material Requisition Procedure d) Material Recording Procedure

10) Kaizen focuses on _____.

a) Large, radical changes b) Small, incremental changes
c) Only cost reduction d) Only productivity improvement

11) In ABC analysis B items require _____.

a) No safety stock b) Low safety stock
c) Moderate safety stock d) High safety stock

12) Identify which one of the following is NOT the objective of the maintenance?

a) To keep all production facilities and allied facilities in an optimum working condition.
b) To ensure specified accuracy to products and time schedule of delivery to customers.
c) To keep the down time of the machine at the maximum
d) To keep the production cycle within stipulated rage

13) The act of going round the production shop to note down the progress of work and feedback the information is known as _____.

a) Dispatching b) Routing
c) Follow up d) Trip card

14) Which of the following method is called as Line of Best Fit?

a) Least Square method b) Moving average method
c) Coefficient d) Delphi

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (197041706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to right indicate full marks.

Section – I

Q.2 **a)** Define Production/ operations Management. Explain its objectives and scope in detail **07**

b) Explain measures of Capacity. **07**

Q.3 **a)** Explain in detail what do you mean by aggregate planning. **07**

b) With the help of following data project the trend for next 3 years using least square method. **07**

Year	2017	2018	2019	2020	2021	2022
Sales in Lakhs of rupees	120	130	135	140	150	165

Q.4 **Write a note on (any two)** **14**

a) Investment decision and replacement analysis.

b) Line balancing

c) PPC

Section – II

Q.5 **a)** Describe the costs associated with inventory. **07**

b) A manufacturer has to supply his customers 3600 units of his product per year. Shortages are not allowed. Inventory carrying cost is Rs.0.1 per unit per month. The set up cost per run is Rs. 80. Find. **07**

i) Economic order quantity
ii) Optimum number of orders per annum
iii) Minimum Average annual inventory cost
iv) Optimum period of supply per optimum order.

Q.6 **a)** Explain the phases of Value analysis. **07**

b) Discuss preventive and breakdown maintenance in detail. **07**

Q.7 **Write a note on (any two)** **14**

a) KAIZEN

b) Supply Chain Management

c) Six Sigma

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (197041706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The length of time between placing an order and receipt of material is called as _____.
a) Order time b) Lead time
c) Cycle time d) Process time

2) MRP stands for?
a) Material Requirement Planning b) Material Reordering Planning
c) Material Requisition Procedure d) Material Recording Procedure

3) Kaizen focuses on _____.
a) Large, radical changes b) Small, incremental changes
c) Only cost reduction d) Only productivity improvement

4) In ABC analysis B items require _____.
a) No safety stock b) Low safety stock
c) Moderate safety stock d) High safety stock

5) Identify which one of the following is NOT the objective of the maintenance?
a) To keep all production facilities and allied facilities in an optimum working condition.
b) To ensure specified accuracy to products and time schedule of delivery to customers.
c) To keep the down time of the machine at the maximum
d) To keep the production cycle within stipulated rage

6) The act of going round the production shop to note down the progress of work and feedback the information is known as _____.
a) Dispatching b) Routing
c) Follow up d) Trip card

7) Which of the following method is called as Line of Best Fit?
a) Least Square method b) Moving average method
c) Coefficient d) Delphi

8) In the organisation, Production planning and control department comes under _____.
a) Inventory department b) Manufacturing department
c) Personnel department d) Purchase department

9) Which one of the following is NOT a form of inventory?
a) Raw materials b) Work in Process materials
c) Finished goods d) CNC milling machines

10) Production planning in the intermediate range of time is termed as _____.
a) Production planning b) Short range production planning
c) Scheduling d) Aggregate planning

11) JIT is targeted for _____.
a) Average inventory b) Minimum inventory
c) High inventory d) None of above

12) Which of the following process types is used when a very highly standardised product is desired in high volumes?
a) Repetitive Process b) Batch Process
c) Project Process d) Continuous Process

13) Generally the size of the order of production for Job production is?
a) small b) large
c) medium d) very large

14) Value Analysis involves analyzing which elements of a product or service?
a) Function b) Quality
c) Cost d) All of the above

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (197041706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to right indicate full marks.

Section – I

Q.2 **a)** Define Production/ operations Management. Explain its objectives and scope in detail **07**

b) Explain measures of Capacity. **07**

Q.3 **a)** Explain in detail what do you mean by aggregate planning. **07**

b) With the help of following data project the trend for next 3 years using least square method. **07**

Year	2017	2018	2019	2020	2021	2022
Sales in Lakhs of rupees	120	130	135	140	150	165

Q.4 **Write a note on (any two)** **14**

a) Investment decision and replacement analysis.

b) Line balancing

c) PPC

Section – II

Q.5 **a)** Describe the costs associated with inventory. **07**

b) A manufacturer has to supply his customers 3600 units of his product per year. Shortages are not allowed. Inventory carrying cost is Rs.0.1 per unit per month. The set up cost per run is Rs. 80. Find. **07**

i) Economic order quantity
ii) Optimum number of orders per annum
iii) Minimum Average annual inventory cost
iv) Optimum period of supply per optimum order.

Q.6 **a)** Explain the phases of Value analysis. **07**

b) Discuss preventive and breakdown maintenance in detail. **07**

Q.7 **Write a note on (any two)** **14**

a) KAIZEN

b) Supply Chain Management

c) Six Sigma

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (197041706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) In ABC analysis B items require _____.
a) No safety stock b) Low safety stock
c) Moderate safety stock d) High safety stock

2) Identify which one of the following is NOT the objective of the maintenance?
a) To keep all production facilities and allied facilities in an optimum working condition.
b) To ensure specified accuracy to products and time schedule of delivery to customers.
c) To keep the down time of the machine at the maximum
d) To keep the production cycle within stipulated rage

3) The act of going round the production shop to note down the progress of work and feedback the information is known as _____.
a) Dispatching b) Routing
c) Follow up d) Trip card

4) Which of the following method is called as Line of Best Fit?
a) Least Square method b) Moving average method
c) Coefficient d) Delphi

5) In the organisation, Production planning and control department comes under _____.
a) Inventory department b) Manufacturing department
c) Personnel department d) Purchase department

6) Which one of the following is NOT a form of inventory?
a) Raw materials b) Work in Process materials
c) Finished goods d) CNC milling machines

7) Production planning in the intermediate range of time is termed as _____.
a) Production planning b) Short range production planning
c) Scheduling d) Aggregate planning

8) JIT is targeted for _____.
a) Average inventory b) Minimum inventory
c) High inventory d) None of above

9) Which of the following process types is used when a very highly standardised product is desired in high volumes?

a) Repetitive Process b) Batch Process
c) Project Process d) Continuous Process

10) Generally the size of the order of production for Job production is?

a) small b) large
c) medium d) very large

11) Value Analysis involves analyzing which elements of a product or service?

a) Function b) Quality
c) Cost d) All of the above

12) The length of time between placing an order and receipt of material is called as _____.

a) Order time b) Lead time
c) Cycle time d) Process time

13) MRP stands for?

a) Material Requirement Planning b) Material Reordering Planning
c) Material Requisition Procedure d) Material Recording Procedure

14) Kaizen focuses on _____.

a) Large, radical changes b) Small, incremental changes
c) Only cost reduction d) Only productivity improvement

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (197041706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to right indicate full marks.

Section – I

Q.2 **a)** Define Production/ operations Management. Explain its objectives and scope in detail **07**

b) Explain measures of Capacity. **07**

Q.3 **a)** Explain in detail what do you mean by aggregate planning. **07**

b) With the help of following data project the trend for next 3 years using least square method. **07**

Year	2017	2018	2019	2020	2021	2022
Sales in Lakhs of rupees	120	130	135	140	150	165

Q.4 **Write a note on (any two)** **14**

a) Investment decision and replacement analysis.

b) Line balancing

c) PPC

Section – II

Q.5 **a)** Describe the costs associated with inventory. **07**

b) A manufacturer has to supply his customers 3600 units of his product per year. Shortages are not allowed. Inventory carrying cost is Rs.0.1 per unit per month. The set up cost per run is Rs. 80. Find. **07**

i) Economic order quantity
ii) Optimum number of orders per annum
iii) Minimum Average annual inventory cost
iv) Optimum period of supply per optimum order.

Q.6 **a)** Explain the phases of Value analysis. **07**

b) Discuss preventive and breakdown maintenance in detail. **07**

Q.7 **Write a note on (any two)** **14**

a) KAIZEN

b) Supply Chain Management

c) Six Sigma

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (197041706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Generally the size of the order of production for Job production is?
a) small b) large
c) medium d) very large

2) Value Analysis involves analyzing which elements of a product or service?
a) Function b) Quality
c) Cost d) All of the above

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c) Material Requisition Procedure d) Material Recording Procedure

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c) Only cost reduction d) Only productivity improvement

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c) Moderate safety stock d) High safety stock

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a) To keep all production facilities and allied facilities in an optimum working condition.
b) To ensure specified accuracy to products and time schedule of delivery to customers.
c) To keep the down time of the machine at the maximum
d) To keep the production cycle within stipulated rage

8) The act of going round the production shop to note down the progress of work and feedback the information is known as _____.
a) Dispatching b) Routing
c) Follow up d) Trip card

9) Which of the following method is called as Line of Best Fit?
a) Least Square method b) Moving average method
c) Coefficient d) Delphi

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a) Raw materials b) Work in Process materials
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a) Production planning b) Short range production planning
c) Scheduling d) Aggregate planning

13) JIT is targeted for _____.
a) Average inventory b) Minimum inventory
c) High inventory d) None of above

14) Which of the following process types is used when a very highly standardised product is desired in high volumes?
a) Repetitive Process b) Batch Process
c) Project Process d) Continuous Process

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Production and Operations Management (197041706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to right indicate full marks.

Section – I

Q.2 **a)** Define Production/ operations Management. Explain its objectives and scope in detail **07**

b) Explain measures of Capacity. **07**

Q.3 **a)** Explain in detail what do you mean by aggregate planning. **07**

b) With the help of following data project the trend for next 3 years using least square method. **07**

Year	2017	2018	2019	2020	2021	2022
Sales in Lakhs of rupees	120	130	135	140	150	165

Q.4 **Write a note on (any two)** **14**

a) Investment decision and replacement analysis.

b) Line balancing

c) PPC

Section – II

Q.5 **a)** Describe the costs associated with inventory. **07**

b) A manufacturer has to supply his customers 3600 units of his product per year. Shortages are not allowed. Inventory carrying cost is Rs.0.1 per unit per month. The set up cost per run is Rs. 80. Find. **07**

i) Economic order quantity
ii) Optimum number of orders per annum
iii) Minimum Average annual inventory cost
iv) Optimum period of supply per optimum order.

Q.6 **a)** Explain the phases of Value analysis. **07**

b) Discuss preventive and breakdown maintenance in detail. **07**

Q.7 **Write a note on (any two)** **14**

a) KAIZEN

b) Supply Chain Management

c) Six Sigma

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Process Engineering (197041708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The decision of what parts to be manufactured and what parts to be purchased from market is taken in _____.
a) analysis of manufacturing system
b) Evaluation of manufacturing system
c) process planning
d) selection of manufacturing process

2) _____ is a diagram that displays a reporting or relationship hierarchy.
a) C chart b) Pi & C chart
c) Pi chart d) org chart

3) The following is also known as Military organization _____.
a) Line and staff organization b) Functional organization
c) Layout organization d) Line organization

4) _____ are used to measure the *gap* between two parallel surfaces.
a) Plug gauge b) Snap gauge
c) Feeler gauge d) Ring gauge

5) _____ Sources of Information for the Process Engineer.
a) Contact within organization
b) catalogs, and periodicals
c) Machine tool manufacturer show
d) all of the above

6) _____ is the operation, which can only enlarge an existing hole.
a) Honning b) Broaching
c) Boring d) Drilling

7) The process assesses the practicality of the proposed plan for the project is called _____ study.
a) Economical b) Technical
c) Managerial d) Feasibility

8) A negative allowance will always result in a _____ fit.

a) Interference b) Clearance
c) Transition d) Any of the above

9) 'GO' and 'NO GO' gauge is a type of _____.

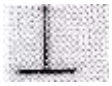
a) plug gauge b) limit gauge
c) ring gauge d) slip gauge

10) Routing is essential in the following type of industry _____.

a) Assembly industry b) Prime industry
c) Job order industry d) Batch order industry

11) symbol used in drawing to interpret _____.

a) Symmetry b) Position
c) Perpendicularity d) Concentricity

12)  symbol used in drawing to interpret _____.

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13) _____ can also produce a variety of shapes, but it lacks the precision and accuracy of machining.

a) Milling b) Casting
c) Boaring d) Turning

14) In method study inspection is indicated by _____.

a) Square b) Circle
c) Triangle d) Rectangle

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Process Engineering (197041708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 and Q. No. 6 are compulsory.
2) Attempt any one question from the remaining in each both sections.
3) Figures to right indicate full marks.
4) Make suitable assumptions, if required and state them clearly.

Section – I

Q.2 Prepare a process plan for manufacturing the component in figure 1 w.r.t data supplied there in along following lines. **14**
- **a)** Route sheet
- **b)** Operations list indicating sequence of operation indicating machine selected, holding methods, tool specifications and machining parameter per set up
- **c)** Gauges and or inspection methods and instruments.

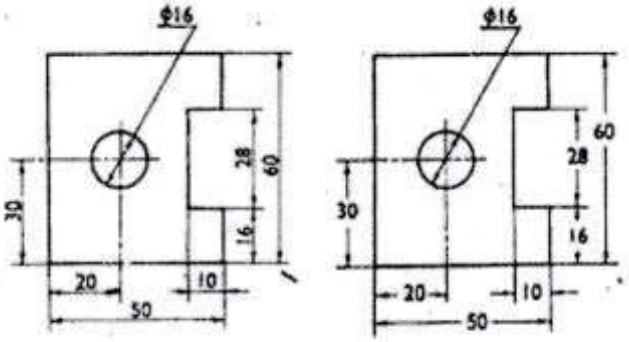

Fig. 1

Q.3 **a)** What is organisation chart. Write down its importance with suitable example. **07**
b) What are functions of process and product engineer? **07**

Q.4 **a)** Write a note on Part Print Analysis with suitable example. **07**
b) What is process engineering. Why it is necessary. **07**

Q.5 **a)** Elaborate with suitable example manufacturing system, input and output of process engineering. **07**
b) What are the documents released by product and process engineering department. **07**

Section – II

Q.6 Draw the process picture sheet for any four operations for manufacturing the component in Figure I w.r.t. sequence. Use standard symbols for locating whenever required. **14**

Q.7 **a)** Discuss technical feasibility in detail. **07**
b) Write a note on selection criteria for GPM and SPM. **07**

Q.8 **a)** What are the technical considerations for equipment selection? Explain. **07**
b) Explain in detail selection of tooling. **07**

Q.9 How do you classify the operations? Explain any five operations with neat sketch? **14**

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Process Engineering (197041708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) A negative allowance will always result in a _____ fit.
a) Interference b) Clearance
c) Transition d) Any of the above

2) 'GO' and 'NO GO' gauge is a type of _____.
a) plug gauge b) limit gauge
c) ring gauge d) slip gauge

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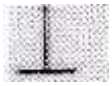
5)  symbol used in drawing to interpret _____.
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c) Boaring d) Turning

7) In method study inspection is indicated by _____.
a) Square b) Circle
c) Triangle d) Rectangle

8) The decision of what parts to be manufactured and what parts to be purchased from market is taken in _____.
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a) C chart
b) Pi & C chart
c) Pi chart
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a) Line and staff organization
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11) _____ are used to measure the *gap* between two parallel surfaces.
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12) _____ Sources of Information for the Process Engineer.
a) Contact within organization
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d) all of the above

13) _____ is the operation, which can only enlarge an existing hole.
a) Honning
b) Broaching
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d) Drilling

14) The process assesses the practicality of the proposed plan for the project is called _____ study.
a) Economical
b) Technical
c) Managerial
d) Feasibility

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Process Engineering (197041708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 and Q. No. 6 are compulsory.
2) Attempt any one question from the remaining in each both sections.
3) Figures to right indicate full marks.
4) Make suitable assumptions, if required and state them clearly.

Section – I

Q.2 Prepare a process plan for manufacturing the component in figure 1 w.r.t data supplied there in along following lines. **14**
- **a)** Route sheet
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- **c)** Gauges and or inspection methods and instruments.

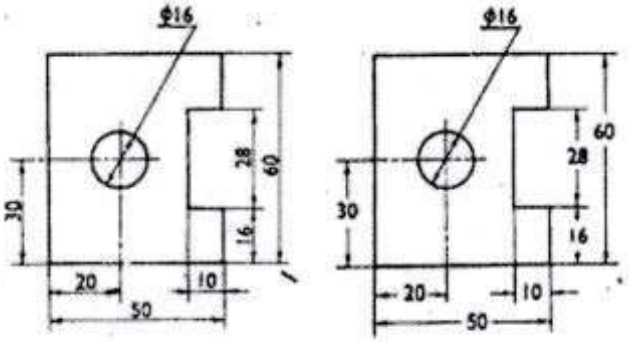

Fig. 1

Q.3 **a)** What is organisation chart. Write down its importance with suitable example. **07**
b) What are functions of process and product engineer? **07**

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b) What is process engineering. Why it is necessary. **07**

Q.5 **a)** Elaborate with suitable example manufacturing system, input and output of process engineering. **07**
b) What are the documents released by product and process engineering department. **07**

Section – II

Q.6 Draw the process picture sheet for any four operations for manufacturing the component in Figure I w.r.t. sequence. Use standard symbols for locating whenever required. **14**

Q.7 **a)** Discuss technical feasibility in detail. **07**
b) Write a note on selection criteria for GPM and SPM. **07**

Q.8 **a)** What are the technical considerations for equipment selection? Explain. **07**
b) Explain in detail selection of tooling. **07**

Q.9 How do you classify the operations? Explain any five operations with neat sketch? **14**

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Process Engineering (197041708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) symbol used in drawing to interpret _____.

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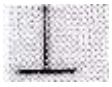
2)  symbol used in drawing to interpret _____.

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14) Routing is essential in the following type of industry _____.
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Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Process Engineering (197041708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 and Q. No. 6 are compulsory.
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Section – I

Q.2 Prepare a process plan for manufacturing the component in figure 1 w.r.t data supplied there in along following lines. **14**
- **a)** Route sheet
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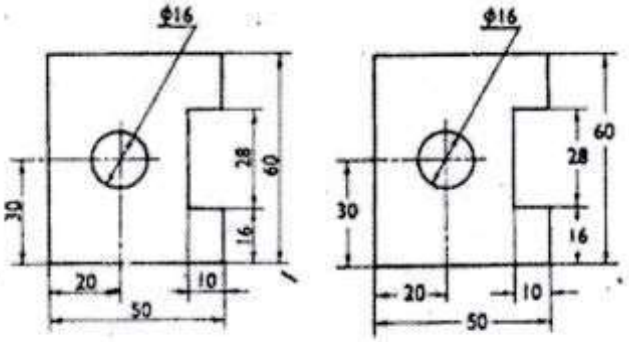

Fig. 1

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Section – II

Q.6 Draw the process picture sheet for any four operations for manufacturing the component in Figure I w.r.t. sequence. Use standard symbols for locating whenever required. **14**

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Q.9 How do you classify the operations? Explain any five operations with neat sketch? **14**

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Process Engineering (197041708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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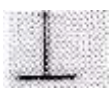
7)  symbol used in drawing to interpret _____.
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Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Process Engineering (197041708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 and Q. No. 6 are compulsory.
2) Attempt any one question from the remaining in each both sections.
3) Figures to right indicate full marks.
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Section – I

Q.2 Prepare a process plan for manufacturing the component in figure 1 w.r.t data supplied there in along following lines. **14**
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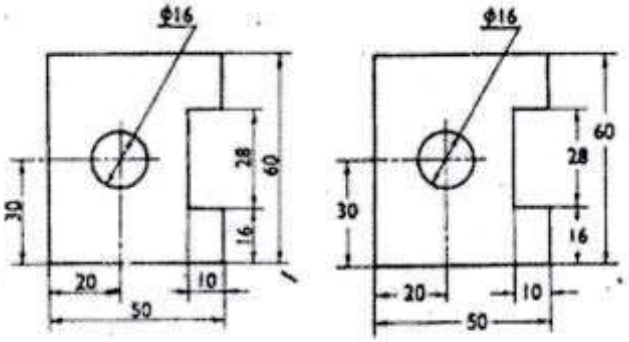

Fig. 1

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b) What are functions of process and product engineer? **07**

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Section – II

Q.6 Draw the process picture sheet for any four operations for manufacturing the component in Figure I w.r.t. sequence. Use standard symbols for locating whenever required. **14**

Q.7 **a)** Discuss technical feasibility in detail. **07**
b) Write a note on selection criteria for GPM and SPM. **07**

Q.8 **a)** What are the technical considerations for equipment selection? Explain. **07**
b) Explain in detail selection of tooling. **07**

Q.9 How do you classify the operations? Explain any five operations with neat sketch? **14**

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Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (197041709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Use of non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) In an _____ element the value of the field variable remains unchanged in the circumferential direction.
a) 1D and 2D b) beam
c) solid d) axisymmetric

2) In thermal analysis problems the primary field variable is _____.
a) temperature b) heat flux
c) stress d) displacement

3) Formula for Galerkin method is _____.
a) $\int f(x)R(x)dx = 0$ b) $\int R(x)dx = 0$
c) $R(x) = 0$ d) $\int R2(x)dx = 0$

4) Multiplex elements are those elements which _____.
a) have higher order interpolation polynomials
b) have sides parallel to coordinate system
c) have sides parallel to coordinate system and use higher order interpolation polynomials
d) have polynomials with only linear and constant terms

5) The potential energy in a spring is given by the equation _____.
a) $\pi = \frac{1}{2}KU^2_FU$ b) $\pi = Mg$
c) $\pi = Mc^2$ d) $\pi = Mk^2$

6) An element in which the order of the geometry interpolation function is higher than the order of the displacement interpolation function is called _____.
a) Iso-parametric element b) Super parametric element
c) Sub parametric element d) Laplacian element

7) The sum of the natural coordinates L_1, L_2, L_3 for triangular element is always _____.

a) equal to 1 b) zero
c) equal to -1 d) varies from -1 to 1

8) The variational method involves the concept of minimization of _____.

a) kinetic energy b) thermal energy
c) strain energy d) potential energy

9) Interpolation function for a 2 noded simplex 1 -D element is _____.

a) $a_1 + a_2 x$ b) $a_1 + a_2 x + a_3 x^2$
c) $a_1 + a_2 x + a_3 y$ d) None of the above

10) Which of the following is a weighted residual method?

a) Galerkin's method b) Rayleigh-Ritz method
c) Potential energy method d) All the above

11) Improvement in the accuracy of finite element mesh by increasing the order of interpolation function used in the elements is _____.

a) h-refinement b) p-refinement
c) mesh refinement d) p-h refinement

12) The analysis concerned with the prediction of natural frequencies is called _____.

a) harmonic analysis b) modal analysis
c) static analysis d) transient analysis

13) Post processing means _____.

a) Meshing b) Solving
c) Result analysis d) Discretization

14) In _____ element the value of field variable remains unchanged in the circumferential direction.

a) 1D and 2D b) Beam
c) Truss d) Axisymmetric

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (197041709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 **a)** Obtain shape functions for 2 node 1-D truss element. **07**

b) Explain General FEM procedure. **07**

Q.3 **a)** Obtain solution of differential equation by using Galerkin's method. **07**
$\frac{\partial^2 u}{\partial x^2} + 3x\frac{\partial u}{\partial x} - 6u = 0, 0 \leqslant \times \leqslant 1$
Take boundary condition $u(0) = 1\ u'(0) = 0.1$

b) Explain Simplex, Complex and Multiplex elements. **07**

Q.4 **a)** Find nodal displacement in stepped bar as shown in figure 1. **07**
Take $A_1 = 40\ mm^2, A_2 = 20\ mm^2$
$L_1 = L_2 = 200\ mm, E = 200 \times 10^3\ MPa$

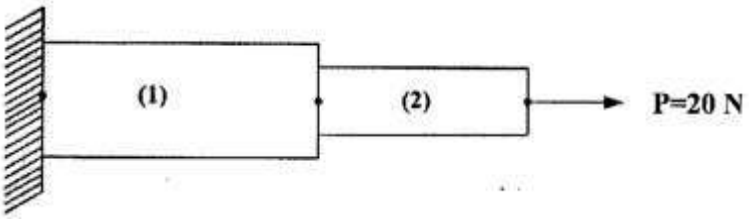

Figure 1:

b) Explain properties of stiffness matrix. **07**

Section – II

Q.5 **a)** A stepped bar is subjected to an axial load of $P = 10KN$ as shown in Figure below. If the material of the stepped bar is steel with a Young's modulus of $E = 2 \times 10^7\ N/cm^2$, find the stresses developed in each of the steps. Apply Boundary conditions by Penalty method. **12**

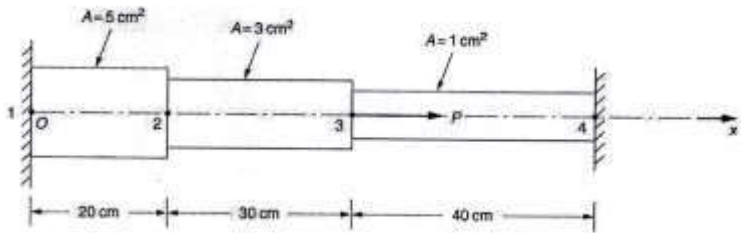

Figure 2:

b) Explain Brick elements? **02**

Q.6 **a)** Calculate the value of field variable at the point $\mathrm{A}(2.0, 2.0)$, which is located inside the triangle as shown in figure 3. The nodal values for field variable are $U_i = 2, U_j = 1$ and $U_k = 3$ **07**

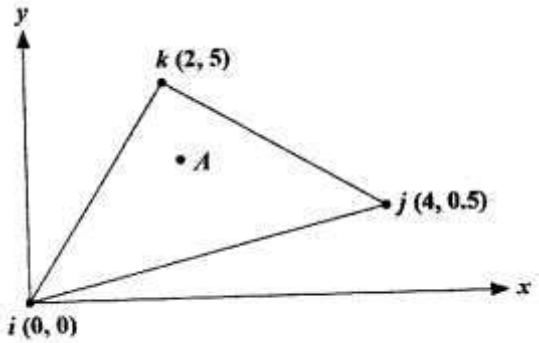

Figure 3:

b) What is convergence study? Why is it necessary to do a convergence study in FEA? **07**

Q.7 **Write a short note on (Any Three)** **14**

a) Transient response analysis
b) Harmonic analysis
c) Explicit analysis,
d) Distortion of elements

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (197041709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Use of non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The variational method involves the concept of minimization of _____.
a) kinetic energy b) thermal energy
c) strain energy d) potential energy

2) Interpolation function for a 2 noded simplex 1 -D element is _____.
a) $a_1 + a_2 x$ b) $a_1 + a_2 x + a_3 x^2$
c) $a_1 + a_2 x + a_3 y$ d) None of the above

3) Which of the following is a weighted residual method?
a) Galerkin's method b) Rayleigh-Ritz method
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4) Improvement in the accuracy of finite element mesh by increasing the order of interpolation function used in the elements is _____.
a) h-refinement b) p-refinement
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5) The analysis concerned with the prediction of natural frequencies is called _____.
a) harmonic analysis b) modal analysis
c) static analysis d) transient analysis

6) Post processing means _____.
a) Meshing b) Solving
c) Result analysis d) Discretization

7) In _____ element the value of field variable remains unchanged in the circumferential direction.
a) 1D and 2D b) Beam
c) Truss d) Axisymmetric

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b) heat flux
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10) Formula for Galerkin method is _____.

a) $\int f(x)R(x)dx = 0$
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c) $R(x) = 0$
d) $\int R2(x)dx = 0$

11) Multiplex elements are those elements which _____.

a) have higher order interpolation polynomials
b) have sides parallel to coordinate system
c) have sides parallel to coordinate system and use higher order interpolation polynomials
d) have polynomials with only linear and constant terms

12) The potential energy in a spring is given by the equation _____.

a) $\pi = \frac{1}{2}KU^2_FU$
b) $\pi = Mg$
c) $\pi = Mc^2$
d) $\pi = Mk^2$

13) An element in which the order of the geometry interpolation function is higher than the order of the displacement interpolation function is called _____.

a) Iso-parametric element
b) Super parametric element
c) Sub parametric element
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14) The sum of the natural coordinates L_1, L_2, L_3 for triangular element is always _____.

a) equal to 1
b) zero
c) equal to -1
d) varies from -1 to 1

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (197041709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 **a)** Obtain shape functions for 2 node 1-D truss element. **07**

b) Explain General FEM procedure. **07**

Q.3 **a)** Obtain solution of differential equation by using Galerkin's method. **07**
$\frac{\partial^2 u}{\partial x^2} + 3x\frac{\partial u}{\partial x} - 6u = 0, 0 \leqslant \times \leqslant 1$
Take boundary condition $u(0) = 1\ u'(0) = 0.1$

b) Explain Simplex, Complex and Multiplex elements. **07**

Q.4 **a)** Find nodal displacement in stepped bar as shown in figure 1. **07**
Take $A_1 = 40\ mm^2, A_2 = 20\ mm^2$
$L_1 = L_2 = 200\ mm, E = 200 \times 10^3\ MPa$

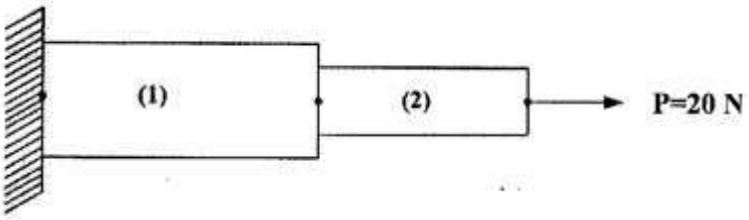

Figure 1:

b) Explain properties of stiffness matrix. **07**

Section – II

Q.5 **a)** A stepped bar is subjected to an axial load of $P = 10KN$ as shown in Figure below. If the material of the stepped bar is steel with a Young's modulus of $E = 2 \times 10^7\ N/cm^2$, find the stresses developed in each of the steps. Apply Boundary conditions by Penalty method. **12**

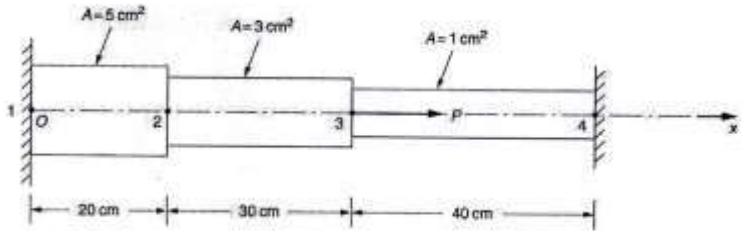

Figure 2:

b) Explain Brick elements? **02**

Q.6 **a)** Calculate the value of field variable at the point $\mathrm{A}(2.0, 2.0)$, which is located inside the triangle as shown in figure 3. The nodal values for field variable are $U_i = 2, U_j = 1$ and $U_k = 3$ **07**

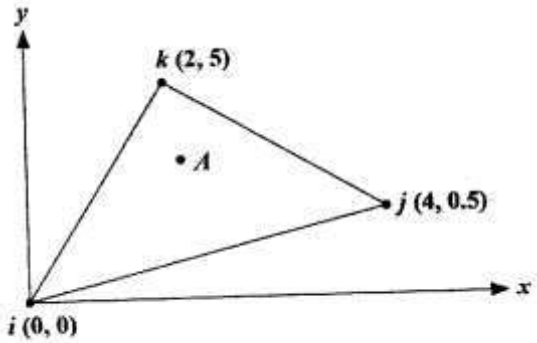

Figure 3:

b) What is convergence study? Why is it necessary to do a convergence study in FEA? **07**

Q.7 **Write a short note on (Any Three)** **14**

a) Transient response analysis
b) Harmonic analysis
c) Explicit analysis,
d) Distortion of elements

Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (197041709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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5) Use of non-programmable scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Improvement in the accuracy of finite element mesh by increasing the order of interpolation function used in the elements is _____.
a) h-refinement b) p-refinement
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4) In _____ element the value of field variable remains unchanged in the circumferential direction.
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7) Formula for Galerkin method is _____.
a) $\int f(x)R(x)dx = 0$ b) $\int R(x)dx = 0$
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b) $a_1 + a_2x + a_3x^2$
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d) None of the above

14) Which of the following is a weighted residual method?
a) Galerkin's method
b) Rayleigh-Ritz method
c) Potential energy method
d) All the above

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (197041709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
2) Figures to right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 **a)** Obtain shape functions for 2 node 1-D truss element. **07**

b) Explain General FEM procedure. **07**

Q.3 **a)** Obtain solution of differential equation by using Galerkin's method. **07**
$\frac{\partial^2 u}{\partial x^2} + 3x\frac{\partial u}{\partial x} - 6u = 0, 0 \leqslant \times \leqslant 1$
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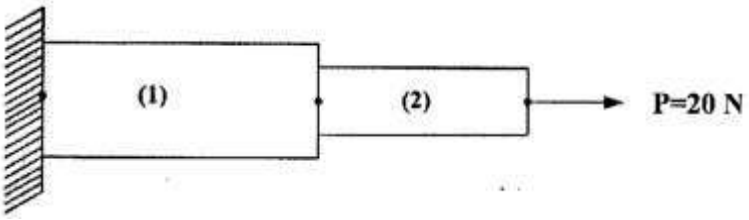

Figure 1:

b) Explain properties of stiffness matrix. **07**

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Q.5 **a)** A stepped bar is subjected to an axial load of $P = 10KN$ as shown in Figure below. If the material of the stepped bar is steel with a Young's modulus of $E = 2 \times 10^7\ N/cm^2$, find the stresses developed in each of the steps. Apply Boundary conditions by Penalty method. **12**

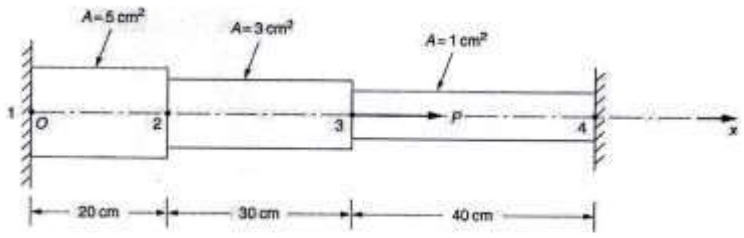

Figure 2:

b) Explain Brick elements? **02**

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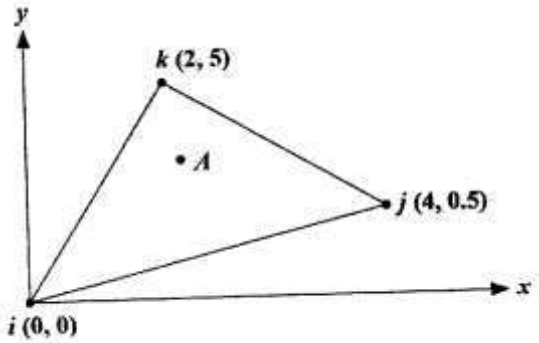

Figure 3:

b) What is convergence study? Why is it necessary to do a convergence study in FEA? **07**

Q.7 **Write a short note on (Any Three)** **14**

a) Transient response analysis
b) Harmonic analysis
c) Explicit analysis,
d) Distortion of elements

SLR-GF-179

Seat No.	

Set S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (197041709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) An element in which the order of the geometry interpolation function is higher than the order of the displacement interpolation function is called _____.
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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Finite Element Method (197041709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II.
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Section – I

Q.2 **a)** Obtain shape functions for 2 node 1-D truss element. **07**

b) Explain General FEM procedure. **07**

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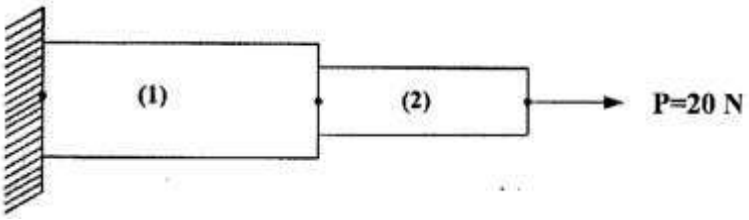

Figure 1:

b) Explain properties of stiffness matrix. **07**

Section – II

Q.5 **a)** A stepped bar is subjected to an axial load of $P = 10KN$ as shown in Figure below. If the material of the stepped bar is steel with a Young's modulus of $E = 2 \times 10^7\ N/cm^2$, find the stresses developed in each of the steps. Apply Boundary conditions by Penalty method. **12**

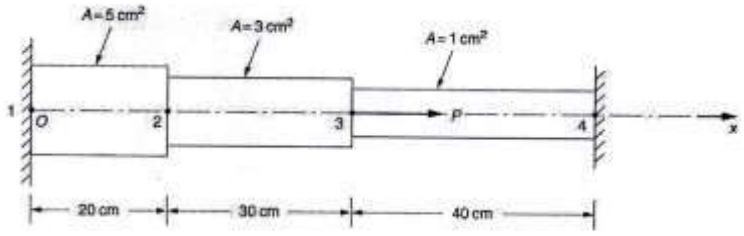

Figure 2:

b) Explain Brick elements? **02**

Q.6 **a)** Calculate the value of field variable at the point $\mathrm{A}(2.0, 2.0)$, which is located inside the triangle as shown in figure 3. The nodal values for field variable are $U_i = 2, U_j = 1$ and $U_k = 3$ **07**

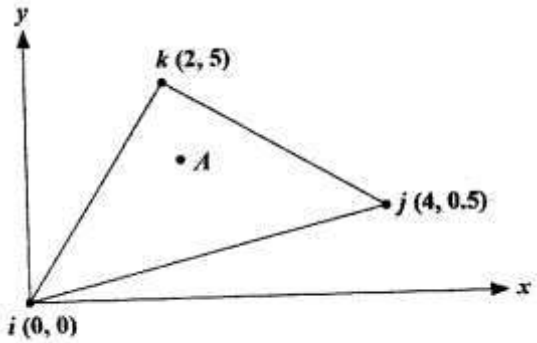

Figure 3:

b) What is convergence study? Why is it necessary to do a convergence study in FEA? **07**

Q.7 **Write a short note on (Any Three)** **14**

a) Transient response analysis
b) Harmonic analysis
c) Explicit analysis,
d) Distortion of elements

SLR-GF-180

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tribology (197041710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) Which of the following is the most important property of the lubricant?
a) Density b) Thermal conductivity
c) Viscosity d) Melting point

2) Which component is used to provide a tight-fitting joint between Cylinder and cylinder head?
a) Revet b) Casting
c) Welding d) Gasket

3) _____ is the friction experienced between two dry and unlubricated surfaces in contact.
a) Pivot friction b) Solid friction
c) Boundary friction d) None of the mentioned

4) The lubricant which gives _____ force of friction is said to have greater oiliness.
a) greater b) lesser
c) similar d) none of the mentioned

5) When the lubricants are smeared on two different surfaces, it is found that the force of friction with one lubricant is different than that of the other.
a) True b) False
c) Cannot predict d) None of the above

6) Sommer field number is _____.
a) similar to bearing characteristic number
b) similar to Reynold's number
c) dimensionless parameter that contains all the design parameter
d) used to find out dynamic load carrying capacity of the hydrodynamic bearing

7) In hydrodynamic bearings _____.
a) The oil film pressure is generated only by the rotation of the journal
b) The oil film is maintained by supplying oil under pressure
c) Do not require external supply of lubricant
d) Grease is used for lubrication

8) In hydrostatic bearing _____.
a) the axis of journal is eccentric with respect to axis of bearing
b) the axis of journal is concentric with respect to axis of bearing
c) the axis can be either eccentric or concentric depending upon speed
d) the axis can be either eccentric or concentric depending upon viscosity

9) _____ is the friction, experienced by a body, due to the motion of rotation as in case of foot step bearings.
a) Pivot friction
b) Solid friction
c) Dry friction
d) None of the mentioned

10) For elasto-hydrodynamic lubrication _____.
a) There should be relative motion between the surfaces of the journal and the bearing and wedge-shaped clearance space
b) There should be external source like pump to supply lubricant under pressure
c) There should be elastic deformation of the parts in contact
d) There should be metal to metal contact

11) Asperities are basically _____.
a) Sharp tips on surface
b) Edge of a surface
c) Corner of a surface
d) Hole in a surface

12) In oil lubricated journal bearing coefficient of friction between the journal and bearing _____.
a) remains constant
b) is maximum at zero speed and increases monotically with increase in speed
c) is maximum at zero speed and decrease monotically with increase in speed
d) becomes minimum at an optimum speed and then increase with further increase in speed

13) If we exclude the cost factor, which bearing is preferred?
a) Hydrostatic
b) Hydrodynamic
c) Both are equally preferred
d) Cannot be determined

14) The coefficient of friction in journal bearing is mainly governed by the:
a) Petroff's equation
b) Reynold's equation
c) Sommerfield's equation
d) Weibull’s equation

SLR-GF-180

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tribology (197041710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicates full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2	**a)**	What is lubrication? Explain the basic modes of lubrication.	**05**
	b)	Explain the significance of tribology in industry.	**05**
	c)	Discuss the various causes of friction.	**04**
Q.3	**a)**	Enlist the types of wear and describe the various factors affecting wear.	**05**
	b)	Explain the Friction measurement.	**05**
	c)	Write a short note on Hydrodynamic Thrust Bearing.	**04**
Q.4	**a)**	What is Somerfield number? Explain the significance of Somerfield number.	**05**
	b)	Explain the mechanism of pressure development in an oil film.	**05**
	c)	Write a short note on Oil Seal and Gasket.	**04**

Section – II

Q.5	**a)**	What is hydrostatic lubrication? Explain the hydrostatic step bearing in detail?	**05**
	b)	Explain the squeeze action between rectangular plates in hydrostatic squeeze film.	**05**
	c)	Write a short note on different regimes in EHL contacts.	**04**
Q.6	**a)**	Explain the elasto-hydrodynamic lubrication between two contacting bodies.	**05**
	b)	Describe the tribological behavior of asperities contact.	**05**
	c)	Write a short note on selection of bearings.	**04**
Q.7	**a)**	What is Gas lubrication? Explain the externally pressurized gas bearings.	**05**
	b)	Write a short note on the selection of coating for wear and corrosion resistance.	**05**
	c)	Explain the scope of Surface engineering in Tribology.	**04**

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tribology (197041710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) In hydrostatic bearing _____.
a) the axis of journal is eccentric with respect to axis of bearing
b) the axis of journal is concentric with respect to axis of bearing
c) the axis can be either eccentric or concentric depending upon speed
d) the axis can be either eccentric or concentric depending upon viscosity

2) _____ is the friction, experienced by a body, due to the motion of rotation as in case of foot step bearings.
a) Pivot friction b) Solid friction
c) Dry friction d) None of the mentioned

3) For elasto-hydrodynamic lubrication _____.
a) There should be relative motion between the surfaces of the journal and the bearing and wedge-shaped clearance space
b) There should be external source like pump to supply lubricant under pressure
c) There should be elastic deformation of the parts in contact
d) There should be metal to metal contact

4) Asperities are basically _____.
a) Sharp tips on surface b) Edge of a surface
c) Corner of a surface d) Hole in a surface

5) In oil lubricated journal bearing coefficient of friction between the journal and bearing _____.
a) remains constant
b) is maximum at zero speed and increases monotically with increase in speed
c) is maximum at zero speed and decrease monotically with increase in speed
d) becomes minimum at an optimum speed and then increase with further increase in speed

6) If we exclude the cost factor, which bearing is preferred?
a) Hydrostatic b) Hydrodynamic
c) Both are equally preferred d) Cannot be determined

7) The coefficient of friction in journal bearing is mainly governed by the:
a) Petroff's equation b) Reynold's equation
c) Sommerfield's equation d) Weibull's equation

8) Which of the following is the most important property of the lubricant?
a) Density b) Thermal conductivity
c) Viscosity d) Melting point

9) Which component is used to provide a tight-fitting joint between Cylinder and cylinder head?
a) Revet b) Casting
c) Welding d) Gasket

10) _____ is the friction experienced between two dry and unlubricated surfaces in contact.
a) Pivot friction b) Solid friction
c) Boundary friction d) None of the mentioned

11) The lubricant which gives _____ force of friction is said to have greater oiliness.
a) greater b) lesser
c) similar d) none of the mentioned

12) When the lubricants are smeared on two different surfaces, it is found that the force of friction with one lubricant is different than that of the other.
a) True b) False
c) Cannot predict d) None of the above

13) Sommer field number is _____.
a) similar to bearing characteristic number
b) similar to Reynold's number
c) dimensionless parameter that contains all the design parameter
d) used to find out dynamic load carrying capacity of the hydrodynamic bearing

14) In hydrodynamic bearings _____.
a) The oil film pressure is generated only by the rotation of the journal
b) The oil film is maintained by supplying oil under pressure
c) Do not require external supply of lubricant
d) Grease is used for lubrication

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tribology (197041710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicates full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2	**a)**	What is lubrication? Explain the basic modes of lubrication.	**05**
	b)	Explain the significance of tribology in industry.	**05**
	c)	Discuss the various causes of friction.	**04**
Q.3	**a)**	Enlist the types of wear and describe the various factors affecting wear.	**05**
	b)	Explain the Friction measurement.	**05**
	c)	Write a short note on Hydrodynamic Thrust Bearing.	**04**
Q.4	**a)**	What is Somerfield number? Explain the significance of Somerfield number.	**05**
	b)	Explain the mechanism of pressure development in an oil film.	**05**
	c)	Write a short note on Oil Seal and Gasket.	**04**

Section – II

Q.5	**a)**	What is hydrostatic lubrication? Explain the hydrostatic step bearing in detail?	**05**
	b)	Explain the squeeze action between rectangular plates in hydrostatic squeeze film.	**05**
	c)	Write a short note on different regimes in EHL contacts.	**04**
Q.6	**a)**	Explain the elasto-hydrodynamic lubrication between two contacting bodies.	**05**
	b)	Describe the tribological behavior of asperities contact.	**05**
	c)	Write a short note on selection of bearings.	**04**
Q.7	**a)**	What is Gas lubrication? Explain the externally pressurized gas bearings.	**05**
	b)	Write a short note on the selection of coating for wear and corrosion resistance.	**05**
	c)	Explain the scope of Surface engineering in Tribology.	**04**

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tribology (197041710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) Asperities are basically _____.
a) Sharp tips on surface b) Edge of a surface
c) Corner of a surface d) Hole in a surface

2) In oil lubricated journal bearing coefficient of friction between the journal and bearing _____.
a) remains constant
b) is maximum at zero speed and increases monotically with increase in speed
c) is maximum at zero speed and decrease monotically with increase in speed
d) becomes minimum at an optimum speed and then increase with further increase in speed

3) If we exclude the cost factor, which bearing is preferred?
a) Hydrostatic b) Hydrodynamic
c) Both are equally preferred d) Cannot be determined

4) The coefficient of friction in journal bearing is mainly governed by the:
a) Petroff's equation b) Reynold's equation
c) Sommerfield's equation d) Weibull's equation

5) Which of the following is the most important property of the lubricant?
a) Density b) Thermal conductivity
c) Viscosity d) Melting point

6) Which component is used to provide a tight-fitting joint between Cylinder and cylinder head?
a) Revet b) Casting
c) Welding d) Gasket

7) _____ is the friction experienced between two dry and unlubricated surfaces in contact.
a) Pivot friction b) Solid friction
c) Boundary friction d) None of the mentioned

8) The lubricant which gives _____ force of friction is said to have greater oiliness.
a) greater b) lesser
c) similar d) none of the mentioned

9) When the lubricants are smeared on two different surfaces, it is found that the force of friction with one lubricant is different than that of the other.
a) True b) False
c) Cannot predict d) None of the above

10) Sommer field number is _____.
a) similar to bearing characteristic number
b) similar to Reynold's number
c) dimensionless parameter that contains all the design parameter
d) used to find out dynamic load carrying capacity of the hydrodynamic bearing

11) In hydrodynamic bearings _____.
a) The oil film pressure is generated only by the rotation of the journal
b) The oil film is maintained by supplying oil under pressure
c) Do not require external supply of lubricant
d) Grease is used for lubrication

12) In hydrostatic bearing _____.
a) the axis of journal is eccentric with respect to axis of bearing
b) the axis of journal is concentric with respect to axis of bearing
c) the axis can be either eccentric or concentric depending upon speed
d) the axis can be either eccentric or concentric depending upon viscosity

13) _____ is the friction, experienced by a body, due to the motion of rotation as in case of foot step bearings.
a) Pivot friction b) Solid friction
c) Dry friction d) None of the mentioned

14) For elasto-hydrodynamic lubrication _____.
a) There should be relative motion between the surfaces of the journal and the bearing and wedge-shaped clearance space
b) There should be external source like pump to supply lubricant under pressure
c) There should be elastic deformation of the parts in contact
d) There should be metal to metal contact

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tribology (197041710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicates full marks.
3) Make suitable assumptions wherever necessary and state them clearly**.**
4) Draw neat diagram wherever necessary.

Section – I

Q.2	**a)**	What is lubrication? Explain the basic modes of lubrication.	**05**
	b)	Explain the significance of tribology in industry.	**05**
	c)	Discuss the various causes of friction.	**04**
Q.3	**a)**	Enlist the types of wear and describe the various factors affecting wear.	**05**
	b)	Explain the Friction measurement.	**05**
	c)	Write a short note on Hydrodynamic Thrust Bearing.	**04**
Q.4	**a)**	What is Somerfield number? Explain the significance of Somerfield number.	**05**
	b)	Explain the mechanism of pressure development in an oil film.	**05**
	c)	Write a short note on Oil Seal and Gasket.	**04**

Section – II

Q.5	**a)**	What is hydrostatic lubrication? Explain the hydrostatic step bearing in detail?	**05**
	b)	Explain the squeeze action between rectangular plates in hydrostatic squeeze film.	**05**
	c)	Write a short note on different regimes in EHL contacts.	**04**
Q.6	**a)**	Explain the elasto-hydrodynamic lubrication between two contacting bodies.	**05**
	b)	Describe the tribological behavior of asperities contact.	**05**
	c)	Write a short note on selection of bearings.	**04**
Q.7	**a)**	What is Gas lubrication? Explain the externally pressurized gas bearings.	**05**
	b)	Write a short note on the selection of coating for wear and corrosion resistance.	**05**
	c)	Explain the scope of Surface engineering in Tribology.	**04**

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Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tribology (197041710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Objective Questions. **14**

1) Sommer field number is _____.
a) similar to bearing characteristic number
b) similar to Reynold's number
c) dimensionless parameter that contains all the design parameter
d) used to find out dynamic load carrying capacity of the hydrodynamic bearing

2) In hydrodynamic bearings _____.
a) The oil film pressure is generated only by the rotation of the journal
b) The oil film is maintained by supplying oil under pressure
c) Do not require external supply of lubricant
d) Grease is used for lubrication

3) In hydrostatic bearing _____.
a) the axis of journal is eccentric with respect to axis of bearing
b) the axis of journal is concentric with respect to axis of bearing
c) the axis can be either eccentric or concentric depending upon speed
d) the axis can be either eccentric or concentric depending upon viscosity

4) _____ is the friction, experienced by a body, due to the motion of rotation as in case of foot step bearings.
a) Pivot friction b) Solid friction
c) Dry friction d) None of the mentioned

5) For elasto-hydrodynamic lubrication _____.
a) There should be relative motion between the surfaces of the journal and the bearing and wedge-shaped clearance space
b) There should be external source like pump to supply lubricant under pressure
c) There should be elastic deformation of the parts in contact
d) There should be metal to metal contact

6) Asperities are basically _____.
a) Sharp tips on surface
b) Edge of a surface
c) Corner of a surface
d) Hole in a surface

7) In oil lubricated journal bearing coefficient of friction between the journal and bearing _____.
a) remains constant
b) is maximum at zero speed and increases monotically with increase in speed
c) is maximum at zero speed and decrease monotically with increase in speed
d) becomes minimum at an optimum speed and then increase with further increase in speed

8) If we exclude the cost factor, which bearing is preferred?
a) Hydrostatic
b) Hydrodynamic
c) Both are equally preferred
d) Cannot be determined

9) The coefficient of friction in journal bearing is mainly governed by the:
a) Petroff's equation
b) Reynold's equation
c) Sommerfield's equation
d) Weibull’s equation

10) Which of the following is the most important property of the lubricant?
a) Density
b) Thermal conductivity
c) Viscosity
d) Melting point

11) Which component is used to provide a tight-fitting joint between Cylinder and cylinder head?
a) Revet
b) Casting
c) Welding
d) Gasket

12) _____ is the friction experienced between two dry and unlubricated surfaces in contact.
a) Pivot friction
b) Solid friction
c) Boundary friction
d) None of the mentioned

13) The lubricant which gives _____ force of friction is said to have greater oiliness.
a) greater
b) lesser
c) similar
d) none of the mentioned

14) When the lubricants are smeared on two different surfaces, it is found that the force of friction with one lubricant is different than that of the other.
a) True
b) False
c) Cannot predict
d) None of the above

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Tribology (197041710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicates full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2	**a)**	What is lubrication? Explain the basic modes of lubrication.	**05**
	b)	Explain the significance of tribology in industry.	**05**
	c)	Discuss the various causes of friction.	**04**
Q.3	**a)**	Enlist the types of wear and describe the various factors affecting wear.	**05**
	b)	Explain the Friction measurement.	**05**
	c)	Write a short note on Hydrodynamic Thrust Bearing.	**04**
Q.4	**a)**	What is Somerfield number? Explain the significance of Somerfield number.	**05**
	b)	Explain the mechanism of pressure development in an oil film.	**05**
	c)	Write a short note on Oil Seal and Gasket.	**04**

Section – II

Q.5	**a)**	What is hydrostatic lubrication? Explain the hydrostatic step bearing in detail?	**05**
	b)	Explain the squeeze action between rectangular plates in hydrostatic squeeze film.	**05**
	c)	Write a short note on different regimes in EHL contacts.	**04**
Q.6	**a)**	Explain the elasto-hydrodynamic lubrication between two contacting bodies.	**05**
	b)	Describe the tribological behavior of asperities contact.	**05**
	c)	Write a short note on selection of bearings.	**04**
Q.7	**a)**	What is Gas lubrication? Explain the externally pressurized gas bearings.	**05**
	b)	Write a short note on the selection of coating for wear and corrosion resistance.	**05**
	c)	Explain the scope of Surface engineering in Tribology.	**04**

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Systems Management (197041711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Weight of the engine is categorized in ____.
a) sprung mass b) unsprung mass
c) non-sprung mass d) dummy mass

2) Tractive force can be increasing by _____.
a) reducing the load b) increasing the load
c) reducing friction d) none of these

3) _____Type Air Conditioning units are used in LHB A.C. Coaches now a days.
a) RMPU b) RMCU
c) conventional d) none of these

4) _____ is not a part of VCC used in A/C.
a) Evaporator b) Condenser
c) Compressor d) Deflector

5) In railway, green light indicates _____.
a) Stop b) Proceed
c) Proceed cautiously d) None of these

6) Electric locomotives in India are manufactured at _____.
a) Jamalpur b) Bangalore
c) Chittranjan d) Gorakhpur

7) _____ Locomotive has the highest operational availability.
a) Electric b) Diesel
c) Steam d) None of these

8) Maintenance consist of the following action(s) _____.
a) Replace of component b) Repair of component
c) Service of component d) All of the above

9) Belt of an electric motor is broken, it needs _____.
a) Corrective maintenance b) Scheduled maintenance
c) Preventive maintenance d) Timely maintenance

10) POH period of maintenance for HHP-Loco is _____.
a) 6 years b) 4 years
c) 18 years d) 10 years

11) By 2019 Indian Railways expected _____ % bio-toilet coaches.
a) 50 b) 70
c) 40 d) 100

12) _____ is not a stage for fire.
a) Propagation b) period of decline
c) flash over d) fully developed

13) _____ is not a Digital Technology used in Traffic Control.
a) RFID b) LiDAR
c) Li-Fi d) Wi-Fi

14) RFID means _____.
a) Radio Frequency Identification Tags
b) Radio frequency Indicative Tub
c) Resonance Frequency Identification Tags.
d) None of these

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Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Systems Management (197041711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:

a)	What are the components of air suspension in the Indian Railway? Elaborate in details.	**04**
b)	Write a short note R.M.P.U in LHB coaches.	**05**
c)	What is Head on Generation (HOG) technology? Explain in details of HOG.	**05**

Q.3 Solve:

a)	Classify in details the types of braking system in Indian Railway.	**04**
b)	Explain in details the components of C.B.C coupler.	**05**
c)	Define tractive force Write its effects on Diesel locomotives.	**05**

Q.4 Solve:

a)	Describe D.C electric supply unit for EMU with neat Sketches.	**04**
b)	Write a short note R.M.P.U in LHB coaches.	**05**
c)	Classify in details the types of Power supply units.	**05**

Section – II

Q.5 Solve:

a)	Describe the duties & Responsibilities of Senior section Engineer (Diesel locomotives)	**04**
b)	Explain with neat sketch the Bio-Vacuum toilet system used in Indian railway.	**05**
c)	Write Short note on RMS in Indian railway.	**05**

Q.6 Solve:

a)	What are different components of Bio-Vacuum toilet system explain in detail?	**05**
b)	Write short note on Traffic management system in Indian railway.	**05**
c)	Describe all parts of D.C traction Motor with neat Sketches.	**04**

Q.7 Solve:

a)	Write in details the Scrap management system in Indian Railway.	**04**
b)	What is mean by rolling stock management. which types of rolling stock management used in Indian railway?	**05**
c)	Which digital technologies used in traffic control? Explain RFID in details.	**05**

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Systems Management (197041711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Maintenance consist of the following action(s) _____.
a) Replace of component b) Repair of component
c) Service of component d) All of the above

2) Belt of an electric motor is broken, it needs _____.
a) Corrective maintenance b) Scheduled maintenance
c) Preventive maintenance d) Timely maintenance

3) POH period of maintenance for HHP-Loco is _____.
a) 6 years b) 4 years
c) 18 years d) 10 years

4) By 2019 Indian Railways expected _____ % bio-toilet coaches.
a) 50 b) 70
c) 40 d) 100

5) _____ is not a stage for fire.
a) Propagation b) period of decline
c) flash over d) fully developed

6) _____ is not a Digital Technology used in Traffic Control.
a) RFID b) LiDAR
c) Li-Fi d) Wi-Fi

7) RFID means _____.
a) Radio Frequency Identification Tags
b) Radio frequency Indicative Tub
c) Resonance Frequency Identification Tags.
d) None of these

8) Weight of the engine is categorized in ____.
a) sprung mass b) unsprung mass
c) non-sprung mass d) dummy mass

9) Tractive force can be increasing by _____.
a) reducing the load b) increasing the load
c) reducing friction d) none of these

10) _____Type Air Conditioning units are used in LHB A.C. Coaches now a days.
a) RMPU b) RMCU
c) conventional d) none of these

11) _____ is not a part of VCC used in A/C.
a) Evaporator b) Condenser
c) Compressor d) Deflector

12) In railway, green light indicates _____.
a) Stop b) Proceed
c) Proceed cautiously d) None of these

13) Electric locomotives in India are manufactured at _____.
a) Jamalpur b) Bangalore
c) Chittranjan d) Gorakhpur

14) _____ Locomotive has the highest operational availability.
a) Electric b) Diesel
c) Steam d) None of these

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Systems Management (197041711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:

a)	What are the components of air suspension in the Indian Railway? Elaborate in details.	**04**
b)	Write a short note R.M.P.U in LHB coaches.	**05**
c)	What is Head on Generation (HOG) technology? Explain in details of HOG.	**05**

Q.3 Solve:

a)	Classify in details the types of braking system in Indian Railway.	**04**
b)	Explain in details the components of C.B.C coupler.	**05**
c)	Define tractive force Write its effects on Diesel locomotives.	**05**

Q.4 Solve:

a)	Describe D.C electric supply unit for EMU with neat Sketches.	**04**
b)	Write a short note R.M.P.U in LHB coaches.	**05**
c)	Classify in details the types of Power supply units.	**05**

Section – II

Q.5 Solve:

a)	Describe the duties & Responsibilities of Senior section Engineer (Diesel locomotives)	**04**
b)	Explain with neat sketch the Bio-Vacuum toilet system used in Indian railway.	**05**
c)	Write Short note on RMS in Indian railway.	**05**

Q.6 Solve:

a)	What are different components of Bio-Vacuum toilet system explain in detail?	**05**
b)	Write short note on Traffic management system in Indian railway.	**05**
c)	Describe all parts of D.C traction Motor with neat Sketches.	**04**

Q.7 Solve:

a)	Write in details the Scrap management system in Indian Railway.	**04**
b)	What is mean by rolling stock management. which types of rolling stock management used in Indian railway?	**05**
c)	Which digital technologies used in traffic control? Explain RFID in details.	**05**

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Systems Management (197041711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) By 2019 Indian Railways expected _____ % bio-toilet coaches.
a) 50 b) 70
c) 40 d) 100

2) _____ is not a stage for fire.
a) Propagation b) period of decline
c) flash over d) fully developed

3) _____ is not a Digital Technology used in Traffic Control.
a) RFID b) LiDAR
c) Li-Fi d) Wi-Fi

4) RFID means _____.
a) Radio Frequency Identification Tags
b) Radio frequency Indicative Tub
c) Resonance Frequency Identification Tags.
d) None of these

5) Weight of the engine is categorized in ____.
a) sprung mass b) unsprung mass
c) non-sprung mass d) dummy mass

6) Tractive force can be increasing by _____.
a) reducing the load b) increasing the load
c) reducing friction d) none of these

7) _____Type Air Conditioning units are used in LHB A.C. Coaches now a days.
a) RMPU b) RMCU
c) conventional d) none of these

8) _____ is not a part of VCC used in A/C.
a) Evaporator b) Condenser
c) Compressor d) Deflector

9) In railway, green light indicates _____.
a) Stop b) Proceed
c) Proceed cautiously d) None of these

10) Electric locomotives in India are manufactured at _____.
a) Jamalpur b) Bangalore
c) Chittranjan d) Gorakhpur

11) _____ Locomotive has the highest operational availability.
a) Electric b) Diesel
c) Steam d) None of these

12) Maintenance consist of the following action(s) _____.
a) Replace of component b) Repair of component
c) Service of component d) All of the above

13) Belt of an electric motor is broken, it needs _____.
a) Corrective maintenance b) Scheduled maintenance
c) Preventive maintenance d) Timely maintenance

14) POH period of maintenance for HHP-Loco is _____.
a) 6 years b) 4 years
c) 18 years d) 10 years

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Systems Management (197041711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:

a)	What are the components of air suspension in the Indian Railway? Elaborate in details.	**04**
b)	Write a short note R.M.P.U in LHB coaches.	**05**
c)	What is Head on Generation (HOG) technology? Explain in details of HOG.	**05**

Q.3 Solve:

a)	Classify in details the types of braking system in Indian Railway.	**04**
b)	Explain in details the components of C.B.C coupler.	**05**
c)	Define tractive force Write its effects on Diesel locomotives.	**05**

Q.4 Solve:

a)	Describe D.C electric supply unit for EMU with neat Sketches.	**04**
b)	Write a short note R.M.P.U in LHB coaches.	**05**
c)	Classify in details the types of Power supply units.	**05**

Section – II

Q.5 Solve:

a)	Describe the duties & Responsibilities of Senior section Engineer (Diesel locomotives)	**04**
b)	Explain with neat sketch the Bio-Vacuum toilet system used in Indian railway.	**05**
c)	Write Short note on RMS in Indian railway.	**05**

Q.6 Solve:

a)	What are different components of Bio-Vacuum toilet system explain in detail?	**05**
b)	Write short note on Traffic management system in Indian railway.	**05**
c)	Describe all parts of D.C traction Motor with neat Sketches.	**04**

Q.7 Solve:

a)	Write in details the Scrap management system in Indian Railway.	**04**
b)	What is mean by rolling stock management. which types of rolling stock management used in Indian railway?	**05**
c)	Which digital technologies used in traffic control? Explain RFID in details.	**05**

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Systems Management (197041711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Electric locomotives in India are manufactured at _____.
a) Jamalpur b) Bangalore
c) Chittranjan d) Gorakhpur

2) _____ Locomotive has the highest operational availability.
a) Electric b) Diesel
c) Steam d) None of these

3) Maintenance consist of the following action(s) _____.
a) Replace of component b) Repair of component
c) Service of component d) All of the above

4) Belt of an electric motor is broken, it needs _____.
a) Corrective maintenance b) Scheduled maintenance
c) Preventive maintenance d) Timely maintenance

5) POH period of maintenance for HHP-Loco is _____.
a) 6 years b) 4 years
c) 18 years d) 10 years

6) By 2019 Indian Railways expected _____ % bio-toilet coaches.
a) 50 b) 70
c) 40 d) 100

7) _____ is not a stage for fire.
a) Propagation b) period of decline
c) flash over d) fully developed

8) _____ is not a Digital Technology used in Traffic Control.
a) RFID b) LiDAR
c) Li-Fi d) Wi-Fi

9) RFID means _____.
a) Radio Frequency Identification Tags
b) Radio frequency Indicative Tub
c) Resonance Frequency Identification Tags.
d) None of these

10) Weight of the engine is categorized in ____.
a) sprung mass b) unsprung mass
c) non-sprung mass d) dummy mass

11) Tractive force can be increasing by _____.
a) reducing the load b) increasing the load
c) reducing friction d) none of these

12) _____Type Air Conditioning units are used in LHB A.C. Coaches now a days.
a) RMPU b) RMCU
c) conventional d) none of these

13) _____ is not a part of VCC used in A/C.
a) Evaporator b) Condenser
c) Compressor d) Deflector

14) In railway, green light indicates _____.
a) Stop b) Proceed
c) Proceed cautiously d) None of these

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Railway Systems Management (197041711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to right indicate full marks.
3) Assume suitable data if required.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Solve:
- **a)** What are the components of air suspension in the Indian Railway? Elaborate in details. **04**
- **b)** Write a short note R.M.P.U in LHB coaches. **05**
- **c)** What is Head on Generation (HOG) technology? Explain in details of HOG. **05**

Q.3 Solve:
- **a)** Classify in details the types of braking system in Indian Railway. **04**
- **b)** Explain in details the components of C.B.C coupler. **05**
- **c)** Define tractive force Write its effects on Diesel locomotives. **05**

Q.4 Solve:
- **a)** Describe D.C electric supply unit for EMU with neat Sketches. **04**
- **b)** Write a short note R.M.P.U in LHB coaches. **05**
- **c)** Classify in details the types of Power supply units. **05**

Section – II

Q.5 Solve:
- **a)** Describe the duties & Responsibilities of Senior section Engineer (Diesel locomotives) **04**
- **b)** Explain with neat sketch the Bio-Vacuum toilet system used in Indian railway. **05**
- **c)** Write Short note on RMS in Indian railway. **05**

Q.6 Solve:
- **a)** What are different components of Bio-Vacuum toilet system explain in detail? **05**
- **b)** Write short note on Traffic management system in Indian railway. **05**
- **c)** Describe all parts of D.C traction Motor with neat Sketches. **04**

Q.7 Solve:
- **a)** Write in details the Scrap management system in Indian Railway. **04**
- **b)** What is mean by rolling stock management. which types of rolling stock management used in Indian railway? **05**
- **c)** Which digital technologies used in traffic control? Explain RFID in details. **05**

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Costing and Cost Control (197041712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Cost estimation include the following. Expenditures.
a) Raw material b) Tooling cost
c) Selling expenses d) All of the above

2) Which of the following calculate the actual cost of product?
a) Cost estimation b) Costing
c) A and B d) None of above

3) Which of the following known as overhead cost _____.
a) direct labour cost b) material cost
c) direct expenses d) indirect expenses

4) _____ costing is a type of job costing.
a) Multiple b) Operating
c) Unit d) Batch

5) Direct cost incurred can be identified with _____.
a) Each department b) Each unit of product
c) Each workers d) None of above

6) Contract costing is variant of _____ costing.
a) Job b) Process
c) Unit d) Batch

7) Cost Volume Profit Analysis Required cost to be categorized as _____.
a) fixed or variable b) direct or indirect
c) Product or period d) None of above

8) At break even point there is _____.
a) No profit. No loss. b) Profit is greater than loss
c) loss is greater than profit d) None of above

9) Value analysis is _____ process.
a) remedial process b) preventive
c) continuous d) none of above

10) Value is the cost directly proportional to the _____.
a) Price b) Function
c) product material d) all the above

11) Value analysis is normally applied to _____.
a) new product b) Old product
c) Future Product d) None of above

12) Which of the following is not direct labour cost?
a) man working on machines b) Man doing assembly
c) man doing material handling d) Time keeper

13) Which of the following cost related to production quantity _____.
a) Fixed cost b) Variable cost
c) Raw material cost d) None of above

14) Cost and function It is related to _____.
a) Price b) Value
c) Expenditure d) None of above

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Costing and Cost Control (197041712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two full questions from each Section.
2) Figures to right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2	**a)**	What is cost value and price? Explain in brief classification of cost.	**07**
	b)	What is cost estimation list Different purpose of cost estimation.	**07**
Q.3	**a)**	How to estimate the cost of product explains with one example.	**07**
	b)	Explain in brief stock recording and consumption of material. By weighted average methods and FIFO.	**07**
Q.4	**a)**	With One example explain the procedure of. Estimation of fabrication cost.	**07**
	b)	With One example explain the procedure for estimation of machining cost.	**07**
Q.5	**a)**	Explain with 2 example difference between direct and indirect and overhead cost.	**07**
	b)	Write short note on forging cost estimation.	**07**

Section – II

Q.6	**a)**	Explain in brief steps for formation of. Machine hour rate for conventional machines.	**07**
	b)	Give definition of wages and explain at least 2 method for remuneration.	**07**
Q.7	**a)**	Explain with neat sketch, break even analysis.	**07**
	b)	Explain in brief various techniques of cost control.	**07**
Q.8	**a)**	Give definition of value explains with one example concept of value analysis.	**07**
	b)	State the difference between break even analysis and value analysis.	**07**
Q.9	**a)**	Write a short notes on CNC and VMC machine per hour rate calculation. Explains with one example.	**07**
	b)	Explain in brief the concept of zero base budgeting with one example.	**07**

Seat No.	

Set | Q

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Costing and Cost Control (197041712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) At break even point there is _____.
a) No profit. No loss. b) Profit is greater than loss
c) loss is greater than profit d) None of above

2) Value analysis is _____ process.
a) remedial process b) preventive
c) continuous d) none of above

3) Value is the cost directly proportional to the _____.
a) Price b) Function
c) product material d) all the above

4) Value analysis is normally applied to _____.
a) new product b) Old product
c) Future Product d) None of above

5) Which of the following is not direct labour cost?
a) man working on machines b) Man doing assembly
c) man doing material handling d) Time keeper

6) Which of the following cost related to production quantity _____.
a) Fixed cost b) Variable cost
c) Raw material cost d) None of above

7) Cost and function It is related to _____.
a) Price b) Value
c) Expenditure d) None of above

8) Cost estimation include the following. Expenditures.
a) Raw material b) Tooling cost
c) Selling expenses d) All of the above

9) Which of the following calculate the actual cost of product?
a) Cost estimation b) Costing
c) A and B d) None of above

10) Which of the following known as overhead cost _____.
a) direct labour cost b) material cost
c) direct expenses d) indirect expenses

11) _____ costing is a type of job costing.
a) Multiple b) Operating
c) Unit d) Batch

12) Direct cost incurred can be identified with _____.
a) Each department b) Each unit of product
c) Each workers d) None of above

13) Contract costing is variant of _____ costing.
a) Job b) Process
c) Unit d) Batch

14) Cost Volume Profit Analysis Required cost to be categorized as _____.
a) fixed or variable b) direct or indirect
c) Product or period d) None of above

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Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Costing and Cost Control (197041712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two full questions from each Section.
2) Figures to right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2	**a)**	What is cost value and price? Explain in brief classification of cost.	**07**
	b)	What is cost estimation list Different purpose of cost estimation.	**07**
Q.3	**a)**	How to estimate the cost of product explains with one example.	**07**
	b)	Explain in brief stock recording and consumption of material. By weighted average methods and FIFO.	**07**
Q.4	**a)**	With One example explain the procedure of. Estimation of fabrication cost.	**07**
	b)	With One example explain the procedure for estimation of machining cost.	**07**
Q.5	**a)**	Explain with 2 example difference between direct and indirect and overhead cost.	**07**
	b)	Write short note on forging cost estimation.	**07**

Section – II

Q.6	**a)**	Explain in brief steps for formation of. Machine hour rate for conventional machines.	**07**
	b)	Give definition of wages and explain at least 2 method for remuneration.	**07**
Q.7	**a)**	Explain with neat sketch, break even analysis.	**07**
	b)	Explain in brief various techniques of cost control.	**07**
Q.8	**a)**	Give definition of value explains with one example concept of value analysis.	**07**
	b)	State the difference between break even analysis and value analysis.	**07**
Q.9	**a)**	Write a short notes on CNC and VMC machine per hour rate calculation. Explains with one example.	**07**
	b)	Explain in brief the concept of zero base budgeting with one example.	**07**

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Costing and Cost Control (197041712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Value analysis is normally applied to _____.
a) new product b) Old product
c) Future Product d) None of above

2) Which of the following is not direct labour cost?
a) man working on machines b) Man doing assembly
c) man doing material handling d) Time keeper

3) Which of the following cost related to production quantity _____.
a) Fixed cost b) Variable cost
c) Raw material cost d) None of above

4) Cost and function It is related to _____.
a) Price b) Value
c) Expenditure d) None of above

5) Cost estimation include the following. Expenditures.
a) Raw material b) Tooling cost
c) Selling expenses d) All of the above

6) Which of the following calculate the actual cost of product?
a) Cost estimation b) Costing
c) A and B d) None of above

7) Which of the following known as overhead cost _____.
a) direct labour cost b) material cost
c) direct expenses d) indirect expenses

8) _____ costing is a type of job costing.
a) Multiple b) Operating
c) Unit d) Batch

9) Direct cost incurred can be identified with _____.
a) Each department b) Each unit of product
c) Each workers d) None of above

10) Contract costing is variant of _____ costing.
a) Job b) Process
c) Unit d) Batch

11) Cost Volume Profit Analysis Required cost to be categorized as _____.
a) fixed or variable b) direct or indirect
c) Product or period d) None of above

12) At break even point there is _____.
a) No profit. No loss. b) Profit is greater than loss
c) loss is greater than profit d) None of above

13) Value analysis is _____ process.
a) remedial process b) preventive
c) continuous d) none of above

14) Value is the cost directly proportional to the _____.
a) Price b) Function
c) product material d) all the above

Seat No.	

Set | R

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Costing and Cost Control (197041712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two full questions from each Section.
2) Figures to right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2	**a)**	What is cost value and price? Explain in brief classification of cost.	**07**
	b)	What is cost estimation list Different purpose of cost estimation.	**07**
Q.3	**a)**	How to estimate the cost of product explains with one example.	**07**
	b)	Explain in brief stock recording and consumption of material. By weighted average methods and FIFO.	**07**
Q.4	**a)**	With One example explain the procedure of. Estimation of fabrication cost.	**07**
	b)	With One example explain the procedure for estimation of machining cost.	**07**
Q.5	**a)**	Explain with 2 example difference between direct and indirect and overhead cost.	**07**
	b)	Write short note on forging cost estimation.	**07**

Section – II

Q.6	**a)**	Explain in brief steps for formation of. Machine hour rate for conventional machines.	**07**
	b)	Give definition of wages and explain at least 2 method for remuneration.	**07**
Q.7	**a)**	Explain with neat sketch, break even analysis.	**07**
	b)	Explain in brief various techniques of cost control.	**07**
Q.8	**a)**	Give definition of value explains with one example concept of value analysis.	**07**
	b)	State the difference between break even analysis and value analysis.	**07**
Q.9	**a)**	Write a short notes on CNC and VMC machine per hour rate calculation. Explains with one example.	**07**
	b)	Explain in brief the concept of zero base budgeting with one example.	**07**

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Costing and Cost Control (197041712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Contract costing is variant of _____ costing.
a) Job b) Process
c) Unit d) Batch

2) Cost Volume Profit Analysis Required cost to be categorized as _____.
a) fixed or variable b) direct or indirect
c) Product or period d) None of above

3) At break even point there is _____.
a) No profit. No loss. b) Profit is greater than loss
c) loss is greater than profit d) None of above

4) Value analysis is _____ process.
a) remedial process b) preventive
c) continuous d) none of above

5) Value is the cost directly proportional to the _____.
a) Price b) Function
c) product material d) all the above

6) Value analysis is normally applied to _____.
a) new product b) Old product
c) Future Product d) None of above

7) Which of the following is not direct labour cost?
a) man working on machines b) Man doing assembly
c) man doing material handling d) Time keeper

8) Which of the following cost related to production quantity _____.
a) Fixed cost b) Variable cost
c) Raw material cost d) None of above

9) Cost and function It is related to _____.
a) Price b) Value
c) Expenditure d) None of above

10) Cost estimation include the following. Expenditures.
a) Raw material
b) Tooling cost
c) Selling expenses
d) All of the above

11) Which of the following calculate the actual cost of product?
a) Cost estimation
b) Costing
c) A and B
d) None of above

12) Which of the following known as overhead cost _____.
a) direct labour cost
b) material cost
c) direct expenses
d) indirect expenses

13) _____ costing is a type of job costing.
a) Multiple
b) Operating
c) Unit
d) Batch

14) Direct cost incurred can be identified with _____.
a) Each department
b) Each unit of product
c) Each workers
d) None of above

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Seat No.	

Set S

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Costing and Cost Control (197041712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two full questions from each Section.
2) Figures to right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2	**a)**	What is cost value and price? Explain in brief classification of cost.	**07**
	b)	What is cost estimation list Different purpose of cost estimation.	**07**
Q.3	**a)**	How to estimate the cost of product explains with one example.	**07**
	b)	Explain in brief stock recording and consumption of material. By weighted average methods and FIFO.	**07**
Q.4	**a)**	With One example explain the procedure of. Estimation of fabrication cost.	**07**
	b)	With One example explain the procedure for estimation of machining cost.	**07**
Q.5	**a)**	Explain with 2 example difference between direct and indirect and overhead cost.	**07**
	b)	Write short note on forging cost estimation.	**07**

Section – II

Q.6	**a)**	Explain in brief steps for formation of. Machine hour rate for conventional machines.	**07**
	b)	Give definition of wages and explain at least 2 method for remuneration.	**07**
Q.7	**a)**	Explain with neat sketch, break even analysis.	**07**
	b)	Explain in brief various techniques of cost control.	**07**
Q.8	**a)**	Give definition of value explains with one example concept of value analysis.	**07**
	b)	State the difference between break even analysis and value analysis.	**07**
Q.9	**a)**	Write a short notes on CNC and VMC machine per hour rate calculation. Explains with one example.	**07**
	b)	Explain in brief the concept of zero base budgeting with one example.	**07**

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (197041713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions, if required and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of these is not a type of entrepreneurship?
a) Small business entrepreneurship
b) Scalable entrepreneurship
c) Large scale entrepreneurship
d) Intrapreneurship

2) Which of these actions of an entrepreneur will most likely result in creative destruction?
a) Developing a new product
b) Taking over a competitor's business
c) Issuing shares to individuals and institutions
d) Lowering prices of your product or service

3) Which of these is not a challenge for the entrepreneur?
a) Managing the cash flow of their business
b) Recruiting new employees
c) Choosing the product or service to sell in the market
d) Formulating rules and regulations relating to conducting entrepreneurship in their country

4) Who should be involved in preparing a firm's business plan?
a) Accountant b) Engineer
c) Entrepreneur d) None of the above

5) The process of creating something new is called:
a) Creative flexibility b) Management
c) Business d) Innovation

6) Entrepreneurship Development Program is helpful for:
a) First-generation entrepreneurs
b) Future generation entrepreneurs
c) Existing Entrepreneurs
d) None of the above

7) If an entrepreneur takes decisions on behalf of their enterprise, it is known as _____:
a) Routine decisions b) Strategic decisions
c) Organisational decisions d) Personal decisions

8) What is the purpose of a feasibility study for starting a new venture?
a) Exploring for potential customers
b) Estimate sales
c) To understand if there are any barriers to success
d) None of the above

9) An entrepreneur who is the owner of more than one business is called:
a) Portfolio Entrepreneur b) Intrapreneur
c) Corporate Entrepreneur d) None of the above

10) Which among these is a money manager who is involved in making risk investments from equity capital with the objective of gaining better returns?
a) Entrepreneur b) Businessperson
c) Buyer d) Venture capitalist

11) A business arrangement where one party allows another party to use a business name and sell its products or services is known as _____.
a) A cooperative b) A franchise
c) An owner-manager business d) A limited company

12) To provide financial assistance to entrepreneurs the government has set up a number of _____.
a) financial advisors b) financial intermediaries
c) Industrial estates d) financial institutions

13) _____ is the first development bank of the country.
a) ICICI b) IDBI
c) SFC d) IFCI

14) SIDBI was set up as a subsidiary of _____.
a) IDBI b) IFCI
c) ICICI d) SFC

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (197041713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from the both sections.
2) Figures to the right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.

Section – I

Q.2	**a)**	Elaborate the factors influencing entrepreneurial developments.	**07**
	b)	Classify the entrepreneur in details.	**07**
Q.3	**a)**	Elaborate the importance and significance of growth of entrepreneurial activity.	**07**
	b)	Explain evolution of entrepreneurship.	**07**
Q.4	**a)**	Explain Phases of EDPs.	**07**
	b)	Explain the problems faced by entrepreneur in detail.	**07**

Section – II

Q.5	**a)**	Explain SWOT analysis in entrepreneurship.	**07**
	b)	Write a short note on “Lean canvas model”.	**07**
Q.6	**a)**	Explain sources and methods for idea generation.	**07**
	b)	Explain contents of project report.	**07**
Q.7	**a)**	Define SME’s in Service & Manufacturing sector.	**07**
	b)	Elaborate the steps in setting up a small unit.	**07**

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Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (197041713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions, if required and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) What is the purpose of a feasibility study for starting a new venture?
a) Exploring for potential customers
b) Estimate sales
c) To understand if there are any barriers to success
d) None of the above

2) An entrepreneur who is the owner of more than one business is called:
a) Portfolio Entrepreneur b) Intrapreneur
c) Corporate Entrepreneur d) None of the above

3) Which among these is a money manager who is involved in making risk investments from equity capital with the objective of gaining better returns?
a) Entrepreneur b) Businessperson
c) Buyer d) Venture capitalist

4) A business arrangement where one party allows another party to use a business name and sell its products or services is known as _____.
a) A cooperative b) A franchise
c) An owner-manager business d) A limited company

5) To provide financial assistance to entrepreneurs the government has set up a number of _____.
a) financial advisors b) financial intermediaries
c) Industrial estates d) financial institutions

6) _____ is the first development bank of the country.
a) ICICI b) IDBI
c) SFC d) IFCI

7) SIDBI was set up as a subsidiary of _____.
a) IDBI b) IFCI
c) ICICI d) SFC

8) Which of these is not a type of entrepreneurship?
a) Small business entrepreneurship
b) Scalable entrepreneurship
c) Large scale entrepreneurship
d) Intrapreneurship

9) Which of these actions of an entrepreneur will most likely result in creative destruction?
a) Developing a new product
b) Taking over a competitor's business
c) Issuing shares to individuals and institutions
d) Lowering prices of your product or service

10) Which of these is not a challenge for the entrepreneur?
a) Managing the cash flow of their business
b) Recruiting new employees
c) Choosing the product or service to sell in the market
d) Formulating rules and regulations relating to conducting entrepreneurship in their country

11) Who should be involved in preparing a firm's business plan?
a) Accountant
b) Engineer
c) Entrepreneur
d) None of the above

12) The process of creating something new is called:
a) Creative flexibility
b) Management
c) Business
d) Innovation

13) Entrepreneurship Development Program is helpful for:
a) First-generation entrepreneurs
b) Future generation entrepreneurs
c) Existing Entrepreneurs
d) None of the above

14) If an entrepreneur takes decisions on behalf of their enterprise, it is known as _____:
a) Routine decisions
b) Strategic decisions
c) Organisational decisions
d) Personal decisions

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (197041713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from the both sections.
2) Figures to the right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.

Section – I

Q.2	**a)**	Elaborate the factors influencing entrepreneurial developments.	**07**
	b)	Classify the entrepreneur in details.	**07**
Q.3	**a)**	Elaborate the importance and significance of growth of entrepreneurial activity.	**07**
	b)	Explain evolution of entrepreneurship.	**07**
Q.4	**a)**	Explain Phases of EDPs.	**07**
	b)	Explain the problems faced by entrepreneur in detail.	**07**

Section – II

Q.5	**a)**	Explain SWOT analysis in entrepreneurship.	**07**
	b)	Write a short note on “Lean canvas model”.	**07**
Q.6	**a)**	Explain sources and methods for idea generation.	**07**
	b)	Explain contents of project report.	**07**
Q.7	**a)**	Define SME’s in Service & Manufacturing sector.	**07**
	b)	Elaborate the steps in setting up a small unit.	**07**

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (197041713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions, if required and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) A business arrangement where one party allows another party to use a business name and sell its products or services is known as _____.
a) A cooperative b) A franchise
c) An owner-manager business d) A limited company

2) To provide financial assistance to entrepreneurs the government has set up a number of _____.
a) financial advisors b) financial intermediaries
c) Industrial estates d) financial institutions

3) _____ is the first development bank of the country.
a) ICICI b) IDBI
c) SFC d) IFCI

4) SIDBI was set up as a subsidiary of _____.
a) IDBI b) IFCI
c) ICICI d) SFC

5) Which of these is not a type of entrepreneurship?
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b) Scalable entrepreneurship
c) Large scale entrepreneurship
d) Intrapreneurship

6) Which of these actions of an entrepreneur will most likely result in creative destruction?
a) Developing a new product
b) Taking over a competitor's business
c) Issuing shares to individuals and institutions
d) Lowering prices of your product or service

7) Which of these is not a challenge for the entrepreneur?
a) Managing the cash flow of their business
b) Recruiting new employees
c) Choosing the product or service to sell in the market
d) Formulating rules and regulations relating to conducting entrepreneurship in their country

8) Who should be involved in preparing a firm's business plan?
a) Accountant
b) Engineer
c) Entrepreneur
d) None of the above

9) The process of creating something new is called:
a) Creative flexibility
b) Management
c) Business
d) Innovation

10) Entrepreneurship Development Program is helpful for:
a) First-generation entrepreneurs
b) Future generation entrepreneurs
c) Existing Entrepreneurs
d) None of the above

11) If an entrepreneur takes decisions on behalf of their enterprise, it is known as _____:
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b) Strategic decisions
c) Organisational decisions
d) Personal decisions

12) What is the purpose of a feasibility study for starting a new venture?
a) Exploring for potential customers
b) Estimate sales
c) To understand if there are any barriers to success
d) None of the above

13) An entrepreneur who is the owner of more than one business is called:
a) Portfolio Entrepreneur
b) Intrapreneur
c) Corporate Entrepreneur
d) None of the above

14) Which among these is a money manager who is involved in making risk investments from equity capital with the objective of gaining better returns?
a) Entrepreneur
b) Businessperson
c) Buyer
d) Venture capitalist

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (197041713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from the both sections.
2) Figures to the right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.

Section – I

Q.2	**a)**	Elaborate the factors influencing entrepreneurial developments.	**07**
	b)	Classify the entrepreneur in details.	**07**
Q.3	**a)**	Elaborate the importance and significance of growth of entrepreneurial activity.	**07**
	b)	Explain evolution of entrepreneurship.	**07**
Q.4	**a)**	Explain Phases of EDPs.	**07**
	b)	Explain the problems faced by entrepreneur in detail.	**07**

Section – II

Q.5	**a)**	Explain SWOT analysis in entrepreneurship.	**07**
	b)	Write a short note on “Lean canvas model”.	**07**
Q.6	**a)**	Explain sources and methods for idea generation.	**07**
	b)	Explain contents of project report.	**07**
Q.7	**a)**	Define SME’s in Service & Manufacturing sector.	**07**
	b)	Elaborate the steps in setting up a small unit.	**07**

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (197041713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions, if required and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Entrepreneurship Development Program is helpful for:
a) First-generation entrepreneurs
b) Future generation entrepreneurs
c) Existing Entrepreneurs
d) None of the above

2) If an entrepreneur takes decisions on behalf of their enterprise, it is known as _____:
a) Routine decisions b) Strategic decisions
c) Organisational decisions d) Personal decisions

3) What is the purpose of a feasibility study for starting a new venture?
a) Exploring for potential customers
b) Estimate sales
c) To understand if there are any barriers to success
d) None of the above

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c) Corporate Entrepreneur d) None of the above

5) Which among these is a money manager who is involved in making risk investments from equity capital with the objective of gaining better returns?
a) Entrepreneur b) Businessperson
c) Buyer d) Venture capitalist

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c) An owner-manager business d) A limited company

7) To provide financial assistance to entrepreneurs the government has set up a number of _____.
a) financial advisors b) financial intermediaries
c) Industrial estates d) financial institutions

8) _____ is the first development bank of the country.
a) ICICI b) IDBI
c) SFC d) IFCI

8) SIDBI was set up as a subsidiary of _____.
a) IDBI b) IFCI
c) ICICI d) SFC

10) Which of these is not a type of entrepreneurship?
a) Small business entrepreneurship
b) Scalable entrepreneurship
c) Large scale entrepreneurship
d) Intrapreneurship

11) Which of these actions of an entrepreneur will most likely result in creative destruction?
a) Developing a new product
b) Taking over a competitor's business
c) Issuing shares to individuals and institutions
d) Lowering prices of your product or service

12) Which of these is not a challenge for the entrepreneur?
a) Managing the cash flow of their business
b) Recruiting new employees
c) Choosing the product or service to sell in the market
d) Formulating rules and regulations relating to conducting entrepreneurship in their country

13) Who should be involved in preparing a firm's business plan?
a) Accountant b) Engineer
c) Entrepreneur d) None of the above

14) The process of creating something new is called:
a) Creative flexibility b) Management
c) Business d) Innovation

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Entrepreneurship Development (197041713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from the both sections.
2) Figures to the right indicate full marks.
3) Make suitable assumptions, if required and state them clearly.

Section – I

Q.2	**a)**	Elaborate the factors influencing entrepreneurial developments.	**07**
	b)	Classify the entrepreneur in details.	**07**
Q.3	**a)**	Elaborate the importance and significance of growth of entrepreneurial activity.	**07**
	b)	Explain evolution of entrepreneurship.	**07**
Q.4	**a)**	Explain Phases of EDPs.	**07**
	b)	Explain the problems faced by entrepreneur in detail.	**07**

Section – II

Q.5	**a)**	Explain SWOT analysis in entrepreneurship.	**07**
	b)	Write a short note on “Lean canvas model”.	**07**
Q.6	**a)**	Explain sources and methods for idea generation.	**07**
	b)	Explain contents of project report.	**07**
Q.7	**a)**	Define SME’s in Service & Manufacturing sector.	**07**
	b)	Elaborate the steps in setting up a small unit.	**07**

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Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Product Life Cycle Management (197041715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Select the correct alternative. **14**

1) As the product passes through different stages of a product life cycle, the product variety _____.
a) increases b) decreases and then increases
c) remains the same d) decreases

2) The term DFA stands for:
a) Design for Management and Administration
b) Design for Manufacturing and Administration
c) Design for Assembly
d) Design for Management and Assembly

3) What does the term PDM stands for?
a) Product Data Management
b) Product Database Management
c) Product Drawing and Manufacturing
d) Production Data Manufacturing

4) The activities of designing and producing a container for a product are known as:
a) Purchase-sale b) Presentation
c) Promotion d) Packaging

5) In which of the following stages of product life cycle a company reduces sales promotion to take advantage of heavy consumer demand?
a) Introduction b) Growth
c) Maturity d) Decline

6) Increased competition leads to price decrease, increasing public awareness, sales volume increase significantly are the characteristics of _____ in PLC.
a) Mature stage b) Decline stage
c) Growth stage d) Market introduction stage

7) _____ includes review of sales, profit projections and cost for a new product, to find out whether it satisfied the company objective or not.
a) Product Development b) Business Analysis
c) Marketing Strategy d) Test Marketing

8) Color and size of the product, brand and packaging are considered as _____.
a) Chemical features of product b) Physical features of product
c) Product designing d) Product manufacture

9) Branding of product _____.
a) makes it more saleable
b) differentiates it from other products in the market
c) make it more attractive for customer
d) gives customer rebate on MRP

10) When two separate companies or two divisions within the same company agree to place both of their respective brands on a particular product or enterprise, this arrangement is termed as:
a) Differential Branding
b) Cobranding
c) Dual Branding
d) Both Cobranding and Dual Branding

11) The most important performance dimension for product development project is _____.
a) Time required to market the product
b) Time to target Customer
c) Time to advertise and reach consumer
d) Time required by seller

12) What does the term PLC stands for?
a) Product life cycle b) Production life cycle
c) Product long cycle d) Production long cycle

13) When a new product arrives in the market with higher quality, higher value and new features better than its competitors. Such products are known as _____.
a) Superior products b) Develop superior products
c) Unique superior products d) New products

14) Which of the following is not a characteristic of “Market Introduction Stage” in PLC?
a) Demands has to be created
b) Costs are low
c) Makes no money at this stage
d) Slow sales volume to start
e) There is little or no competition

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Product Life Cycle Management (197041715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II
2) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	Define PLM. List and Explain different phases in PLM.	**07**
	b)	How PLM can be operational framework of CIM?	**07**
Q.3	**a)**	Explain PLM characteristics and Scope of PLM.	**07**
	b)	What is the difference between PLM and MRP?	**07**
Q.4	**a)**	What is Industry 4.0? List Benefits of Digital Manufacturing.	**07**
	b)	What is the Necessity & Importance of PLM?	**07**

Section – II

Q.5	**a)**	Explain with Sketch various Components in a Product life cycle Management PLM Software.	**07**
	b)	What is information model and data model?	**07**
Q.6	**a)**	What is the PLM Strategy, Explain PLM as Business strategy.	**07**
	b)	Explain Sources of Problem in Product Data.	**07**

Q.7 Write Short note on. (Any Four) **14**

- **a)** PLM System Architecture
- **b)** Benefits of PLM
- **c)** Design for Manufacturing DFM
- **d)** PDM
- **e)** Stages in NPD (New Product Development)
- **f)** Engineering Database Management (EDM)

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Product Life Cycle Management (197041715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Select the correct alternative. **14**

1) Color and size of the product, brand and packaging are considered as _____.
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c) Product designing d) Product manufacture

2) Branding of product _____.
a) makes it more saleable
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a) Differential Branding
b) Cobranding
c) Dual Branding
d) Both Cobranding and Dual Branding

4) The most important performance dimension for product development project is _____.
a) Time required to market the product
b) Time to target Customer
c) Time to advertise and reach consumer
d) Time required by seller

5) What does the term PLC stands for?
a) Product life cycle b) Production life cycle
c) Product long cycle d) Production long cycle

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c) Unique superior products d) New products

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a) Demands has to be created
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c) Makes no money at this stage
d) Slow sales volume to start
e) There is little or no competition

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a) increases
b) decreases and then increases
c) remains the same
d) decreases

9) The term DFA stands for:
a) Design for Management and Administration
b) Design for Manufacturing and Administration
c) Design for Assembly
d) Design for Management and Assembly

10) What does the term PDM stands for?
a) Product Data Management
b) Product Database Management
c) Product Drawing and Manufacturing
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11) The activities of designing and producing a container for a product are known as:
a) Purchase-sale
b) Presentation
c) Promotion
d) Packaging

12) In which of the following stages of product life cycle a company reduces sales promotion to take advantage of heavy consumer demand?
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b) Growth
c) Maturity
d) Decline

13) Increased competition leads to price decrease, increasing public awareness, sales volume increase significantly are the characteristics of _____ in PLC.
a) Mature stage
b) Decline stage
c) Growth stage
d) Market introduction stage

14) _____ includes review of sales, profit projections and cost for a new product, to find out whether it satisfied the company objective or not.
a) Product Development
b) Business Analysis
c) Marketing Strategy
d) Test Marketing

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Product Life Cycle Management (197041715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II
2) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	Define PLM. List and Explain different phases in PLM.	**07**
	b)	How PLM can be operational framework of CIM?	**07**
Q.3	**a)**	Explain PLM characteristics and Scope of PLM.	**07**
	b)	What is the difference between PLM and MRP?	**07**
Q.4	**a)**	What is Industry 4.0? List Benefits of Digital Manufacturing.	**07**
	b)	What is the Necessity & Importance of PLM?	**07**

Section – II

Q.5	**a)**	Explain with Sketch various Components in a Product life cycle Management PLM Software.	**07**
	b)	What is information model and data model?	**07**
Q.6	**a)**	What is the PLM Strategy, Explain PLM as Business strategy.	**07**
	b)	Explain Sources of Problem in Product Data.	**07**

Q.7 Write Short note on. (Any Four) **14**

- **a)** PLM System Architecture
- **b)** Benefits of PLM
- **c)** Design for Manufacturing DFM
- **d)** PDM
- **e)** Stages in NPD (New Product Development)
- **f)** Engineering Database Management (EDM)

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Product Life Cycle Management (197041715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Select the correct alternative. **14**

1) The most important performance dimension for product development project is _____.
a) Time required to market the product
b) Time to target Customer
c) Time to advertise and reach consumer
d) Time required by seller

2) What does the term PLC stands for?
a) Product life cycle b) Production life cycle
c) Product long cycle d) Production long cycle

3) When a new product arrives in the market with higher quality, higher value and new features better than its competitors. Such products are known as _____.
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c) Unique superior products d) New products

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b) Costs are low
c) Makes no money at this stage
d) Slow sales volume to start
e) There is little or no competition

5) As the product passes through different stages of a product life cycle, the product variety _____.
a) increases b) decreases and then increases
c) remains the same d) decreases

6) The term DFA stands for:
a) Design for Management and Administration
b) Design for Manufacturing and Administration
c) Design for Assembly
d) Design for Management and Assembly

7) What does the term PDM stands for?
a) Product Data Management
b) Product Database Management
c) Product Drawing and Manufacturing
d) Production Data Manufacturing

8) The activities of designing and producing a container for a product are known as:
a) Purchase-sale
b) Presentation
c) Promotion
d) Packaging

9) In which of the following stages of product life cycle a company reduces sales promotion to take advantage of heavy consumer demand?
a) Introduction
b) Growth
c) Maturity
d) Decline

10) Increased competition leads to price decrease, increasing public awareness, sales volume increase significantly are the characteristics of _____ in PLC.
a) Mature stage
b) Decline stage
c) Growth stage
d) Market introduction stage

11) _____ includes review of sales, profit projections and cost for a new product, to find out whether it satisfied the company objective or not.
a) Product Development
b) Business Analysis
c) Marketing Strategy
d) Test Marketing

12) Color and size of the product, brand and packaging are considered as _____.
a) Chemical features of product
b) Physical features of product
c) Product designing
d) Product manufacture

13) Branding of product _____.
a) makes it more saleable
b) differentiates it from other products in the market
c) make it more attractive for customer
d) gives customer rebate on MRP

14) When two separate companies or two divisions within the same company agree to place both of their respective brands on a particular product or enterprise, this arrangement is termed as:
a) Differential Branding
b) Cobranding
c) Dual Branding
d) Both Cobranding and Dual Branding

SLR-GF-185

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Product Life Cycle Management (197041715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II
2) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	Define PLM. List and Explain different phases in PLM.	**07**
	b)	How PLM can be operational framework of CIM?	**07**
Q.3	**a)**	Explain PLM characteristics and Scope of PLM.	**07**
	b)	What is the difference between PLM and MRP?	**07**
Q.4	**a)**	What is Industry 4.0? List Benefits of Digital Manufacturing.	**07**
	b)	What is the Necessity & Importance of PLM?	**07**

Section – II

Q.5	**a)**	Explain with Sketch various Components in a Product life cycle Management PLM Software.	**07**
	b)	What is information model and data model?	**07**
Q.6	**a)**	What is the PLM Strategy, Explain PLM as Business strategy.	**07**
	b)	Explain Sources of Problem in Product Data.	**07**

Q.7 Write Short note on. (Any Four) **14**

- **a)** PLM System Architecture
- **b)** Benefits of PLM
- **c)** Design for Manufacturing DFM
- **d)** PDM
- **e)** Stages in NPD (New Product Development)
- **f)** Engineering Database Management (EDM)

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Product Life Cycle Management (197041715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Select the correct alternative. **14**

1) Increased competition leads to price decrease, increasing public awareness, sales volume increase significantly are the characteristics of _____ in PLC.
a) Mature stage b) Decline stage
c) Growth stage d) Market introduction stage

2) _____ includes review of sales, profit projections and cost for a new product, to find out whether it satisfied the company objective or not.
a) Product Development b) Business Analysis
c) Marketing Strategy d) Test Marketing

3) Color and size of the product, brand and packaging are considered as _____.
a) Chemical features of product b) Physical features of product
c) Product designing d) Product manufacture

4) Branding of product _____.
a) makes it more saleable
b) differentiates it from other products in the market
c) make it more attractive for customer
d) gives customer rebate on MRP

5) When two separate companies or two divisions within the same company agree to place both of their respective brands on a particular product or enterprise, this arrangement is termed as:
a) Differential Branding
b) Cobranding
c) Dual Branding
d) Both Cobranding and Dual Branding

6) The most important performance dimension for product development project is _____.
a) Time required to market the product
b) Time to target Customer
c) Time to advertise and reach consumer
d) Time required by seller

7) What does the term PLC stands for?
a) Product life cycle
b) Production life cycle
c) Product long cycle
d) Production long cycle

8) When a new product arrives in the market with higher quality, higher value and new features better than its competitors. Such products are known as _____.
a) Superior products
b) Develop superior products
c) Unique superior products
d) New products

9) Which of the following is not a characteristic of "Market Introduction Stage" in PLC?
a) Demands has to be created
b) Costs are low
c) Makes no money at this stage
d) Slow sales volume to start
e) There is little or no competition

10) As the product passes through different stages of a product life cycle, the product variety _____.
a) increases
b) decreases and then increases
c) remains the same
d) decreases

11) The term DFA stands for:
a) Design for Management and Administration
b) Design for Manufacturing and Administration
c) Design for Assembly
d) Design for Management and Assembly

12) What does the term PDM stands for?
a) Product Data Management
b) Product Database Management
c) Product Drawing and Manufacturing
d) Production Data Manufacturing

13) The activities of designing and producing a container for a product are known as:
a) Purchase-sale
b) Presentation
c) Promotion
d) Packaging

14) In which of the following stages of product life cycle a company reduces sales promotion to take advantage of heavy consumer demand?
a) Introduction
b) Growth
c) Maturity
d) Decline

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Product Life Cycle Management (197041715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any two questions from Section I and Section II
2) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	Define PLM. List and Explain different phases in PLM.	**07**
	b)	How PLM can be operational framework of CIM?	**07**
Q.3	**a)**	Explain PLM characteristics and Scope of PLM.	**07**
	b)	What is the difference between PLM and MRP?	**07**
Q.4	**a)**	What is Industry 4.0? List Benefits of Digital Manufacturing.	**07**
	b)	What is the Necessity & Importance of PLM?	**07**

Section – II

Q.5	**a)**	Explain with Sketch various Components in a Product life cycle Management PLM Software.	**07**
	b)	What is information model and data model?	**07**
Q.6	**a)**	What is the PLM Strategy, Explain PLM as Business strategy.	**07**
	b)	Explain Sources of Problem in Product Data.	**07**

Q.7 Write Short note on. (Any Four) **14**

- **a)** PLM System Architecture
- **b)** Benefits of PLM
- **c)** Design for Manufacturing DFM
- **d)** PDM
- **e)** Stages in NPD (New Product Development)
- **f)** Engineering Database Management (EDM)

SLR-GF-186

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (197041716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) In economics, desire backed by purchasing power is known as _____.
a) Utility b) Demand
c) Consumption d) Scarcity

2) Basic assumptions of law of demand include _____.
a) Prices of other goods should change.
b) There should be substitute for the commodity.
c) The commodity should not confer any distinction.
d) The demand for the commodity should not be continuous

3) In the case of perfect elasticity, the demand curve is _____.
a) Vertical b) Horizontal
c) Flat d) Steep

4) Outlay method of measurement of elasticity is also called as _____.
a) Percentage method b) Expenditure method
c) Point method d) Geometric method

5) The distinction between variable cost and fixed cost is relevant only in _____.
a) long period b) short period
c) medium term d) mixed period

6) Car and petrol are _____.
a) Complimentary goods b) Substitute goods
c) Supplementary goods d) Reserve goods

7) Cost plus pricing is also called _____.
a) margin pricing b) full cost pricing
c) mark up pricing d) all the above

8) If break-even output/quantity is 500 units and price per unit is Rs. 200, then what will be total revenue?
a) 1 Lakh b) 2 Lakh
c) 3 Lakh d) 4 Lakh

9) If Total Fixed Cost is Rs. 40,000, Price per unit is Rs. 200 and Average Variable cost is Rs. 120. Then what will be break-even output/quantity?

a) 200 units
b) 300 units
c) 400 units
d) 500 units

10) Economic profit includes _____.

a) Implicit and explicit cost
b) Implicit cost
c) Explicit cost
d) Opportunity cost

11) Which of the following represents the estimated value of the work actually accomplished?

a) Earned value (EV)
b) Planned value (PV)
c) Actual cost (AC)
d) Cost variance (CV)

12) With increase in cost of preventive maintenance, the breakdown maintenance cost will be _____.

a) Increase
b) Decrease
c) No change
d) None from above

13) Cost Classification carried out on various factor like _____.

a) Resources deployed against the planned
b) Status of the Project
c) Manpower required
d) Direct & Indirect Cost

14) When demand increases, the price _____.

a) Falls
b) Rises
c) No change
d) None from above

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (197041716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to right indicate full marks.

Section – I

Q.2	**a)**	Definition and scope of Business Economics with major topics in Engineering Economics.	**05**
	b)	Explain Theory of Demand, Law of demand, determinants of demand.	**05**
Q.3	**a)**	Explain Concept of Cost and difference between cost and price.	**05**
	b)	Explain Break Even Analysis.	**04**
Q.4	**a)**	Explain inflation, causes and consequences and control of inflation.	**05**
	b)	Explain cash flow diagram.	**04**
Q.5	**Short Notes. (Any Three)**		
	a)	Relationship between demand and supply.	**09**
	b)	Price Elasticity of Demand.	
	c)	Long run and short run costs.	
	d)	Time Value of Money.	

Section – II

Q.6	**a)**	Explain various aspects of make or buy decision, break-even point in make or buy decision.	**05**
	b)	Explain elementary economic analysis.	**05**
Q.7	**a)**	Explain types of maintenance practices, cost of maintenance.	**05**
	b)	Explain preventive and breakdown maintenance.	**04**
Q.8	**a)**	Explain project management life cycle and its block diagram.	**05**
	b)	Explain phases of value analysis and value engineering.	**04**
Q.9	**Short Notes. (Any Three)**		**09**
	a)	Engineering and economic approach.	
	b)	Routine maintenance & predictive maintenance.	
	c)	Financial appraisal.	
	d)	Value engineering procedure.	

Seat No.	

Set | Q

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (197041716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) If break-even output/quantity is 500 units and price per unit is Rs. 200, then what will be total revenue?
a) 1 Lakh b) 2 Lakh
c) 3 Lakh d) 4 Lakh

2) If Total Fixed Cost is Rs. 40,000, Price per unit is Rs. 200 and Average Variable cost is Rs. 120. Then what will be break-even output/quantity?
a) 200 units b) 300 units
c) 400 units d) 500 units

3) Economic profit includes _____.
a) Implicit and explicit cost b) Implicit cost
c) Explicit cost d) Opportunity cost

4) Which of the following represents the estimated value of the work actually accomplished?
a) Earned value (EV) b) Planned value (PV)
c) Actual cost (AC) d) Cost variance (CV)

5) With increase in cost of preventive maintenance, the breakdown maintenance cost will be _____.
a) Increase b) Decrease
c) No change d) None from above

6) Cost Classification carried out on various factor like _____.
a) Resources deployed against the planned
b) Status of the Project
c) Manpower required
d) Direct & Indirect Cost

7) When demand increases, the price _____.
a) Falls b) Rises
c) No change d) None from above

8) In economics, desire backed by purchasing power is known as _____.
a) Utility b) Demand
c) Consumption d) Scarcity

9) Basic assumptions of law of demand include _____.
a) Prices of other goods should change.
b) There should be substitute for the commodity.
c) The commodity should not confer any distinction.
d) The demand for the commodity should not be continuous

10) In the case of perfect elasticity, the demand curve is _____.
a) Vertical b) Horizontal
c) Flat d) Steep

11) Outlay method of measurement of elasticity is also called as _____.
a) Percentage method b) Expenditure method
c) Point method d) Geometric method

12) The distinction between variable cost and fixed cost is relevant only in _____.
a) long period b) short period
c) medium term d) mixed period

13) Car and petrol are _____.
a) Complimentary goods b) Substitute goods
c) Supplementary goods d) Reserve goods

14) Cost plus pricing is also called _____.
a) margin pricing b) full cost pricing
c) mark up pricing d) all the above

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (197041716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to right indicate full marks.

Section – I

Q.2	**a)**	Definition and scope of Business Economics with major topics in Engineering Economics.	**05**
	b)	Explain Theory of Demand, Law of demand, determinants of demand.	**05**
Q.3	**a)**	Explain Concept of Cost and difference between cost and price.	**05**
	b)	Explain Break Even Analysis.	**04**
Q.4	**a)**	Explain inflation, causes and consequences and control of inflation.	**05**
	b)	Explain cash flow diagram.	**04**
Q.5	**Short Notes. (Any Three)**		
	a)	Relationship between demand and supply.	**09**
	b)	Price Elasticity of Demand.	
	c)	Long run and short run costs.	
	d)	Time Value of Money.	

Section – II

Q.6	**a)**	Explain various aspects of make or buy decision, break-even point in make or buy decision.	**05**
	b)	Explain elementary economic analysis.	**05**
Q.7	**a)**	Explain types of maintenance practices, cost of maintenance.	**05**
	b)	Explain preventive and breakdown maintenance.	**04**
Q.8	**a)**	Explain project management life cycle and its block diagram.	**05**
	b)	Explain phases of value analysis and value engineering.	**04**
Q.9	**Short Notes. (Any Three)**		**09**
	a)	Engineering and economic approach.	
	b)	Routine maintenance & predictive maintenance.	
	c)	Financial appraisal.	
	d)	Value engineering procedure.	

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (197041716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of the following represents the estimated value of the work actually accomplished?
a) Earned value (EV) b) Planned value (PV)
c) Actual cost (AC) d) Cost variance (CV)

2) With increase in cost of preventive maintenance, the breakdown maintenance cost will be _____.
a) Increase b) Decrease
c) No change d) None from above

3) Cost Classification carried out on various factor like _____.
a) Resources deployed against the planned
b) Status of the Project
c) Manpower required
d) Direct & Indirect Cost

4) When demand increases, the price _____.
a) Falls b) Rises
c) No change d) None from above

5) In economics, desire backed by purchasing power is known as _____.
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c) Consumption d) Scarcity

6) Basic assumptions of law of demand include _____.
a) Prices of other goods should change.
b) There should be substitute for the commodity.
c) The commodity should not confer any distinction.
d) The demand for the commodity should not be continuous

7) In the case of perfect elasticity, the demand curve is _____.
a) Vertical b) Horizontal
c) Flat d) Steep

8) Outlay method of measurement of elasticity is also called as _____.
a) Percentage method b) Expenditure method
c) Point method d) Geometric method

9) The distinction between variable cost and fixed cost is relevant only in _____.
a) long period b) short period
c) medium term d) mixed period

10) Car and petrol are _____.
a) Complimentary goods b) Substitute goods
c) Supplementary goods d) Reserve goods

11) Cost plus pricing is also called _____.
a) margin pricing b) full cost pricing
c) mark up pricing d) all the above

12) If break-even output/quantity is 500 units and price per unit is Rs. 200, then what will be total revenue?
a) 1 Lakh b) 2 Lakh
c) 3 Lakh d) 4 Lakh

13) If Total Fixed Cost is Rs. 40,000, Price per unit is Rs. 200 and Average Variable cost is Rs. 120. Then what will be break-even output/quantity?
a) 200 units b) 300 units
c) 400 units d) 500 units

14) Economic profit includes _____.
a) Implicit and explicit cost b) Implicit cost
c) Explicit cost d) Opportunity cost

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (197041716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to right indicate full marks.

Section – I

Q.2	**a)**	Definition and scope of Business Economics with major topics in Engineering Economics.	**05**
	b)	Explain Theory of Demand, Law of demand, determinants of demand.	**05**
Q.3	**a)**	Explain Concept of Cost and difference between cost and price.	**05**
	b)	Explain Break Even Analysis.	**04**
Q.4	**a)**	Explain inflation, causes and consequences and control of inflation.	**05**
	b)	Explain cash flow diagram.	**04**
Q.5	**Short Notes. (Any Three)**		
	a)	Relationship between demand and supply.	**09**
	b)	Price Elasticity of Demand.	
	c)	Long run and short run costs.	
	d)	Time Value of Money.	

Section – II

Q.6	**a)**	Explain various aspects of make or buy decision, break-even point in make or buy decision.	**05**
	b)	Explain elementary economic analysis.	**05**
Q.7	**a)**	Explain types of maintenance practices, cost of maintenance.	**05**
	b)	Explain preventive and breakdown maintenance.	**04**
Q.8	**a)**	Explain project management life cycle and its block diagram.	**05**
	b)	Explain phases of value analysis and value engineering.	**04**
Q.9	**Short Notes. (Any Three)**		**09**
	a)	Engineering and economic approach.	
	b)	Routine maintenance & predictive maintenance.	
	c)	Financial appraisal.	
	d)	Value engineering procedure.	

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (197041716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Car and petrol are _____.
a) Complimentary goods b) Substitute goods
c) Supplementary goods d) Reserve goods

2) Cost plus pricing is also called _____.
a) margin pricing b) full cost pricing
c) mark up pricing d) all the above

3) If break-even output/quantity is 500 units and price per unit is Rs. 200, then what will be total revenue?
a) 1 Lakh b) 2 Lakh
c) 3 Lakh d) 4 Lakh

4) If Total Fixed Cost is Rs. 40,000, Price per unit is Rs. 200 and Average Variable cost is Rs. 120. Then what will be break-even output/quantity?
a) 200 units b) 300 units
c) 400 units d) 500 units

5) Economic profit includes _____.
a) Implicit and explicit cost b) Implicit cost
c) Explicit cost d) Opportunity cost

6) Which of the following represents the estimated value of the work actually accomplished?
a) Earned value (EV) b) Planned value (PV)
c) Actual cost (AC) d) Cost variance (CV)

7) With increase in cost of preventive maintenance, the breakdown maintenance cost will be _____.
a) Increase b) Decrease
c) No change d) None from above

8) Cost Classification carried out on various factor like _____.
a) Resources deployed against the planned
b) Status of the Project
c) Manpower required
d) Direct & Indirect Cost

9) When demand increases, the price _____.
a) Falls b) Rises
c) No change d) None from above

10) In economics, desire backed by purchasing power is known as _____.
a) Utility b) Demand
c) Consumption d) Scarcity

11) Basic assumptions of law of demand include _____.
a) Prices of other goods should change.
b) There should be substitute for the commodity.
c) The commodity should not confer any distinction.
d) The demand for the commodity should not be continuous

12) In the case of perfect elasticity, the demand curve is _____.
a) Vertical b) Horizontal
c) Flat d) Steep

13) Outlay method of measurement of elasticity is also called as _____.
a) Percentage method b) Expenditure method
c) Point method d) Geometric method

14) The distinction between variable cost and fixed cost is relevant only in _____.
a) long period b) short period
c) medium term d) mixed period

SLR-GF-186

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Business Economics (197041716)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to right indicate full marks.

Section – I

Q.2	**a)**	Definition and scope of Business Economics with major topics in Engineering Economics.	**05**
	b)	Explain Theory of Demand, Law of demand, determinants of demand.	**05**
Q.3	**a)**	Explain Concept of Cost and difference between cost and price.	**05**
	b)	Explain Break Even Analysis.	**04**
Q.4	**a)**	Explain inflation, causes and consequences and control of inflation.	**05**
	b)	Explain cash flow diagram.	**04**
Q.5	**Short Notes. (Any Three)**		
	a)	Relationship between demand and supply.	**09**
	b)	Price Elasticity of Demand.	
	c)	Long run and short run costs.	
	d)	Time Value of Money.	

Section – II

Q.6	**a)**	Explain various aspects of make or buy decision, break-even point in make or buy decision.	**05**
	b)	Explain elementary economic analysis.	**05**
Q.7	**a)**	Explain types of maintenance practices, cost of maintenance.	**05**
	b)	Explain preventive and breakdown maintenance.	**04**
Q.8	**a)**	Explain project management life cycle and its block diagram.	**05**
	b)	Explain phases of value analysis and value engineering.	**04**
Q.9	**Short Notes. (Any Three)**		**09**
	a)	Engineering and economic approach.	
	b)	Routine maintenance & predictive maintenance.	
	c)	Financial appraisal.	
	d)	Value engineering procedure.	

SLR-GF-187

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Reliability Engineering (197041717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Reliability is a measure of how quality changes over time _____.
a) True b) False
c) Cannot predict d) None of the above

2) Measure of reliability is given by _____.
a) Mean Time between success
b) Mean reliable
c) Mean Time between failure (MTBF)
d) MTTR

3) In series configuration of five components, the entire system will fail if _____.
a) any two components fail b) any three components fail
c) any one of the components fail d) any four components fail

4) The system reliability for a two-component parallel system is 0.99968. If the reliability of the first component is 0.992, the reliability of the second component is _____.
a) 0.996 b) 0.999
c) 0.008 d) 0.960

5) As a rule, adding more questions to a test that measures the same trait or attribute _____ the test's reliability.
a) can decrease b) can increase
c) does not affect d) lowers

6) Standby redundancy, also known as _____.
a) element redundancy b) Backup Redundancy
c) unit redundancy d) off redundancy

7) A system made up of 5 series components has a design reliability of .96. Subsequently, 4 of the components have reliabilities apportioned to them of 0.992, 0.991, 0.994, and 0.992. What should the reliability apportionment for the 5th subsystem be?
a) 0.970 b) 0.969
c) 0.990 d) 0.992

8) What is the Major Key parameter of maintainability?
a) Survival
b) Vulnerability
c) Accessibility
d) RCS

9) What is the failure cost of a product possessing reliability R=1?
a) Zero
b) Unity
c) Infinity
d) None of the above

10) Failure Mode, Effects & Criticality Analysis (FMECA) is a method which involves _____.
a) Creating a series of linkages between potential failures
b) Impact on the mission (Effects)
c) The causes of the failure
d) All of the above

11) If a test shows three failures in 50 hours of operation, how many failures will it show in 1000 hours of operation if the failure rate is constant?
a) 150
b) 20
c) 333
d) 60

12) What is Maintainability?
a) The ease with which the aircraft can be fixed
b) The ease with which the aircraft can sustain damage
c) Vulnerability
d) RCS detection

13) The terms HALT and HASS are both used for _____.
a) accelerating testing
b) Design of Experiments
c) Data acquisition
d) Reliability Management

14) FRACAS stands for _____.
a) Failure Reporting, Analysis, and Corrective Action System
b) Failure Regression, Analysis and Corrective Action System
c) Failure Recording, Application and Corrective Action System
d) Failure Regression, Analysis and Compliance Action System

SLR-GF-187

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Reliability Engineering (197041717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2	**a)**	What is Reliability? Explain the significance of Reliability.	**05**
	b)	Compare standby system with the k-out-of-m configuration.	**05**
	c)	Write short note on Mean Time to Failure (MTTF).	**04**
Q.3	**a)**	Explain the Interrelationship of safety, quality and reliability.	**05**
	b)	Explain the Weibull probability Distribution and Normal probability Distribution.	**05**
	c)	Write a short note on Redundancy.	**04**
Q.4	**a)**	What is Reliability apportionment? Explain any one technique of the same.	**05**
	b)	What is Failure? Explain the failure Rate and hazard rate.	**05**
	c)	Discuss the mixed configuration system.	**04**

Section – II

Q.5	**a)**	What is Maintainability? Explain the factors affecting maintainability.	**05**
	b)	Describe the Failure Mode, effects and criticality analysis (FMECA).	**05**
	c)	What is availability? Explain the operational availability.	**04**
Q.6	**a)**	Explain in detail Failure mode effects analysis (FMEA).	**05**
	b)	Discuss the technology aspects in Reliability Management.	**05**
	c)	Write a short note on reliability in manufacturing.	**04**
Q.7	**a)**	What do you mean by Reliability Testing? Discuss the significance of Reliability Testing.	**05**
	b)	Explain the use of Design of Experiments (DOE) in Reliability.	**05**
	c)	Differentiate between Highly Accelerated Life Testing (HALT) and highly accelerated stress Screening (HASS).	**04**

Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Reliability Engineering (197041717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What is the Major Key parameter of maintainability?
a) Survival b) Vulnerability
c) Accessibility d) RCS

2) What is the failure cost of a product possessing reliability R=1?
a) Zero b) Unity
c) Infinity d) None of the above

3) Failure Mode, Effects & Criticality Analysis (FMECA) is a method which involves _____.
a) Creating a series of linkages between potential failures
b) Impact on the mission (Effects)
c) The causes of the failure
d) All of the above

4) If a test shows three failures in 50 hours of operation, how many failures will it show in 1000 hours of operation if the failure rate is constant?
a) 150 b) 20
c) 333 d) 60

5) What is Maintainability?
a) The ease with which the aircraft can be fixed
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6) The terms HALT and HASS are both used for _____.
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8) Reliability is a measure of how quality changes over time _____.
a) True b) False
c) Cannot predict d) None of the above

9) Measure of reliability is given by _____.
a) Mean Time between success
b) Mean reliable
c) Mean Time between failure (MTBF)
d) MTTR

10) In series configuration of five components, the entire system will fail if _____.
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11) The system reliability for a two-component parallel system is 0.99968. If the reliability of the first component is 0.992, the reliability of the second component is _____.
a) 0.996 b) 0.999
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12) As a rule, adding more questions to a test that measures the same trait or attribute _____ the test's reliability.
a) can decrease b) can increase
c) does not affect d) lowers

13) Standby redundancy, also known as _____.
a) element redundancy b) Backup Redundancy
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14) A system made up of 5 series components has a design reliability of .96. Subsequently, 4 of the components have reliabilities apportioned to them of 0.992, 0.991, 0.994, and 0.992. What should the reliability apportionment for the 5th subsystem be?
a) 0.970 b) 0.969
c) 0.990 d) 0.992

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Reliability Engineering (197041717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2	**a)**	What is Reliability? Explain the significance of Reliability.	**05**
	b)	Compare standby system with the k-out-of-m configuration.	**05**
	c)	Write short note on Mean Time to Failure (MTTF).	**04**
Q.3	**a)**	Explain the Interrelationship of safety, quality and reliability.	**05**
	b)	Explain the Weibull probability Distribution and Normal probability Distribution.	**05**
	c)	Write a short note on Redundancy.	**04**
Q.4	**a)**	What is Reliability apportionment? Explain any one technique of the same.	**05**
	b)	What is Failure? Explain the failure Rate and hazard rate.	**05**
	c)	Discuss the mixed configuration system.	**04**

Section – II

Q.5	**a)**	What is Maintainability? Explain the factors affecting maintainability.	**05**
	b)	Describe the Failure Mode, effects and criticality analysis (FMECA).	**05**
	c)	What is availability? Explain the operational availability.	**04**
Q.6	**a)**	Explain in detail Failure mode effects analysis (FMEA).	**05**
	b)	Discuss the technology aspects in Reliability Management.	**05**
	c)	Write a short note on reliability in manufacturing.	**04**
Q.7	**a)**	What do you mean by Reliability Testing? Discuss the significance of Reliability Testing.	**05**
	b)	Explain the use of Design of Experiments (DOE) in Reliability.	**05**
	c)	Differentiate between Highly Accelerated Life Testing (HALT) and highly accelerated stress Screening (HASS).	**04**

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Reliability Engineering (197041717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) If a test shows three failures in 50 hours of operation, how many failures will it show in 1000 hours of operation if the failure rate is constant?
a) 150 b) 20
c) 333 d) 60

2) What is Maintainability?
a) The ease with which the aircraft can be fixed
b) The ease with which the aircraft can sustain damage
c) Vulnerability
d) RCS detection

3) The terms HALT and HASS are both used for _____.
a) accelerating testing b) Design of Experiments
c) Data acquisition d) Reliability Management

4) FRACAS stands for _____.
a) Failure Reporting, Analysis, and Corrective Action System
b) Failure Regression, Analysis and Corrective Action System
c) Failure Recording, Application and Corrective Action System
d) Failure Regression, Analysis and Compliance Action System

5) Reliability is a measure of how quality changes over time _____.
a) True b) False
c) Cannot predict d) None of the above

6) Measure of reliability is given by _____.
a) Mean Time between success
b) Mean reliable
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d) MTTR

7) In series configuration of five components, the entire system will fail if _____.
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8) The system reliability for a two-component parallel system is 0.99968. If the reliability of the first component is 0.992, the reliability of the second component is _____.

a) 0.996 b) 0.999
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9) As a rule, adding more questions to a test that measures the same trait or attribute _____ the test's reliability.

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10) Standby redundancy, also known as _____.

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11) A system made up of 5 series components has a design reliability of .96. Subsequently, 4 of the components have reliabilities apportioned to them of 0.992, 0.991, 0.994, and 0.992. What should the reliability apportionment for the 5th subsystem be?

a) 0.970 b) 0.969
c) 0.990 d) 0.992

12) What is the Major Key parameter of maintainability?

a) Survival b) Vulnerability
c) Accessibility d) RCS

13) What is the failure cost of a product possessing reliability R=1?

a) Zero b) Unity
c) Infinity d) None of the above

14) Failure Mode, Effects & Criticality Analysis (FMECA) is a method which involves _____.

a) Creating a series of linkages between potential failures
b) Impact on the mission (Effects)
c) The causes of the failure
d) All of the above

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Reliability Engineering (197041717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2	**a)**	What is Reliability? Explain the significance of Reliability.	**05**
	b)	Compare standby system with the k-out-of-m configuration.	**05**
	c)	Write short note on Mean Time to Failure (MTTF).	**04**
Q.3	**a)**	Explain the Interrelationship of safety, quality and reliability.	**05**
	b)	Explain the Weibull probability Distribution and Normal probability Distribution.	**05**
	c)	Write a short note on Redundancy.	**04**
Q.4	**a)**	What is Reliability apportionment? Explain any one technique of the same.	**05**
	b)	What is Failure? Explain the failure Rate and hazard rate.	**05**
	c)	Discuss the mixed configuration system.	**04**

Section – II

Q.5	**a)**	What is Maintainability? Explain the factors affecting maintainability.	**05**
	b)	Describe the Failure Mode, effects and criticality analysis (FMECA).	**05**
	c)	What is availability? Explain the operational availability.	**04**
Q.6	**a)**	Explain in detail Failure mode effects analysis (FMEA).	**05**
	b)	Discuss the technology aspects in Reliability Management.	**05**
	c)	Write a short note on reliability in manufacturing.	**04**
Q.7	**a)**	What do you mean by Reliability Testing? Discuss the significance of Reliability Testing.	**05**
	b)	Explain the use of Design of Experiments (DOE) in Reliability.	**05**
	c)	Differentiate between Highly Accelerated Life Testing (HALT) and highly accelerated stress Screening (HASS).	**04**

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Reliability Engineering (197041717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions wherever necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Standby redundancy, also known as _____.
a) element redundancy b) Backup Redundancy
c) unit redundancy d) off redundancy

2) A system made up of 5 series components has a design reliability of .96. Subsequently, 4 of the components have reliabilities apportioned to them of 0.992, 0.991, 0.994, and 0.992. What should the reliability apportionment for the 5th subsystem be?
a) 0.970 b) 0.969
c) 0.990 d) 0.992

3) What is the Major Key parameter of maintainability?
a) Survival b) Vulnerability
c) Accessibility d) RCS

4) What is the failure cost of a product possessing reliability R=1?
a) Zero b) Unity
c) Infinity d) None of the above

5) Failure Mode, Effects & Criticality Analysis (FMECA) is a method which involves _____.
a) Creating a series of linkages between potential failures
b) Impact on the mission (Effects)
c) The causes of the failure
d) All of the above

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a) 150 b) 20
c) 333 d) 60

7) What is Maintainability?
a) The ease with which the aircraft can be fixed
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c) Vulnerability
d) RCS detection

8) The terms HALT and HASS are both used for _____.
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c) Data acquisition d) Reliability Management

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d) Failure Regression, Analysis and Compliance Action System

10) Reliability is a measure of how quality changes over time _____.
a) True b) False
c) Cannot predict d) None of the above

11) Measure of reliability is given by _____.
a) Mean Time between success
b) Mean reliable
c) Mean Time between failure (MTBF)
d) MTTR

12) In series configuration of five components, the entire system will fail if _____.
a) any two components fail b) any three components fail
c) any one of the components fail d) any four components fail

13) The system reliability for a two-component parallel system is 0.99968. If the reliability of the first component is 0.992, the reliability of the second component is _____.
a) 0.996 b) 0.999
c) 0.008 d) 0.960

14) As a rule, adding more questions to a test that measures the same trait or attribute _____ the test's reliability.
a) can decrease b) can increase
c) does not affect d) lowers

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Reliability Engineering (197041717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any Two questions from each section.
2) Figures to the right indicate full marks.
3) Make suitable assumptions wherever necessary and state them clearly.
4) Draw neat diagram wherever necessary.

Section – I

Q.2	**a)**	What is Reliability? Explain the significance of Reliability.	**05**
	b)	Compare standby system with the k-out-of-m configuration.	**05**
	c)	Write short note on Mean Time to Failure (MTTF).	**04**
Q.3	**a)**	Explain the Interrelationship of safety, quality and reliability.	**05**
	b)	Explain the Weibull probability Distribution and Normal probability Distribution.	**05**
	c)	Write a short note on Redundancy.	**04**
Q.4	**a)**	What is Reliability apportionment? Explain any one technique of the same.	**05**
	b)	What is Failure? Explain the failure Rate and hazard rate.	**05**
	c)	Discuss the mixed configuration system.	**04**

Section – II

Q.5	**a)**	What is Maintainability? Explain the factors affecting maintainability.	**05**
	b)	Describe the Failure Mode, effects and criticality analysis (FMECA).	**05**
	c)	What is availability? Explain the operational availability.	**04**
Q.6	**a)**	Explain in detail Failure mode effects analysis (FMEA).	**05**
	b)	Discuss the technology aspects in Reliability Management.	**05**
	c)	Write a short note on reliability in manufacturing.	**04**
Q.7	**a)**	What do you mean by Reliability Testing? Discuss the significance of Reliability Testing.	**05**
	b)	Explain the use of Design of Experiments (DOE) in Reliability.	**05**
	c)	Differentiate between Highly Accelerated Life Testing (HALT) and highly accelerated stress Screening (HASS).	**04**

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Seat No.		Set	P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Communication (BTN04501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) The advantage(s) of digital and/or data communications over analog include _____.
a) Noise performance b) Regeneration
c) Digital signal processing d) All the above

2) In an S/H circuit, the time that it must hold the sampled voltage is _____.
a) Aperture time b) Acquisition time
c) Flat-top time d) $D_{\min}$

3) Error signals associated with the sampling process are called _____.
a) Foldover distortion
b) Aliasing
c) Nyquist rate
d) Fold over distortion and aliasing

4) Which of the following is not a common RZ code?
a) RZ-unipolar b) RZ-bipolar
c) RZ-M d) RZ-AMI

5) A CD audio laser-disk system has a frequency bandwidth of 20 Hz to 20 kHz. The minimum sample rate to satisfy the Nyquist criteria is _____.
a) 20Hz b) 20KHz
c) 40Hz d) 40KHz

6) The quantizing error of PCM systems for weak signals can be made less significant by _____.
a) Companding
b) Using time-division multiplexing
c) Using Frequency-division multiplexing
d) Filtering out the alias frequency

7) The entropy of a message source generating 4 messages with probabilities 0.5, 0.25, 0.125 & 0.125 is _____.
a) 1 bit/msg b) 1.75 bits/msg
c) 3.32 bits/msg d) 5.93 bits/msg

8) When the message and the BCC are transmitted as separate parts within the same transmitted code, it is called a(n) _____.
a) Systematic code b) CRC
c) (n, k) cyclic code d) Interleaved code

9) The value left in the CRC dividing circuit after all data have been shifted in is the _____.
a) Quantile interval b) Codec
c) BCC d) Syndrome

10) Which of the following is not an example of code error detection and correction in a data communication channel?
a) Parity b) FSK
c) Block check character d) Hamming code

11) Error-correcting techniques that allow for correction at the receiver are called _____.
a) Cyclic redundancy checks (CRC)
b) Block-check characters (BCC)
c) Forward error correcting (FEC)
d) Parity

12) The probability of error for M-ary FSK decreases as _____.
a) M decreases b) M increases
c) M constant d) None of these

13) The early late gate synchronizer is a technique used for _____.
a) carrier synchronization b) symbol synchronization
c) frame synchronization d) None of these

14) Some advantages of spread spectrum are _____.
a) Low susceptibility b) Immunity to jamming
c) Reduced interference d) All of the mentioned

Seat No.		Set	P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Communication (BTN04501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) State and prove Sampling Theorem.
b) What is a Duo Binary signaling scheme, discuss the Duo binary encoder & decoder in detail?
c) Illustrate with a neat diagram Baseband binary data Transmitter.
d) State the limitations of Delta modulation.
e) Verify the expression $\mathrm{I(X;Y) = I(Y;X)}$

Q.3 Attempt the following (Any Two) **12**

a) With suitable diagram explain DPCM modulator & demodulator.
b) Discuss with a neat diagram different formats of line coding for the given sequence 10111001.
c) There 6 different source symbols, with the following frequencies of occurrences {0.30, 0.25,0.20, 0.12, 0.08, 0.05}. Estimate the efficiency of the code using Shannon Fano Encoding Algorithm. (M=2)

Section – II

Q.4 Attempt the following (Any Four) **16**

a) Explain generation of ASK from baseband signal.
b) State advantages and disadvantages of spread spectrum techniques.
c) Explain Matched Filter BPSK Detector.
d) Find the systematic (7,4) cyclic code for message [0 1 1 1] and $g(x) = 1 + x + x3$
e) With suitable example & diagram explain FHSS. What are its types?

Q.5 Attempt the following (Any Two) **12**

a) With suitable waveforms explain QPSK & OQPSK.
b) An error control code has the following parity check matrix.

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

i) Determine the generator matrix G
ii) Find the code word that begin with 101
iii) Decode the received code word $1\ 1\ 0\ 1\ 1\ 0$

c) Explain QAM modulator and demodulator.

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Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Communication (BTN04501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) When the message and the BCC are transmitted as separate parts within the same transmitted code, it is called a(n) _____.
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d) Fold over distortion and aliasing

11) Which of the following is not a common RZ code?

a) RZ-unipolar
b) RZ-bipolar
c) RZ-M
d) RZ-AMI

12) A CD audio laser-disk system has a frequency bandwidth of 20 Hz to 20 kHz. The minimum sample rate to satisfy the Nyquist criteria is _____.

a) 20Hz
b) 20KHz
c) 40Hz
d) 40KHz

13) The quantizing error of PCM systems for weak signals can be made less significant by _____.

a) Companding
b) Using time-division multiplexing
c) Using Frequency-division multiplexing
d) Filtering out the alias frequency

14) The entropy of a message source generating 4 messages with probabilities 0.5, 0.25, 0.125 & 0.125 is _____.

a) 1 bit/msg
b) 1.75 bits/msg
c) 3.32 bits/msg
d) 5.93 bits/msg

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Communication (BTN04501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) State and prove Sampling Theorem.
b) What is a Duo Binary signaling scheme, discuss the Duo binary encoder & decoder in detail?
c) Illustrate with a neat diagram Baseband binary data Transmitter.
d) State the limitations of Delta modulation.
e) Verify the expression $\mathrm{I(X;Y) = I(Y;X)}$

Q.3 Attempt the following (Any Two) **12**

a) With suitable diagram explain DPCM modulator & demodulator.
b) Discuss with a neat diagram different formats of line coding for the given sequence 10111001.
c) There 6 different source symbols, with the following frequencies of occurrences {0.30, 0.25,0.20, 0.12, 0.08, 0.05}. Estimate the efficiency of the code using Shannon Fano Encoding Algorithm. (M=2)

Section – II

Q.4 Attempt the following (Any Four) **16**

a) Explain generation of ASK from baseband signal.
b) State advantages and disadvantages of spread spectrum techniques.
c) Explain Matched Filter BPSK Detector.
d) Find the systematic (7,4) cyclic code for message [0 1 1 1] and $g(x) = 1 + x + x3$
e) With suitable example & diagram explain FHSS. What are its types?

Q.5 Attempt the following (Any Two) **12**

a) With suitable waveforms explain QPSK & OQPSK.
b) An error control code has the following parity check matrix.

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

i) Determine the generator matrix G
ii) Find the code word that begin with 101
iii) Decode the received code word 1 1 0 1 1 0

c) Explain QAM modulator and demodulator.

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Communication (BTN04501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) Error-correcting techniques that allow for correction at the receiver are called _____.
a) Cyclic redundancy checks (CRC)
b) Block-check characters (BCC)
c) Forward error correcting (FEC)
d) Parity

2) The probability of error for M-ary FSK decreases as _____.
a) M decreases b) M increases
c) M constant d) None of these

3) The early late gate synchronizer is a technique used for _____.
a) carrier synchronization b) symbol synchronization
c) frame synchronization d) None of these

4) Some advantages of spread spectrum are _____.
a) Low susceptibility b) Immunity to jamming
c) Reduced interference d) All of the mentioned

5) The advantage(s) of digital and/or data communications over analog include _____.
a) Noise performance b) Regeneration
c) Digital signal processing d) All the above

6) In an S/H circuit, the time that it must hold the sampled voltage is _____.
a) Aperture time b) Acquisition time
c) Flat-top time d) $D_{\min}$

7) Error signals associated with the sampling process are called _____.
a) Foldover distortion
b) Aliasing
c) Nyquist rate
d) Fold over distortion and aliasing

8) Which of the following is not a common RZ code?
a) RZ-unipolar b) RZ-bipolar
c) RZ-M d) RZ-AMI

9) A CD audio laser-disk system has a frequency bandwidth of 20 Hz to 20 kHz. The minimum sample rate to satisfy the Nyquist criteria is _____.
a) $20H_Z$ b) $20KH_Z$
c) $40H_Z$ d) $40KH_Z$

10) The quantizing error of PCM systems for weak signals can be made less significant by _____.
a) Companding
b) Using time-division multiplexing
c) Using Frequency-division multiplexing
d) Filtering out the alias frequency

11) The entropy of a message source generating 4 messages with probabilities 0.5, 0.25, 0.125 & 0.125 is _____.
a) 1 bit/msg b) 1.75 bits/msg
c) 3.32 bits/msg d) 5.93 bits/msg

12) When the message and the BCC are transmitted as separate parts within the same transmitted code, it is called a(n) _____.
a) Systematic code b) CRC
c) (n, k) cyclic code d) Interleaved code

13) The value left in the CRC dividing circuit after all data have been shifted in is the _____.
a) Quantile interval b) Codec
c) BCC d) Syndrome

14) Which of the following is not an example of code error detection and correction in a data communication channel?
a) Parity b) FSK
c) Block check character d) Hamming code

Seat No.		Set	R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Communication (BTN04501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt the following (Any Four) **16**

a) State and prove Sampling Theorem.
b) What is a Duo Binary signaling scheme, discuss the Duo binary encoder & decoder in detail?
c) Illustrate with a neat diagram Baseband binary data Transmitter.
d) State the limitations of Delta modulation.
e) Verify the expression $\mathrm{I(X;Y)} = \mathrm{I(Y;X)}$

Q.3 Attempt the following (Any Two) **12**

a) With suitable diagram explain DPCM modulator & demodulator.
b) Discuss with a neat diagram different formats of line coding for the given sequence 10111001.
c) There 6 different source symbols, with the following frequencies of occurrences {0.30, 0.25,0.20, 0.12, 0.08, 0.05}. Estimate the efficiency of the code using Shannon Fano Encoding Algorithm. (M=2)

Section – II

Q.4 Attempt the following (Any Four) **16**

a) Explain generation of ASK from baseband signal.
b) State advantages and disadvantages of spread spectrum techniques.
c) Explain Matched Filter BPSK Detector.
d) Find the systematic (7,4) cyclic code for message [0 1 1 1] and $g(x) = 1 + x + x3$
e) With suitable example & diagram explain FHSS. What are its types?

Q.5 Attempt the following (Any Two) **12**

a) With suitable waveforms explain QPSK & OQPSK.
b) An error control code has the following parity check matrix.

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

i) Determine the generator matrix G
ii) Find the code word that begin with 101
iii) Decode the received code word 1 1 0 1 1 0

c) Explain QAM modulator and demodulator.

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Communication (BTN04501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) The quantizing error of PCM systems for weak signals can be made less significant by _____.
a) Companding
b) Using time-division multiplexing
c) Using Frequency-division multiplexing
d) Filtering out the alias frequency

2) The entropy of a message source generating 4 messages with probabilities 0.5, 0.25, 0.125 & 0.125 is _____.
a) 1 bit/msg b) 1.75 bits/msg
c) 3.32 bits/msg d) 5.93 bits/msg

3) When the message and the BCC are transmitted as separate parts within the same transmitted code, it is called a(n) _____.
a) Systematic code b) CRC
c) (n, k) cyclic code d) Interleaved code

4) The value left in the CRC dividing circuit after all data have been shifted in is the _____.
a) Quantile interval b) Codec
c) BCC d) Syndrome

5) Which of the following is not an example of code error detection and correction in a data communication channel?
a) Parity b) FSK
c) Block check character d) Hamming code

6) Error-correcting techniques that allow for correction at the receiver are called _____.
a) Cyclic redundancy checks (CRC)
b) Block-check characters (BCC)
c) Forward error correcting (FEC)
d) Parity

7) The probability of error for M-ary FSK decreases as _____.
a) M decreases b) M increases
c) M constant d) None of these

8) The early late gate synchronizer is a technique used for _____.
a) carrier synchronization b) symbol synchronization
c) frame synchronization d) None of these

9) Some advantages of spread spectrum are _____.
a) Low susceptibility b) Immunity to jamming
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10) The advantage(s) of digital and/or data communications over analog include _____.
a) Noise performance b) Regeneration
c) Digital signal processing d) All the above

11) In an S/H circuit, the time that it must hold the sampled voltage is _____.
a) Aperture time b) Acquisition time
c) Flat-top time d) $D_{\min}$

12) Error signals associated with the sampling process are called _____.
a) Foldover distortion
b) Aliasing
c) Nyquist rate
d) Fold over distortion and aliasing

13) Which of the following is not a common RZ code?
a) RZ-unipolar b) RZ-bipolar
c) RZ-M d) RZ-AMI

14) A CD audio laser-disk system has a frequency bandwidth of 20 Hz to 20 kHz. The minimum sample rate to satisfy the Nyquist criteria is _____.
a) 20Hz b) 20KHz
c) 40Hz d) 40KHz

SLR-GF-188

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Communication (BTN04501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) State and prove Sampling Theorem.
b) What is a Duo Binary signaling scheme, discuss the Duo binary encoder & decoder in detail?
c) Illustrate with a neat diagram Baseband binary data Transmitter.
d) State the limitations of Delta modulation.
e) Verify the expression $\mathrm{I(X;Y)} = \mathrm{I(Y;X)}$

Q.3 Attempt the following (Any Two) **12**

a) With suitable diagram explain DPCM modulator & demodulator.
b) Discuss with a neat diagram different formats of line coding for the given sequence 10111001.
c) There 6 different source symbols, with the following frequencies of occurrences {0.30, 0.25,0.20, 0.12, 0.08, 0.05}. Estimate the efficiency of the code using Shannon Fano Encoding Algorithm. (M=2)

Section – II

Q.4 Attempt the following (Any Four) **16**

a) Explain generation of ASK from baseband signal.
b) State advantages and disadvantages of spread spectrum techniques.
c) Explain Matched Filter BPSK Detector.
d) Find the systematic (7,4) cyclic code for message [0 1 1 1] and $g(x) = 1 + x + x3$
e) With suitable example & diagram explain FHSS. What are its types?

Q.5 Attempt the following (Any Two) **12**

a) With suitable waveforms explain QPSK & OQPSK.
b) An error control code has the following parity check matrix.

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

i) Determine the generator matrix G
ii) Find the code word that begin with 101
iii) Decode the received code word 1 1 0 1 1 0

c) Explain QAM modulator and demodulator.

SLR-GF-189

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) DFT of $x(n) = \{1, 0, 1, 0\}$ is _____.
a) $x(k) = \{2, 0, 2, 0\}$ b) $x(k) = \{1, 0, 1, 0\}$
c) $x(k) = \{2, 0, 1, 0\}$ d) None

2) Number of complex multiplications and complex additions required for 4 point DFT with direct computation method are _____.
a) 12, 8 respectively b) 16, 12 respectively
c) 4, 8 respectively d) 20, 16 respectively

3) The number of multipliers required for realization of FIR system is reduced if we choose _____.
a) Direct form b) Cascade form
c) Parallel form d) Linear phase realization

4) The DFT of the signal $x(n) = \{0,\ 3,\ 0,\ -3\}$ _____.
a) $\{0, -2, 0, 2\}$ b) $\{0, -6j, 0, 6j\}$
c) $\{2, -6j, 0, 6j\}$ d) $\{2, -6j, -2, 6j\}$

5) The number of complex multiplications required DIT FFT algorithm to compute N point DFT is _____.
a) N^2 b) $N\log_2 N$
c) $(N/2)\log_2 N$ d) None of the above

6) If the linear convolution $x1 = [1, 2, 3, 4]$ and $x2 = [1, 2, 3]$ is $\{1,4,10,16,17,12\}$, the 4 point circular convolution between $x1$ & $x2$ will be _____.
a) $\{1,4,10,16\}$ b) $\{10,16,17,12\}$
c) $\{13,21,16,17\}$ d) $\{18,16,10,16\}$

7) Consider the signals $x1 = [1,2,3,4]$ and $x2 = [1, 2, 3]$. We can get the linear convolution between $x1$ & $x2$ by taking N point circular convolution if minimum value of N is _____.
a) 7 b) 5
c) 6 d) 8

8) The addressing mode that is convenient for FFT computation is _____.
a) Indirect addressing b) Circular mode addressing
c) Bit reversed addressing d) Memory mapped addressing

9) IIR filters are _____.
a) Recursive type
b) Non recursive type
c) Neither recursive nor non recursive
d) None of the above

10) In impulse invariant transformation, relation between Ω and ω is _____.
a) $\Omega = \omega T$ b) $\Omega = \omega/T$
c) $\omega = \tan(\Omega T)$ d) $\Omega = (T/2)\tan(\omega T/2)$

11) Butterworth filters have _____.
a) Wide transition region
b) Sharp transition region
c) Oscillation in transition region
d) Maximally flat passband

12) The poles of the Butterworth LPF with cutoff frequency Ωc _____.
a) lie on the unit circle in s plane
b) lie on the RHS of s plane
c) lie on a circle of radius Ωc
d) none of these

13) Which of the following is true for FIR filters?
a) They have linear phase b) Are always stable
c) They are all zero filters d) All above true

14) When carrying out floating point additions the operands should be normalized to have the same exponent. This is achieved by which of the following unit?
a) Multiply & accumulate (MAC)
b) Arithmetic & Logic unit
c) Shifter
d) Guards bits

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate neat marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four of the followings. **16**

a) State and prove circular time reversal property of DFT of a DT signal.

b) If $x(n) = \{4, 5, 3, 2\}$ Determine
i) $x1(n) = x\big((-n)\big)_4$
ii) $x2(n) = x\big((n-1)\big)_4$

c) Compute IDFT of $\mathrm{X(k)} = \{21, -1 + 4\mathrm{j}, 1, -1 - 4\mathrm{j}\}$

d) Draw a direct form realization for the following linear phase FIR filter.
$$h(n) = \{1, 4, 3, 7, 3, 4, 1\}$$

e) Compute 4 point circular convolution of sequences
$x(n) = \{1\ 4\ 3\}$ & $h(n) = \{2,5,1,4\}$

Q.3 Solve any two of the followings. **12**

a) List out the similarities and differences between DIT and DIF algorithms. Find DFT of the sequence $x(n) = \{3, 2, 5, 2\}$ using DIT FFT algorithm.

b) Obtain Direct form I, Direct form II realizations for the system.
$$y(n) = -0.1y(n-1) + 0.2y(n-2) + 3x(n) + 3.6x(n-1) + 0.6\,x(n-2)$$

c) Obtain the output of a filter using overlap & add method whose input & impulse response are as below.
$$x(n) = \{1,2,1,3,1,4,1,5,1,6\} \text{ \& } h(n) = \{1\ 2\ 3\}$$

Section – II

Q.4 Solve any four of the followings. **16**

a) Explain in detail Multiply & Accumulate (MAC) unit of digital signal processor.

b) What is signal flow graph? How to obtain signal flow graph for a given direct form structure? Explain with example.

c) Draw and explain the barrel shifter block of DSP chip.

d) Convert the analog filter to digital filter whose system function is
$$H(s) = \frac{(s + 0.3)}{(s + 0.3)^2 + 16}$$
Use bilinear transformation. Assume T = 1s.

e) Given the desired specifications $\Omega\mathrm{p}, \Omega s, \delta 1, \delta 2$ of Butterworth filter derive the relation for obtaining order N & cutoff frequency Ωc.

Q.5 Solve any two of the followings. **12**

a) Explain impulse invariant method along with the mapping between s domain & z domain.

b) Design a digital Butterworth filter to meet the following constraints.

$$0.9 \leq \left|H(e^{j\omega})\right| \leq 1 \qquad 0 \leq \omega \leq 0.5\pi$$

$$\left|H(e^{j\omega})\right| \leq 0.2 \qquad 0.75\pi \leq \omega \leq \pi$$

Using Bilinear transformation. Use T = 1 sec

c) Explain in brief how to design an FIR filter using windowing method. Compare different window characteristics based on transition width and stop band attenuation.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The addressing mode that is convenient for FFT computation is _____.
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a) Recursive type
b) Non recursive type
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3) In impulse invariant transformation, relation between Ω and ω is _____.
a) $\Omega = \omega T$ b) $\Omega = \omega/T$
c) $\omega = \tan(\Omega T)$ d) $\Omega = (T/2)\tan(\omega T/2)$

4) Butterworth filters have _____.
a) Wide transition region
b) Sharp transition region
c) Oscillation in transition region
d) Maximally flat passband

5) The poles of the Butterworth LPF with cutoff frequency Ω_c _____.
a) lie on the unit circle in s plane
b) lie on the RHS of s plane
c) lie on a circle of radius Ω_c
d) none of these

6) Which of the following is true for FIR filters?
a) They have linear phase b) Are always stable
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7) When carrying out floating point additions the operands should be normalized to have the same exponent. This is achieved by which of the following unit?
a) Multiply & accumulate (MAC)
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8) DFT of $x(n) = \{1, 0, 1, 0\}$ is _____.
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c) $\{2, -6\text{j}, 0, 6\text{j}\}$ d) $\{2, -6\text{j}, -2, 6\text{j}\}$

12) The number of complex multiplications required DIT FFT algorithm to compute N point DFT is _____.
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13) If the linear convolution $x1 = [1, 2, 3, 4]$ and $x2 = [1, 2, 3]$ is $\{1,4,10,16,17,12\}$, the 4 point circular convolution between $x1$ & $x2$ will be _____.
a) $\{1,4,10,16\}$ b) $\{10,16,17,12\}$
c) $\{13,21,16,17\}$ d) $\{18,16,10,16\}$

14) Consider the signals $x1 = [1,2\ ,3,4]$ and $x2 = [1, 2, 3]$. We can get the linear convolution between $x1$ & $x2$ by taking N point circular convolution if minimum value of N is _____.
a) 7 b) 5
c) 6 d) 8

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate neat marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four of the followings. **16**

a) State and prove circular time reversal property of DFT of a DT signal.

b) If $x(n) = \{4, 5, 3, 2\}$ Determine
i) $x1(n) = x\big((-n)\big)_4$
ii) $x2(n) = x\big((n-1)\big)_4$

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d) Draw a direct form realization for the following linear phase FIR filter.
$$h(n) = \{1, 4, 3, 7, 3, 4, 1\}$$

e) Compute 4 point circular convolution of sequences
$x(n) = \{1\ 4\ 3\}$ & $h(n) = \{2,5,1,4\}$

Q.3 Solve any two of the followings. **12**

a) List out the similarities and differences between DIT and DIF algorithms. Find DFT of the sequence $x(n) = \{3, 2, 5, 2\}$ using DIT FFT algorithm.

b) Obtain Direct form I, Direct form II realizations for the system.
$$y(n) = -0.1y(n-1) + 0.2y(n-2) + 3x(n) + 3.6x(n-1) + 0.6\,x(n-2)$$

c) Obtain the output of a filter using overlap & add method whose input & impulse response are as below.
$$x(n) = \{1,2,1,3,1,4,1,5,1,6\} \text{ \& } h(n) = \{1\ 2\ 3\}$$

Section – II

Q.4 Solve any four of the followings. **16**

a) Explain in detail Multiply & Accumulate (MAC) unit of digital signal processor.

b) What is signal flow graph? How to obtain signal flow graph for a given direct form structure? Explain with example.

c) Draw and explain the barrel shifter block of DSP chip.

d) Convert the analog filter to digital filter whose system function is
$$H(s) = \frac{(s + 0.3)}{(s + 0.3)^2 + 16}$$
Use bilinear transformation. Assume T = 1s.

e) Given the desired specifications $\Omega\mathrm{p}, \Omega s, \delta 1, \delta 2$ of Butterworth filter derive the relation for obtaining order N & cutoff frequency Ωc.

Q.5 Solve any two of the followings. **12**

a) Explain impulse invariant method along with the mapping between s domain & z domain.

b) Design a digital Butterworth filter to meet the following constraints.

$$0.9 \leq \left|H(e^{j\omega})\right| \leq 1 \qquad 0 \leq \omega \leq 0.5\pi$$

$$\left|H(e^{j\omega})\right| \leq 0.2 \qquad 0.75\pi \leq \omega \leq \pi$$

Using Bilinear transformation. Use T = 1 sec

c) Explain in brief how to design an FIR filter using windowing method. Compare different window characteristics based on transition width and stop band attenuation.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Butterworth filters have _____.
a) Wide transition region
b) Sharp transition region
c) Oscillation in transition region
d) Maximally flat passband

2) The poles of the Butterworth LPF with cutoff frequency Ωc _____.
a) lie on the unit circle in s plane
b) lie on the RHS of s plane
c) lie on a circle of radius Ωc
d) none of these

3) Which of the following is true for FIR filters?
a) They have linear phase b) Are always stable
c) They are all zero filters d) All above true

4) When carrying out floating point additions the operands should be normalized to have the same exponent. This is achieved by which of the following unit?
a) Multiply & accumulate (MAC)
b) Arithmetic & Logic unit
c) Shifter
d) Guards bits

5) DFT of $x(n) = \{1, 0, 1, 0\}$ is _____.
a) $x(k) = \{2, 0, 2, 0\}$ b) $x(k) = \{1, 0, 1, 0\}$
c) $x(k) = \{2, 0, 1, 0\}$ d) None

6) Number of complex multiplications and complex additions required for 4 point DFT with direct computation method are _____.
a) 12, 8 respectively b) 16, 12 respectively
c) 4, 8 respectively d) 20, 16 respectively

7) The number of multipliers required for realization of FIR system is reduced if we choose _____.
a) Direct form b) Cascade form
c) Parallel form d) Linear phase realization

8) The DFT of the signal $x(n) = \{0,\ 3,\ 0,\ -3\}$ _____.
a) $\{0, -2, 0, 2\}$ b) $\{0, -6\text{j}, 0, 6\text{j}\}$
c) $\{2, -6\text{j}, 0, 6\text{j}\}$ d) $\{2, -6\text{j}, -2, 6\text{j}\}$

9) The number of complex multiplications required DIT FFT algorithm to compute N point DFT is _____.
a) N^2 b) $N\log_2 N$
c) $(N/2)\log_2 N$ d) None of the above

10) If the linear convolution $x1 = [1, 2, 3, 4]$ and $x2 = [1, 2, 3]$ is $\{1,4,10,16,17,12\}$, the 4 point circular convolution between $x1$ & $x2$ will be _____.
a) $\{1,4,10,16\}$ b) $\{10,16,17,12\}$
c) $\{13,21,16,17\}$ d) $\{18,16,10,16\}$

11) Consider the signals $x1 = [1,2\ ,3,4]$ and $x2 = [1, 2, 3]$. We can get the linear convolution between $x1$ & $x2$ by taking N point circular convolution if minimum value of N is _____.
a) 7 b) 5
c) 6 d) 8

12) The addressing mode that is convenient for FFT computation is _____.
a) Indirect addressing b) Circular mode addressing
c) Bit reversed addressing d) Memory mapped addressing

13) IIR filters are _____.
a) Recursive type
b) Non recursive type
c) Neither recursive nor non recursive
d) None of the above

14) In impulse invariant transformation, relation between Ω and ω is _____.
a) $\Omega = \omega\text{T}$ b) $\Omega = \omega/\text{T}$
c) $\omega = \tan(\Omega\text{T})$ d) $\Omega = (\text{T}/2)\tan(\omega\text{T}/2)$

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate neat marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four of the followings. **16**

a) State and prove circular time reversal property of DFT of a DT signal.

b) If $x(n) = \{4, 5, 3, 2\}$ Determine

i) $x1(n) = x\big((-n)\big)_4$

ii) $x2(n) = x\big((n-1)\big)_4$

c) Compute IDFT of $\mathrm{X(k)} = \{21, -1 + 4\mathrm{j}, 1, -1 - 4\mathrm{j}\}$

d) Draw a direct form realization for the following linear phase FIR filter.

$$h(n) = \{1, 4, 3, 7, 3, 4, 1\}$$

e) Compute 4 point circular convolution of sequences
$x(n) = \{1\ 4\ 3\}$ & $h(n) = \{2,5,1,4\}$

Q.3 Solve any two of the followings. **12**

a) List out the similarities and differences between DIT and DIF algorithms. Find DFT of the sequence $x(n) = \{3, 2, 5, 2\}$ using DIT FFT algorithm.

b) Obtain Direct form I, Direct form II realizations for the system.

$$y(n) = -0.1y(n-1) + 0.2y(n-2) + 3x(n) + 3.6x(n-1) + 0.6\,x(n-2)$$

c) Obtain the output of a filter using overlap & add method whose input & impulse response are as below.

$$x(n) = \{1,2,1,3,1,4,1,5,1,6\} \text{ \& } h(n) = \{1\ 2\ 3\}$$

Section – II

Q.4 Solve any four of the followings. **16**

a) Explain in detail Multiply & Accumulate (MAC) unit of digital signal processor.

b) What is signal flow graph? How to obtain signal flow graph for a given direct form structure? Explain with example.

c) Draw and explain the barrel shifter block of DSP chip.

d) Convert the analog filter to digital filter whose system function is

$$H(s) = \frac{(s + 0.3)}{(s + 0.3)^2 + 16}$$

Use bilinear transformation. Assume T = 1s.

e) Given the desired specifications $\Omega\mathrm{p}, \Omega s, \delta 1, \delta 2$ of Butterworth filter derive the relation for obtaining order N & cutoff frequency Ωc.

Q.5 Solve any two of the followings. **12**

a) Explain impulse invariant method along with the mapping between s domain & z domain.

b) Design a digital Butterworth filter to meet the following constraints.

$$0.9 \leq \left|H(e^{j\omega})\right| \leq 1 \qquad 0 \leq \omega \leq 0.5\pi$$

$$\left|H(e^{j\omega})\right| \leq 0.2 \qquad 0.75\pi \leq \omega \leq \pi$$

Using Bilinear transformation. Use T = 1 sec

c) Explain in brief how to design an FIR filter using windowing method. Compare different window characteristics based on transition width and stop band attenuation.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If the linear convolution $x1 = [1, 2, 3, 4]$ and $x2 = [1, 2, 3]$ is $\{1,4,10,16,17,12\}$, the 4 point circular convolution between $x1$ & $x2$ will be _____.
a) $\{1,4,10,16\}$ b) $\{10,16,17,12\}$
c) $\{13,21,16,17\}$ d) $\{18,16,10,16\}$

2) Consider the signals $x1 = [1,2\ ,3,4]$ and $x2 = [1, 2, 3]$. We can get the linear convolution between $x1$ & $x2$ by taking N point circular convolution if minimum value of N is _____.
a) 7 b) 5
c) 6 d) 8

3) The addressing mode that is convenient for FFT computation is _____.
a) Indirect addressing b) Circular mode addressing
c) Bit reversed addressing d) Memory mapped addressing

4) IIR filters are _____.
a) Recursive type
b) Non recursive type
c) Neither recursive nor non recursive
d) None of the above

5) In impulse invariant transformation, relation between Ω and ω is _____.
a) $\Omega = \omega T$ b) $\Omega = \omega/T$
c) $\omega = \tan(\Omega T)$ d) $\Omega = (T/2)\tan(\omega T/2)$

6) Butterworth filters have _____.
a) Wide transition region
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7) The poles of the Butterworth LPF with cutoff frequency Ωc _____.
a) lie on the unit circle in s plane
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8) Which of the following is true for FIR filters?
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9) When carrying out floating point additions the operands should be normalized to have the same exponent. This is achieved by which of the following unit?
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10) DFT of $x(n) = \{1, 0, 1, 0\}$ is _____.
a) $x(k) = \{2, 0, 2, 0\}$ b) $x(k) = \{1, 0, 1, 0\}$
c) $x(k) = \{2, 0, 1, 0\}$ d) None

11) Number of complex multiplications and complex additions required for 4 point DFT with direct computation method are _____.
a) 12, 8 respectively b) 16, 12 respectively
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a) Direct form b) Cascade form
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13) The DFT of the signal $x(n) = \{0,\ 3,\ 0,\ -3\}$ _____.
a) $\{0, -2, 0, 2\}$ b) $\{0, -6\text{j}, 0, 6\text{j}\}$
c) $\{2, -6\text{j}, 0, 6\text{j}\}$ d) $\{2, -6\text{j}, -2, 6\text{j}\}$

14) The number of complex multiplications required DIT FFT algorithm to compute N point DFT is _____.
a) N^2 b) $N\log_2 N$
c) $(N/2)\log_2 N$ d) None of the above

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Digital Signal Processing (BTN04502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate neat marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four of the followings. **16**

a) State and prove circular time reversal property of DFT of a DT signal.

b) If $x(n) = \{4, 5, 3, 2\}$ Determine
i) $x1(n) = x\big((-n)\big)_4$
ii) $x2(n) = x\big((n-1)\big)_4$

c) Compute IDFT of $\mathrm{X(k)} = \{21, -1 + 4\mathrm{j}, 1, -1 - 4\mathrm{j}\}$

d) Draw a direct form realization for the following linear phase FIR filter.
$$h(n) = \{1, 4, 3, 7, 3, 4, 1\}$$

e) Compute 4 point circular convolution of sequences
$x(n) = \{1\ 4\ 3\}$ & $h(n) = \{2,5,1,4\}$

Q.3 Solve any two of the followings. **12**

a) List out the similarities and differences between DIT and DIF algorithms. Find DFT of the sequence $x(n) = \{3, 2, 5, 2\}$ using DIT FFT algorithm.

b) Obtain Direct form I, Direct form II realizations for the system.
$$y(n) = -0.1y(n-1) + 0.2y(n-2) + 3x(n) + 3.6x(n-1) + 0.6\,x(n-2)$$

c) Obtain the output of a filter using overlap & add method whose input & impulse response are as below.
$$x(n) = \{1,2,1,3,1,4,1,5,1,6\} \text{ \& } h(n) = \{1\ 2\ 3\}$$

Section – II

Q.4 Solve any four of the followings. **16**

a) Explain in detail Multiply & Accumulate (MAC) unit of digital signal processor.

b) What is signal flow graph? How to obtain signal flow graph for a given direct form structure? Explain with example.

c) Draw and explain the barrel shifter block of DSP chip.

d) Convert the analog filter to digital filter whose system function is
$$H(s) = \frac{(s + 0.3)}{(s + 0.3)^2 + 16}$$
Use bilinear transformation. Assume T = 1s.

e) Given the desired specifications $\Omega\mathrm{p}, \Omega s, \delta 1, \delta 2$ of Butterworth filter derive the relation for obtaining order N & cutoff frequency Ωc.

Q.5 Solve any two of the followings. **12**

a) Explain impulse invariant method along with the mapping between s domain & z domain.

b) Design a digital Butterworth filter to meet the following constraints.

$$0.9 \leq \left|H(e^{j\omega})\right| \leq 1 \qquad 0 \leq \omega \leq 0.5\pi$$

$$\left|H(e^{j\omega})\right| \leq 0.2 \qquad 0.75\pi \leq \omega \leq \pi$$

Using Bilinear transformation. Use T = 1 sec

c) Explain in brief how to design an FIR filter using windowing method. Compare different window characteristics based on transition width and stop band attenuation.

SLR-GF-190

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Saturday,30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) MOV A, @R1 will: _____.
a) copy R1 to the accumulator
b) copy the accumulator to R1
c) copy the contents of memory whose address is in R1 to the accumulator
d) copy the accumulator to the contents of memory whose address is in R1

2) Which of the following is directly connected to the ALU?
a) Program counter b) Instruction pointer
c) Accumulator d) Stack pointer

3) Which of the following is used for storing flag bits?
a) Status register b) Control register
c) Buffer register d) None of the mentioned

4) The I/O ports that are used as address and data for external memory are: _____.
a) ports 1 and 2 b) ports 1 and 3
c) ports 0 and 2 d) ports 0 and 3

5) What is the frequency of the clock that is being used as the clock source for the timer in timer mode?
a) some externally applied frequency f'
b) controller's crystal frequency f
c) controller's crystal frequency /12
d) externally applied frequency / 12

6) Operating 8051 in mode2 what is the maximum delay that can be generated with the crystal frequency of 11.0592 MHz?
a) 277 seconds b) 277 ms
c) 277 microseconds d) 2.97 ms

7) How many rows and columns are present in a 16*2 alphanumeric LCD?
a) rows=2, columns=32 b) rows=16, columns=2
c) rows=16, columns=16 d) rows=2, columns=16

8) Eight input DAC has _____.
a) 8 discrete voltage levels b) 64 discrete voltage levels
c) 124 discrete voltage levels d) 256 discrete voltage levels

9) The PIC 16F877 has _____ on chip flash program memory.
a) 4K x 8 bytes b) 4K x 14 words
c) 8K x 8 bytes d) 8K x 14 words

10) What is the address of the last location of on-chip flash program memory for PIC 16F877?
a) 0FFF h b) 1FFF h
c) FFFF h d) 7FFF h

11) In PIC 16F877 the _____ module is with prescaler and postscaler.
a) Timer 0 b) Timer 2
c) Timer 1 d) Timer 3

12) Operating CCP1 module in PWM mode, PWM period can be set by writing to _____ register.
a) PR1 b) TMR2
c) PR2 d) CCP1RL

13) Which of the following is shows the top of stack?
a) Program counter b) Instruction pointer
c) Accumulator d) Stack pointer

14) The interrupt vector address of serial interrupt in 8051 is: _____.
a) 0003h b) 0013h
c) 000Bh d) 0023h

SLR-GF-190

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Saturday,30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any Four **16**

a) Define T-state, machine cycle, and instruction cycle.
b) Compare microprocessor and microcontroller.
c) Write an assembly program to add two 32 bit numbers.
d) Differentiate MOV, MOVX, and MOVC instructions with examples.
e) Draw and explain bit format of status (PSW) register in 8051?

Q.3 Solve any Two **12**

a) Write a 8051 program to transfer “YES” serially with mode 1 and baud rate of 9600.
b) Write an 8051 assembly program to generate a square wave of 50 Hz frequency on pin P2.3. Assume XTAL= 11.0592MHz. Use Timer interrupt.
c) Write a program to count positive numbers form a given array of 10 elements.

Section – II

Q.4 Solve Any Four **16**

a) Evaluate the following control pins of ADC 0808: ALE, SOC, EOC, OE.
b) Explain the use of CPU registers in PIC 16F877.
c) What the following instruction does?
1) BTFSS
2) DECFSZ
3) RETLW
4) IORWF
d) Interface 8 LEDs to 8051 and write a program to turn on and off alternate LEDs continuously.
e) List out the features of PIC16F877.

Q.5 Solve Any Two **12**

a) Draw and explain interfacing of 16*2 LCD to 8051. Write a program to display “YES” from second row-fifth column.
b) Draw and explain interfacing of DAC to 8051. Write a program
1) To generate triangular wave
2) To generate a saw tooth wave
c) How do you use the PORT D as PSP? Explain the different control signals and flags used in PSP communication.

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Saturday,30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Eight input DAC has _____.
a) 8 discrete voltage levels b) 64 discrete voltage levels
c) 124 discrete voltage levels d) 256 discrete voltage levels

2) The PIC 16F877 has _____ on chip flash program memory.
a) 4K x 8 bytes b) 4K x 14 words
c) 8K x 8 bytes d) 8K x 14 words

3) What is the address of the last location of on-chip flash program memory for PIC 16F877?
a) 0FFF h b) 1FFF h
c) FFFF h d) 7FFF h

4) In PIC 16F877 the _____ module is with prescaler and postscaler.
a) Timer 0 b) Timer 2
c) Timer 1 d) Timer 3

5) Operating CCP1 module in PWM mode, PWM period can be set by writing to _____ register.
a) PR1 b) TMR2
c) PR2 d) CCP1RL

6) Which of the following is shows the top of stack?
a) Program counter b) Instruction pointer
c) Accumulator d) Stack pointer

7) The interrupt vector address of serial interrupt in 8051 is: _____.
a) 0003h b) 0013h
c) 000Bh d) 0023h

8) MOV A, @R1 will: _____.
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b) copy the accumulator to R1
c) copy the contents of memory whose address is in R1 to the accumulator
d) copy the accumulator to the contents of memory whose address is in R1

9) Which of the following is directly connected to the ALU?
a) Program counter
b) Instruction pointer
c) Accumulator
d) Stack pointer

10) Which of the following is used for storing flag bits?
a) Status register
b) Control register
c) Buffer register
d) None of the mentioned

11) The I/O ports that are used as address and data for external memory are: _____.
a) ports 1 and 2
b) ports 1 and 3
c) ports 0 and 2
d) ports 0 and 3

12) What is the frequency of the clock that is being used as the clock source for the timer in timer mode?
a) some externally applied frequency f'
b) controller's crystal frequency f
c) controller's crystal frequency /12
d) externally applied frequency / 12

13) Operating 8051 in mode2 what is the maximum delay that can be generated with the crystal frequency of 11.0592 MHz?
a) 277 seconds
b) 277 ms
c) 277 microseconds
d) 2.97 ms

14) How many rows and columns are present in a 16*2 alphanumeric LCD?
a) rows=2, columns=32
b) rows=16, columns=2
c) rows=16, columns=16
d) rows=2, columns=16

SLR-GF-190

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Saturday,30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any Four **16**

a) Define T-state, machine cycle, and instruction cycle.
b) Compare microprocessor and microcontroller.
c) Write an assembly program to add two 32 bit numbers.
d) Differentiate MOV, MOVX, and MOVC instructions with examples.
e) Draw and explain bit format of status (PSW) register in 8051?

Q.3 Solve any Two **12**

a) Write a 8051 program to transfer “YES” serially with mode 1 and baud rate of 9600.
b) Write an 8051 assembly program to generate a square wave of 50 Hz frequency on pin P2.3. Assume XTAL= 11.0592MHz. Use Timer interrupt.
c) Write a program to count positive numbers form a given array of 10 elements.

Section – II

Q.4 Solve Any Four **16**

a) Evaluate the following control pins of ADC 0808: ALE, SOC, EOC, OE.
b) Explain the use of CPU registers in PIC 16F877.
c) What the following instruction does?
1) BTFSS
2) DECFSZ
3) RETLW
4) IORWF
d) Interface 8 LEDs to 8051 and write a program to turn on and off alternate LEDs continuously.
e) List out the features of PIC16F877.

Q.5 Solve Any Two **12**

a) Draw and explain interfacing of 16*2 LCD to 8051. Write a program to display “YES” from second row-fifth column.
b) Draw and explain interfacing of DAC to 8051. Write a program
1) To generate triangular wave
2) To generate a saw tooth wave
c) How do you use the PORT D as PSP? Explain the different control signals and flags used in PSP communication.

SLR-GF-190

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Saturday,30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) In PIC 16F877 the _____ module is with prescaler and postscaler.
a) Timer 0 b) Timer 2
c) Timer 1 d) Timer 3

2) Operating CCP1 module in PWM mode, PWM period can be set by writing to _____ register.
a) PR1 b) TMR2
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a) 0003h b) 0013h
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5) MOV A, @R1 will: _____.
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c) copy the contents of memory whose address is in R1 to the accumulator
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6) Which of the following is directly connected to the ALU?
a) Program counter b) Instruction pointer
c) Accumulator d) Stack pointer

7) Which of the following is used for storing flag bits?
a) Status register b) Control register
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8) The I/O ports that are used as address and data for external memory are: _____.

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9) What is the frequency of the clock that is being used as the clock source for the timer in timer mode?

a) some externally applied frequency f'
b) controller's crystal frequency f
c) controller's crystal frequency /12
d) externally applied frequency / 12

10) Operating 8051 in mode2 what is the maximum delay that can be generated with the crystal frequency of 11.0592 MHz?

a) 277 seconds b) 277 ms
c) 277 microseconds d) 2.97 ms

11) How many rows and columns are present in a 16*2 alphanumeric LCD?

a) rows=2, columns=32 b) rows=16, columns=2
c) rows=16, columns=16 d) rows=2, columns=16

12) Eight input DAC has _____.

a) 8 discrete voltage levels b) 64 discrete voltage levels
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13) The PIC 16F877 has _____ on chip flash program memory.

a) 4K x 8 bytes b) 4K x 14 words
c) 8K x 8 bytes d) 8K x 14 words

14) What is the address of the last location of on-chip flash program memory for PIC 16F877?

a) 0FFF h b) 1FFF h
c) FFFF h d) 7FFF h

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Saturday,30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any Four **16**

a) Define T-state, machine cycle, and instruction cycle.
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d) Differentiate MOV, MOVX, and MOVC instructions with examples.
e) Draw and explain bit format of status (PSW) register in 8051?

Q.3 Solve any Two **12**

a) Write a 8051 program to transfer “YES” serially with mode 1 and baud rate of 9600.
b) Write an 8051 assembly program to generate a square wave of 50 Hz frequency on pin P2.3. Assume XTAL= 11.0592MHz. Use Timer interrupt.
c) Write a program to count positive numbers form a given array of 10 elements.

Section – II

Q.4 Solve Any Four **16**

a) Evaluate the following control pins of ADC 0808: ALE, SOC, EOC, OE.
b) Explain the use of CPU registers in PIC 16F877.
c) What the following instruction does?
1) BTFSS
2) DECFSZ
3) RETLW
4) IORWF
d) Interface 8 LEDs to 8051 and write a program to turn on and off alternate LEDs continuously.
e) List out the features of PIC16F877.

Q.5 Solve Any Two **12**

a) Draw and explain interfacing of 16*2 LCD to 8051. Write a program to display “YES” from second row-fifth column.
b) Draw and explain interfacing of DAC to 8051. Write a program
1) To generate triangular wave
2) To generate a saw tooth wave
c) How do you use the PORT D as PSP? Explain the different control signals and flags used in PSP communication.

SLR-GF-190

Seat No.	

Set S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Saturday,30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Operating 8051 in mode2 what is the maximum delay that can be generated with the crystal frequency of 11.0592 MHz?
a) 277 seconds b) 277 ms
c) 277 microseconds d) 2.97 ms

2) How many rows and columns are present in a 16*2 alphanumeric LCD?
a) rows=2, columns=32 b) rows=16, columns=2
c) rows=16, columns=16 d) rows=2, columns=16

3) Eight input DAC has _____.
a) 8 discrete voltage levels b) 64 discrete voltage levels
c) 124 discrete voltage levels d) 256 discrete voltage levels

4) The PIC 16F877 has _____ on chip flash program memory.
a) 4K x 8 bytes b) 4K x 14 words
c) 8K x 8 bytes d) 8K x 14 words

5) What is the address of the last location of on-chip flash program memory for PIC 16F877?
a) 0FFF h b) 1FFF h
c) FFFF h d) 7FFF h

6) In PIC 16F877 the _____ module is with prescaler and postscaler.
a) Timer 0 b) Timer 2
c) Timer 1 d) Timer 3

7) Operating CCP1 module in PWM mode, PWM period can be set by writing to _____ register.
a) PR1 b) TMR2
c) PR2 d) CCP1RL

8) Which of the following is shows the top of stack?
a) Program counter b) Instruction pointer
c) Accumulator d) Stack pointer

9) The interrupt vector address of serial interrupt in 8051 is: _____.

a) 0003h b) 0013h
c) 000Bh d) 0023h

10) MOV A, @R1 will: _____.

a) copy R1 to the accumulator
b) copy the accumulator to R1
c) copy the contents of memory whose address is in R1 to the accumulator
d) copy the accumulator to the contents of memory whose address is in R1

11) Which of the following is directly connected to the ALU?

a) Program counter b) Instruction pointer
c) Accumulator d) Stack pointer

12) Which of the following is used for storing flag bits?

a) Status register b) Control register
c) Buffer register d) None of the mentioned

13) The I/O ports that are used as address and data for external memory are: _____.

a) ports 1 and 2 b) ports 1 and 3
c) ports 0 and 2 d) ports 0 and 3

14) What is the frequency of the clock that is being used as the clock source for the timer in timer mode?

a) some externally applied frequency f'
b) controller's crystal frequency f
c) controller's crystal frequency /12
d) externally applied frequency / 12

SLR-GF-190

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Microcontrollers (BTN04503)

Day & Date: Saturday,30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any Four **16**

a) Define T-state, machine cycle, and instruction cycle.
b) Compare microprocessor and microcontroller.
c) Write an assembly program to add two 32 bit numbers.
d) Differentiate MOV, MOVX, and MOVC instructions with examples.
e) Draw and explain bit format of status (PSW) register in 8051?

Q.3 Solve any Two **12**

a) Write a 8051 program to transfer “YES” serially with mode 1 and baud rate of 9600.
b) Write an 8051 assembly program to generate a square wave of 50 Hz frequency on pin P2.3. Assume XTAL= 11.0592MHz. Use Timer interrupt.
c) Write a program to count positive numbers form a given array of 10 elements.

Section – II

Q.4 Solve Any Four **16**

a) Evaluate the following control pins of ADC 0808: ALE, SOC, EOC, OE.
b) Explain the use of CPU registers in PIC 16F877.
c) What the following instruction does?
1) BTFSS
2) DECFSZ
3) RETLW
4) IORWF
d) Interface 8 LEDs to 8051 and write a program to turn on and off alternate LEDs continuously.
e) List out the features of PIC16F877.

Q.5 Solve Any Two **12**

a) Draw and explain interfacing of 16*2 LCD to 8051. Write a program to display “YES” from second row-fifth column.
b) Draw and explain interfacing of DAC to 8051. Write a program
1) To generate triangular wave
2) To generate a saw tooth wave
c) How do you use the PORT D as PSP? Explain the different control signals and flags used in PSP communication.

SLR-GF-191

Seat No.	

Set P

T. Y. (B. Tech) (Sem -I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries two marks.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Assume data wherever necessary
4) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option **14**

1) While on line transaction, card details are encrypted using _____ protocol
a) NPCI b) SSL
c) SSD d) USSD

2) A technical view of the organization is about
a) how IS is used in organization
b) what is the culture of organization
c) how input is processed to produce output
d) all of these

3) _____ are subject to revision however _____ can not be modified or deleted
a) records, documents b) documents, records
c) records, archival d) archival, records

4) Collection of computing systems used by organization in information system is referred as _____
a) e infrastructure
b) information technology
c) Processes
d) All of these

5) A working model that is functionally equivalent to a component of the product is called _____
a) spiral model b) v model
c) waterfall model d) none of these

6) Which of below is a sources of data into an enterprise?
a) Clicksteram at web site b) CRM input
c) supply chain input d) all of these

7) A _____ query is simply a data retrieval query.
a) action b) get
c) select d) All of these

8) Which of below is a major disadvantage of a centralized database
   a) Expensive b) requires scheduling
   c) causes delays d) all of these

9) Which of below is not true about organizations
   a) closed system
   b) social unit
   c) interact with environment
   d) have a structure

10) OLAP is used for _____
   a) decisions b) payment
   c) content management d) all of these

11) _____ are software systems designed to support machine to machine interaction over a network
   a) programs b) data bases
   c) services d) web services

12) A company only involved in E Commerce is called
   a) brick and mortar b) click and mortar
   c) virtual organization d) B2B

13) Take an odd man out- NEFT, IRCTC, RTGS, PayTM,
   a) NEFT b) IRCTC
   c) RTGS d) PayTM

14) Information systems and organizations _____.
   a) are independent b) influence each other
   c) are efficient d) have symbols

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem -I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION I

Q.2 Solve Any Two **12**

a) Discuss benefits of E commerce to organizations and customers
b) Compare centralized and distributed databases
c) Discuss various Cloud Computing models

Q.3 Solve Any Four **16**

a) To whom and how IT supports in enterprise?
b) What are different ways to classify information systems?
c) Evaluate data management problems and challenges
d) With one suitable application discuss electronic content management
e) Justify: data visualization is vital for managers

SECTION II

Q.4 Solve Any Two **12**

a) Discuss in brief any six attributes of software project
b) Discuss need of and how supply chain management system is being implemented
c) Discuss need of and how enterprise resource planning system is being implemented

Q.5 Solve Any Four **16**

a) Discuss pros and cons of waterfall SDLC model
b) Compare OLAP and OLTP
c) Justify with example: e-waste management is a need of an hour
d) What is green IT? How it can be practiced?
e) What are the features of modern organization? How IS helps modern organizations?

SLR-GF-191

Seat No.		Set	Q

T. Y. (B. Tech) (Sem -I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) causes delays d) all of these

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c) interact with environment
d) have a structure

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   a) how IS is used in organization
   b) what is the culture of organization
   c) how input is processed to produce output
   d) all of these

10) _____ are subject to revision however _____ can not be modified or deleted
   a) records, documents b) documents, records
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11) Collection of computing systems used by organization in information system is referred as _____
   a) e infrastructure
   b) information technology
   c) Processes
   d) All of these

12) A working model that is functionally equivalent to a component of the product is called _____
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Seat No.	

Set Q

T. Y. (B. Tech) (Sem -I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

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SECTION I

Q.2 Solve Any Two **12**

a) Discuss benefits of E commerce to organizations and customers
b) Compare centralized and distributed databases
c) Discuss various Cloud Computing models

Q.3 Solve Any Four **16**

a) To whom and how IT supports in enterprise?
b) What are different ways to classify information systems?
c) Evaluate data management problems and challenges
d) With one suitable application discuss electronic content management
e) Justify: data visualization is vital for managers

SECTION II

Q.4 Solve Any Two **12**

a) Discuss in brief any six attributes of software project
b) Discuss need of and how supply chain management system is being implemented
c) Discuss need of and how enterprise resource planning system is being implemented

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a) Discuss pros and cons of waterfall SDLC model
b) Compare OLAP and OLTP
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d) What is green IT? How it can be practiced?
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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem -I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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3) Assume data wherever necessary
4) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option **14**

1) _____ are software systems designed to support machine to machine interaction over a network
a) programs b) data bases
c) services d) web services

2) A company only involved in E Commerce is called
a) brick and mortar b) click and mortar
c) virtual organization d) B2B

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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem -I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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SECTION I

Q.2 Solve Any Two **12**

a) Discuss benefits of E commerce to organizations and customers
b) Compare centralized and distributed databases
c) Discuss various Cloud Computing models

Q.3 Solve Any Four **16**

a) To whom and how IT supports in enterprise?
b) What are different ways to classify information systems?
c) Evaluate data management problems and challenges
d) With one suitable application discuss electronic content management
e) Justify: data visualization is vital for managers

SECTION II

Q.4 Solve Any Two **12**

a) Discuss in brief any six attributes of software project
b) Discuss need of and how supply chain management system is being implemented
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SLR-GF-191

Seat No.		Set	S

T. Y. (B. Tech) (Sem -I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-GF-191

Seat No.	

Set S

T. Y. (B. Tech) (Sem -I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Information Technology and Management (BTN04513)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
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SECTION I

Q.2 Solve Any Two **12**

a) Discuss benefits of E commerce to organizations and customers
b) Compare centralized and distributed databases
c) Discuss various Cloud Computing models

Q.3 Solve Any Four **16**

a) To whom and how IT supports in enterprise?
b) What are different ways to classify information systems?
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SECTION II

Q.4 Solve Any Two **12**

a) Discuss in brief any six attributes of software project
b) Discuss need of and how supply chain management system is being implemented
c) Discuss need of and how enterprise resource planning system is being implemented

Q.5 Solve Any Four **16**

a) Discuss pros and cons of waterfall SDLC model
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e) What are the features of modern organization? How IS helps modern organizations?

SLR-GF-192

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Demand is determined by _____.
a) Price of the product b) Relative prices of other goods
c) Tastes d) All of the above

2) Which of the following is the best definition of managerial economics? Managerial economics is ____.
a) a distinct field of economic theory
b) a field that applies economic theory and the tools of decision science
c) a field that combines economics theory and mathematics
d) None of theses

3) Micro economy deals with _____.
a) Whole economy b) Smaller unit if economy
c) Only public sector d) Only private sector

4) Which of the following is determinant of demand?
a) the price of a substitute good
b) the price of a complement good
c) the price of the good next month
d) All of the above

5) The demand curve for a normal good shifts leftward if income _____ or the expected future price _____.
a) decreases; falls b) increases; rises
c) increase; falls d) decreases; rises

6) Cross elasticity of demand is:
a) Negative for complementary goods
b) Negative for substitute goods
c) Unitary for inferior goods
d) Positive for inferior goods

7) Barometric methods are used to forecast
a) seasonal variation b) secular trend
c) cyclical variation d) irregular variation

8) A _____ is the legal minimum price.
a) Price ceiling
b) Price floors
c) Market price
d) None of the above

9) The law of demand states that the quantity of a good demanded varies
a) inversely with its price
b) directly with population
c) directly with income
d) inversely with the price of substitute goods

10) Linear regression is most similar to
a) The trend projection method of forecasting
b) The simple moving average method of forecasting
c) The weighted moving average method of forecasting
d) The native method of forecasting

11) Implicit costs are:
a) equal to total fixed costs
b) comprised entirely of variable costs
c) “payments” for self-employed resources
d) always greater in the short run than in the long run

12) Which of the following costs are expenses that change in proportion to the activity of a business?
a) Variable cost
b) Fixed cost
c) Material cost
d) All of the above

13) Firms in a monopolistic market are price.
a) Takers
b) Givers
c) Makers
d) Acceptor

14) Which of the following is the least competitive market structure?
a) Perfect competition
b) Monopolistic competition
c) Oligopoly
d) Monopoly

SLR-GF-192

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the significance and limitations of Managerial Economics.
b) State the difference between Microeconomics and Macroeconomics.
c) Explain the following terms
1) Demand
2) Market demand
3) Supply
4) Market equilibrium
d) Explain elasticity of supply. Also state the factors affecting the elasticity of supply.
e) Explain the concept elasticity of demand in detail

Q.3 Solve any Two **12**

a) Explain demand utility and consumer demand analysis.
b) State and explain the determinants of demands.
c) Explain Elasticity of supply. State the factors affecting elasticity of supply.

Section – II

Q.4 Solve any Four. **16**

a) Describe Survey Methods for demand forecasting.
b) Explain Barometric Method for demand forecasting.
c) Explain the concept demand side of market.
d) Explain the concept profit margin of safety.
e) Explain different market structures.

Q.5 Solve any Two. **12**

a) State and explain the characteristics of market structure.
b) Explain break even analysis in detail. What is profit margin of safety.
c) Explain the impact of linear cost and revenue functions on breakeven analysis.

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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3) Linear regression is most similar to
a) The trend projection method of forecasting
b) The simple moving average method of forecasting
c) The weighted moving average method of forecasting
d) The native method of forecasting

4) Implicit costs are:
a) equal to total fixed costs
b) comprised entirely of variable costs
c) "payments" for self-employed resources
d) always greater in the short run than in the long run

5) Which of the following costs are expenses that change in proportion to the activity of a business?
a) Variable cost
b) Fixed cost
c) Material cost
d) All of the above

6) Firms in a monopolistic market are price.
a) Takers b) Givers
c) Makers d) Acceptor

7) Which of the following is the least competitive market structure?
a) Perfect competition b) Monopolistic competition
c) Oligopoly d) Monopoly

8) Demand is determined by _____.
a) Price of the product
b) Relative prices of other goods
c) Tastes
d) All of the above

9) Which of the following is the best definition of managerial economics? Managerial economics is ____.
a) a distinct field of economic theory
b) a field that applies economic theory and the tools of decision science
c) a field that combines economics theory and mathematics
d) None of theses

10) Micro economy deals with _____.
a) Whole economy
b) Smaller unit if economy
c) Only public sector
d) Only private sector

11) Which of the following is determinant of demand?
a) the price of a substitute good
b) the price of a complement good
c) the price of the good next month
d) All of the above

12) The demand curve for a normal good shifts leftward if income _____ or the expected future price _____.
a) decreases; falls
b) increases; rises
c) increase; falls
d) decreases; rises

13) Cross elasticity of demand is:
a) Negative for complementary goods
b) Negative for substitute goods
c) Unitary for inferior goods
d) Positive for inferior goods

14) Barometric methods are used to forecast
a) seasonal variation
b) secular trend
c) cyclical variation
d) irregular variation

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Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the significance and limitations of Managerial Economics.
b) State the difference between Microeconomics and Macroeconomics.
c) Explain the following terms
1) Demand
2) Market demand
3) Supply
4) Market equilibrium
d) Explain elasticity of supply. Also state the factors affecting the elasticity of supply.
e) Explain the concept elasticity of demand in detail

Q.3 Solve any Two **12**

a) Explain demand utility and consumer demand analysis.
b) State and explain the determinants of demands.
c) Explain Elasticity of supply. State the factors affecting elasticity of supply.

Section – II

Q.4 Solve any Four. **16**

a) Describe Survey Methods for demand forecasting.
b) Explain Barometric Method for demand forecasting.
c) Explain the concept demand side of market.
d) Explain the concept profit margin of safety.
e) Explain different market structures.

Q.5 Solve any Two. **12**

a) State and explain the characteristics of market structure.
b) Explain break even analysis in detail. What is profit margin of safety.
c) Explain the impact of linear cost and revenue functions on breakeven analysis.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Implicit costs are:
a) equal to total fixed costs
b) comprised entirely of variable costs
c) "payments" for self-employed resources
d) always greater in the short run than in the long run

2) Which of the following costs are expenses that change in proportion to the activity of a business?
a) Variable cost
b) Fixed cost
c) Material cost
d) All of the above

3) Firms in a monopolistic market are price.
a) Takers b) Givers
c) Makers d) Acceptor

4) Which of the following is the least competitive market structure?
a) Perfect competition b) Monopolistic competition
c) Oligopoly d) Monopoly

5) Demand is determined by _____.
a) Price of the product b) Relative prices of other goods
c) Tastes d) All of the above

6) Which of the following is the best definition of managerial economics? Managerial economics is ____.
a) a distinct field of economic theory
b) a field that applies economic theory and the tools of decision science
c) a field that combines economics theory and mathematics
d) None of theses

7) Micro economy deals with _____.
a) Whole economy b) Smaller unit if economy
c) Only public sector d) Only private sector

8) Which of the following is determinant of demand?
a) the price of a substitute good
b) the price of a complement good
c) the price of the good next month
d) All of the above

9) The demand curve for a normal good shifts leftward if income _____ or the expected future price _____.
a) decreases; falls
b) increases; rises
c) increase; falls
d) decreases; rises

10) Cross elasticity of demand is:
a) Negative for complementary goods
b) Negative for substitute goods
c) Unitary for inferior goods
d) Positive for inferior goods

11) Barometric methods are used to forecast
a) seasonal variation
b) secular trend
c) cyclical variation
d) irregular variation

12) A _____ is the legal minimum price.
a) Price ceiling
b) Price floors
c) Market price
d) None of the above

13) The law of demand states that the quantity of a good demanded varies
a) inversely with its price
b) directly with population
c) directly with income
d) inversely with the price of substitute goods

14) Linear regression is most similar to
a) The trend projection method of forecasting
b) The simple moving average method of forecasting
c) The weighted moving average method of forecasting
d) The native method of forecasting

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Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the significance and limitations of Managerial Economics.
b) State the difference between Microeconomics and Macroeconomics.
c) Explain the following terms
1) Demand
2) Market demand
3) Supply
4) Market equilibrium
d) Explain elasticity of supply. Also state the factors affecting the elasticity of supply.
e) Explain the concept elasticity of demand in detail

Q.3 Solve any Two **12**

a) Explain demand utility and consumer demand analysis.
b) State and explain the determinants of demands.
c) Explain Elasticity of supply. State the factors affecting elasticity of supply.

Section – II

Q.4 Solve any Four. **16**

a) Describe Survey Methods for demand forecasting.
b) Explain Barometric Method for demand forecasting.
c) Explain the concept demand side of market.
d) Explain the concept profit margin of safety.
e) Explain different market structures.

Q.5 Solve any Two. **12**

a) State and explain the characteristics of market structure.
b) Explain break even analysis in detail. What is profit margin of safety.
c) Explain the impact of linear cost and revenue functions on breakeven analysis.

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Cross elasticity of demand is:
a) Negative for complementary goods
b) Negative for substitute goods
c) Unitary for inferior goods
d) Positive for inferior goods

2) Barometric methods are used to forecast
a) seasonal variation b) secular trend
c) cyclical variation d) irregular variation

3) A _____ is the legal minimum price.
a) Price ceiling b) Price floors
c) Market price d) None of the above

4) The law of demand states that the quantity of a good demanded varies
a) inversely with its price
b) directly with population
c) directly with income
d) inversely with the price of substitute goods

5) Linear regression is most similar to
a) The trend projection method of forecasting
b) The simple moving average method of forecasting
c) The weighted moving average method of forecasting
d) The native method of forecasting

6) Implicit costs are:
a) equal to total fixed costs
b) comprised entirely of variable costs
c) "payments" for self-employed resources
d) always greater in the short run than in the long run

7) Which of the following costs are expenses that change in proportion to the activity of a business?
a) Variable cost
b) Fixed cost
c) Material cost
d) All of the above

8) Firms in a monopolistic market are price.
a) Takers
b) Givers
c) Makers
d) Acceptor

9) Which of the following is the least competitive market structure?
a) Perfect competition
b) Monopolistic competition
c) Oligopoly
d) Monopoly

10) Demand is determined by _____.
a) Price of the product
b) Relative prices of other goods
c) Tastes
d) All of the above

11) Which of the following is the best definition of managerial economics? Managerial economics is ____.
a) a distinct field of economic theory
b) a field that applies economic theory and the tools of decision science
c) a field that combines economics theory and mathematics
d) None of theses

12) Micro economy deals with _____.
a) Whole economy
b) Smaller unit if economy
c) Only public sector
d) Only private sector

12) Which of the following is determinant of demand?
a) the price of a substitute good
b) the price of a complement good
c) the price of the good next month
d) All of the above

14) The demand curve for a normal good shifts leftward if income _____ or the expected future price _____.
a) decreases; falls
b) increases; rises
c) increase; falls
d) decreases; rises

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Managerial Economics (BTN04514)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the significance and limitations of Managerial Economics.
b) State the difference between Microeconomics and Macroeconomics.
c) Explain the following terms
1) Demand
2) Market demand
3) Supply
4) Market equilibrium
d) Explain elasticity of supply. Also state the factors affecting the elasticity of supply.
e) Explain the concept elasticity of demand in detail

Q.3 Solve any Two **12**

a) Explain demand utility and consumer demand analysis.
b) State and explain the determinants of demands.
c) Explain Elasticity of supply. State the factors affecting elasticity of supply.

Section – II

Q.4 Solve any Four. **16**

a) Describe Survey Methods for demand forecasting.
b) Explain Barometric Method for demand forecasting.
c) Explain the concept demand side of market.
d) Explain the concept profit margin of safety.
e) Explain different market structures.

Q.5 Solve any Two. **12**

a) State and explain the characteristics of market structure.
b) Explain break even analysis in detail. What is profit margin of safety.
c) Explain the impact of linear cost and revenue functions on breakeven analysis.

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Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Why business ethics are important?
a) It formulates the firm's image and builds the brand
b) It influences the buying decision of the customers
c) Build confidence within employees
d) All of the above

2) Global organizations must _____ their ethical guidelines so that employees know what is expected of them while working in a foreign location.
a) Clarify b) Provide
c) Establish d) Broaden

3) Who are organisational stakeholders?
a) Government b) Employees
c) Customers d) All of the above

4) Code of conduct does not include
a) Dishonesty b) Rules
c) Morality d) Integrity

5) Codes of conduct and codes of ethics
a) are formal statements that describe what an organization expects of its employees.
b) become necessary only after a company has been in legal trouble.
c) are designed for top executives and managers, not regular employees.
d) rarely become an effective component of the ethics and compliance program.

6) Which of the following would most effectively act as the primary objective of a business organization?
a) To make a profit
b) To procure resources
c) To communicate with shareholders
d) To mediate between the organization and the environment

7) The factor which affects ethical and unethical behavior is _____.
a) Ethical dilemma b) Diversity
c) Teamwork d) Open communication

8) Which of the following is an example of an area where business ethics apply?
a) Conduct of international operations
b) Nowhere
c) In the personal life of staff
d) None of the above

9) What is Ethics to do with?
a) The wider community
b) Business
c) Right and wrong
d) Nothing

10) The moral principles, standards of behavior, or set of values that guide a person's actions in the workplace is called_____
a) Office place ethics b) Factory place ethics
c) Behavioral ethics d) Workplace ethics

11) Stakeholders are considered more important to an organization when:
a) they can make use of their power on the organization
b) they do not emphasize the urgency of their issues
c) their issues are not legitimate
d) they can express themselves articulately

12) What is meant by the phrase CSR?
a) Corporate Social Responsibility
b) Company Social Responsibility
c) Corporate Society Responsibility
d) Company Society Responsibility

13) The _____ dimension of social responsibility refers to a business's societal contribution of time, money, and other resources.
a) Ethical b) Philanthropic
c) Volunteerism d) Strategic

14) A _____ sets out the purpose and general direction for the organization?
a) Mission statement b) Purpose statement
c) Vision d) Profit statement

SLR-GF-194

Seat No.		Set	P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) What do you mean by business ethics? Explain the functions of business ethics.
b) Explain nature and need of business ethics.
c) Mention the ethical issues that arise for managers.
d) Explain the stages in modern decision making process.
e) Define corporate governance. Explain the principles of corporate governance.
f) Explain purpose and importance of corporate governance in Stakeholder's point of view.

Q.3 Solve any two **12**

a) List out the basic ethical theories. Identify the limitations of each theory.
b) State the difficulties involved in ethical decision making. Bring out the guidelines which help ethical decision making.
c) Explain the objectives and importance of CSR.

Section – II

Q.4 Solve any four **16**

a) Explain ethical and social issues in marketing.
b) Explain ethical challenges of globalization.
c) Explain the relation between business ethics and environmental values.
d) Explain the business ethics for pollution control.
e) Explain moral significance of information technology to business.
f) Describe ethical issues in the relation between business and government

Q.5 Solve any two **12**

a) State and explain ethical issues in the firm-employee relationship.
b) State and explain the important parameters of environmental ethics.
c) Explain the role of government in business ethics.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is an example of an area where business ethics apply?
a) Conduct of international operations
b) Nowhere
c) In the personal life of staff
d) None of the above

2) What is Ethics to do with?
a) The wider community
b) Business
c) Right and wrong
d) Nothing

3) The moral principles, standards of behavior, or set of values that guide a person's actions in the workplace is called_____
a) Office place ethics b) Factory place ethics
c) Behavioral ethics d) Workplace ethics

4) Stakeholders are considered more important to an organization when:
a) they can make use of their power on the organization
b) they do not emphasize the urgency of their issues
c) their issues are not legitimate
d) they can express themselves articulately

5) What is meant by the phrase CSR?
a) Corporate Social Responsibility
b) Company Social Responsibility
c) Corporate Society Responsibility
d) Company Society Responsibility

6) The _____ dimension of social responsibility refers to a business's societal contribution of time, money, and other resources.
a) Ethical b) Philanthropic
c) Volunteerism d) Strategic

7) A _____ sets out the purpose and general direction for the organization?
a) Mission statement b) Purpose statement
c) Vision d) Profit statement

8) Why business ethics are important?
a) It formulates the firm's image and builds the brand
b) It influences the buying decision of the customers
c) Build confidence within employees
d) All of the above

9) Global organizations must _____ their ethical guidelines so that employees know what is expected of them while working in a foreign location.
a) Clarify b) Provide
c) Establish d) Broaden

10) Who are organisational stakeholders?
a) Government b) Employees
c) Customers d) All of the above

11) Code of conduct does not include
a) Dishonesty b) Rules
c) Morality d) Integrity

12) Codes of conduct and codes of ethics
a) are formal statements that describe what an organization expects of its employees.
b) become necessary only after a company has been in legal trouble.
c) are designed for top executives and managers, not regular employees.
d) rarely become an effective component of the ethics and compliance program.

13) Which of the following would most effectively act as the primary objective of a business organization?
a) To make a profit
b) To procure resources
c) To communicate with shareholders
d) To mediate between the organization and the environment

14) The factor which affects ethical and unethical behavior is _____.
a) Ethical dilemma b) Diversity
c) Teamwork d) Open communication

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Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) What do you mean by business ethics? Explain the functions of business ethics.
b) Explain nature and need of business ethics.
c) Mention the ethical issues that arise for managers.
d) Explain the stages in modern decision making process.
e) Define corporate governance. Explain the principles of corporate governance.
f) Explain purpose and importance of corporate governance in Stakeholder's point of view.

Q.3 Solve any two **12**

a) List out the basic ethical theories. Identify the limitations of each theory.
b) State the difficulties involved in ethical decision making. Bring out the guidelines which help ethical decision making.
c) Explain the objectives and importance of CSR.

Section – II

Q.4 Solve any four **16**

a) Explain ethical and social issues in marketing.
b) Explain ethical challenges of globalization.
c) Explain the relation between business ethics and environmental values.
d) Explain the business ethics for pollution control.
e) Explain moral significance of information technology to business.
f) Describe ethical issues in the relation between business and government

Q.5 Solve any two **12**

a) State and explain ethical issues in the firm-employee relationship.
b) State and explain the important parameters of environmental ethics.
c) Explain the role of government in business ethics.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Stakeholders are considered more important to an organization when:
a) they can make use of their power on the organization
b) they do not emphasize the urgency of their issues
c) their issues are not legitimate
d) they can express themselves articulately

2) What is meant by the phrase CSR?
a) Corporate Social Responsibility
b) Company Social Responsibility
c) Corporate Society Responsibility
d) Company Society Responsibility

3) The _____ dimension of social responsibility refers to a business's societal contribution of time, money, and other resources.
a) Ethical b) Philanthropic
c) Volunteerism d) Strategic

4) A _____ sets out the purpose and general direction for the organization?
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c) Vision d) Profit statement

5) Why business ethics are important?
a) It formulates the firm's image and builds the brand
b) It influences the buying decision of the customers
c) Build confidence within employees
d) All of the above

6) Global organizations must _____ their ethical guidelines so that employees know what is expected of them while working in a foreign location.
a) Clarify b) Provide
c) Establish d) Broaden

7) Who are organisational stakeholders?
a) Government b) Employees
c) Customers d) All of the above

8) Code of conduct does not include
a) Dishonesty b) Rules
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9) Codes of conduct and codes of ethics
a) are formal statements that describe what an organization expects of its employees.
b) become necessary only after a company has been in legal trouble.
c) are designed for top executives and managers, not regular employees.
d) rarely become an effective component of the ethics and compliance program.

10) Which of the following would most effectively act as the primary objective of a business organization?
a) To make a profit
b) To procure resources
c) To communicate with shareholders
d) To mediate between the organization and the environment

11) The factor which affects ethical and unethical behavior is _____.
a) Ethical dilemma b) Diversity
c) Teamwork d) Open communication

12) Which of the following is an example of an area where business ethics apply?
a) Conduct of international operations
b) Nowhere
c) In the personal life of staff
d) None of the above

13) What is Ethics to do with?
a) The wider community
b) Business
c) Right and wrong
d) Nothing

14) The moral principles, standards of behavior, or set of values that guide a person's actions in the workplace is called_____
a) Office place ethics b) Factory place ethics
c) Behavioral ethics d) Workplace ethics

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Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) What do you mean by business ethics? Explain the functions of business ethics.
b) Explain nature and need of business ethics.
c) Mention the ethical issues that arise for managers.
d) Explain the stages in modern decision making process.
e) Define corporate governance. Explain the principles of corporate governance.
f) Explain purpose and importance of corporate governance in Stakeholder's point of view.

Q.3 Solve any two **12**

a) List out the basic ethical theories. Identify the limitations of each theory.
b) State the difficulties involved in ethical decision making. Bring out the guidelines which help ethical decision making.
c) Explain the objectives and importance of CSR.

Section – II

Q.4 Solve any four **16**

a) Explain ethical and social issues in marketing.
b) Explain ethical challenges of globalization.
c) Explain the relation between business ethics and environmental values.
d) Explain the business ethics for pollution control.
e) Explain moral significance of information technology to business.
f) Describe ethical issues in the relation between business and government

Q.5 Solve any two **12**

a) State and explain ethical issues in the firm-employee relationship.
b) State and explain the important parameters of environmental ethics.
c) Explain the role of government in business ethics.

Seat No.		Set	S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following would most effectively act as the primary objective of a business organization?
a) To make a profit
b) To procure resources
c) To communicate with shareholders
d) To mediate between the organization and the environment

2) The factor which affects ethical and unethical behavior is _____.
a) Ethical dilemma b) Diversity
c) Teamwork d) Open communication

3) Which of the following is an example of an area where business ethics apply?
a) Conduct of international operations
b) Nowhere
c) In the personal life of staff
d) None of the above

4) What is Ethics to do with?
a) The wider community
b) Business
c) Right and wrong
d) Nothing

5) The moral principles, standards of behavior, or set of values that guide a person's actions in the workplace is called_____
a) Office place ethics b) Factory place ethics
c) Behavioral ethics d) Workplace ethics

6) Stakeholders are considered more important to an organization when:
a) they can make use of their power on the organization
b) they do not emphasize the urgency of their issues
c) their issues are not legitimate
d) they can express themselves articulately

7) What is meant by the phrase CSR?
a) Corporate Social Responsibility
b) Company Social Responsibility
c) Corporate Society Responsibility
d) Company Society Responsibility

8) The _____ dimension of social responsibility refers to a business's societal contribution of time, money, and other resources.
a) Ethical
b) Philanthropic
c) Volunteerism
d) Strategic

9) A _____ sets out the purpose and general direction for the organization?
a) Mission statement
b) Purpose statement
c) Vision
d) Profit statement

10) Why business ethics are important?
a) It formulates the firm's image and builds the brand
b) It influences the buying decision of the customers
c) Build confidence within employees
d) All of the above

11) Global organizations must _____ their ethical guidelines so that employees know what is expected of them while working in a foreign location.
a) Clarify
b) Provide
c) Establish
d) Broaden

12) Who are organisational stakeholders?
a) Government
b) Employees
c) Customers
d) All of the above

13) Code of conduct does not include
a) Dishonesty
b) Rules
c) Morality
d) Integrity

14) Codes of conduct and codes of ethics
a) are formal statements that describe what an organization expects of its employees.
b) become necessary only after a company has been in legal trouble.
c) are designed for top executives and managers, not regular employees.
d) rarely become an effective component of the ethics and compliance program.

SLR-GF-194

Seat No.		Set	S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Business Ethics (BTN04516)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) What do you mean by business ethics? Explain the functions of business ethics.
b) Explain nature and need of business ethics.
c) Mention the ethical issues that arise for managers.
d) Explain the stages in modern decision making process.
e) Define corporate governance. Explain the principles of corporate governance.
f) Explain purpose and importance of corporate governance in Stakeholder's point of view.

Q.3 Solve any two **12**

a) List out the basic ethical theories. Identify the limitations of each theory.
b) State the difficulties involved in ethical decision making. Bring out the guidelines which help ethical decision making.
c) Explain the objectives and importance of CSR.

Section – II

Q.4 Solve any four **16**

a) Explain ethical and social issues in marketing.
b) Explain ethical challenges of globalization.
c) Explain the relation between business ethics and environmental values.
d) Explain the business ethics for pollution control.
e) Explain moral significance of information technology to business.
f) Describe ethical issues in the relation between business and government

Q.5 Solve any two **12**

a) State and explain ethical issues in the firm-employee relationship.
b) State and explain the important parameters of environmental ethics.
c) Explain the role of government in business ethics.

SLR-GF-195

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary .
5) Supplements will not be provided
6) Use of nonprogrammable calculator is permitted.
7) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game

2) Which is not the commonly used programming language for AI?
a) PROLOG b) Java
c) LISP d) Perl

3) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

4) A production rule consists of _____.
a) A set of Rule
b) A sequence of steps
c) Both (a) and (b)
d) Arbitrary representation to problem

5) Which search method takes less memory?
a) Depth-First Search b) Breadth-First search
c) Both (a) and (b) d) Linear Search

6) A heuristic is a way of trying _____.
a) To discover something or an idea embedded in a program
b) To search and measure how far a node in a search tree seems to be from a goal
c) To compare two nodes in a search tree to see if one is better than the other
d) Only (a), (b) and (c)

7) A* algorithm is based on _____.
a) Breadth-First-Search b) Depth-First-Search
c) Best-First-Search d) Hill climbing

8) Which is the best way to go for Game playing problem?
a) Linear approach b) Heuristic approach
c) Random approach d) Optimal approach

9) Which is not a property of representation of knowledge?
a) Representational Verification b) Representational Adequacy
c) Inferential Adequacy d) Inferential Efficiency

10) The core idea of develop Al is building machines and algorithms to _____.
a) functions like anything
b) perform computation tasks and functions like human brain
c) perform only arithmetic tasks
d) perform logical comparisons only

11) Which if the following most advanced form of Al?
a) Neural Network b) Machine Learning
c) Data Science d) Deep Learning

12) Procedural Domain Knowledge in a rule-based system, is in the form of?
a) Meta Rule b) Control Rule
c) Production Rule d) None of the above

13) The available ways to solve a problem of state-space-search.
a) 1 b) 2
c) 3 d) 4

14) An Al agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Supplements will not be provided
5) Use of nonprogrammable calculator is permitted.
6) Draw neat sketches wherever necessary.

Section – I

Q.2 Solve any three questions. **12**
a) What is an Agent in AI? Explain types of Agents in Artificial Intelligence.
b) Explain A* Algorithm.
c) Explain Best First Search with example.
d) Explain various approaches to knowledge Representation.

Q.3 Solve any two questions. **16**
a) Differentiate between BFS and DFS in detail.
b) Explain PEAS in Artificial Intelligence.
c) Explain FOL in detail.

Section – II

Q.4 Solve any three questions. **12**
a) Explain Bayes Rule with suitable example.
b) Explain statistical Learning.
c) Explain elementary game theory.
d) Explain Bayesian networks.

Q.5 Solve any two questions. **16**
a) State the difference between supervised and unsupervised learning.
b) Justify the application of machine learning in Artificial Intelligence.
c) Explain Basic of utility theory.

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Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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6) Use of nonprogrammable calculator is permitted.
7) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which is the best way to go for Game playing problem?
a) Linear approach b) Heuristic approach
c) Random approach d) Optimal approach

2) Which is not a property of representation of knowledge?
a) Representational Verification b) Representational Adequacy
c) Inferential Adequacy d) Inferential Efficiency

3) The core idea of develop Al is building machines and algorithms to _____.
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b) perform computation tasks and functions like human brain
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a) Neural Network b) Machine Learning
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5) Procedural Domain Knowledge in a rule-based system, is in the form of?
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c) Production Rule d) None of the above

6) The available ways to solve a problem of state-space-search.
a) 1 b) 2
c) 3 d) 4

7) An Al agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

8) What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game

9) Which is not the commonly used programming language for AI?
a) PROLOG
b) Java
c) LISP
d) Perl

10) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

11) A production rule consists of _____.
a) A set of Rule
b) A sequence of steps
c) Both (a) and (b)
d) Arbitrary representation to problem

12) Which search method takes less memory?
a) Depth-First Search
b) Breadth-First search
c) Both (a) and (b)
d) Linear Search

13) A heuristic is a way of trying _____.
a) To discover something or an idea embedded in a program
b) To search and measure how far a node in a search tree seems to be from a goal
c) To compare two nodes in a search tree to see if one is better than the other
d) Only (a), (b) and (c)

14) A* algorithm is based on _____.
a) Breadth-First-Search
b) Depth-First-Search
c) Best-First-Search
d) Hill climbing

SLR-GF-195

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Supplements will not be provided
5) Use of nonprogrammable calculator is permitted.
6) Draw neat sketches wherever necessary.

Section – I

Q.2 Solve any three questions. **12**
a) What is an Agent in AI? Explain types of Agents in Artificial Intelligence.
b) Explain A* Algorithm.
c) Explain Best First Search with example.
d) Explain various approaches to knowledge Representation.

Q.3 Solve any two questions. **16**
a) Differentiate between BFS and DFS in detail.
b) Explain PEAS in Artificial Intelligence.
c) Explain FOL in detail.

Section – II

Q.4 Solve any three questions. **12**
a) Explain Bayes Rule with suitable example.
b) Explain statistical Learning.
c) Explain elementary game theory.
d) Explain Bayesian networks.

Q.5 Solve any two questions. **16**
a) State the difference between supervised and unsupervised learning.
b) Justify the application of machine learning in Artificial Intelligence.
c) Explain Basic of utility theory.

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Seat No.		Set	R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary .
5) Supplements will not be provided
6) Use of nonprogrammable calculator is permitted.
7) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which if the following most advanced form of AI?
a) Neural Network b) Machine Learning
c) Data Science d) Deep Learning

2) Procedural Domain Knowledge in a rule-based system, is in the form of?
a) Meta Rule b) Control Rule
c) Production Rule d) None of the above

3) The available ways to solve a problem of state-space-search.
a) 1 b) 2
c) 3 d) 4

4) An AI agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

5) What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game

6) Which is not the commonly used programming language for AI?
a) PROLOG b) Java
c) LISP d) Perl

7) What is state space?
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b) Your Definition to a problem
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b) A sequence of steps
c) Both (a) and (b)
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c) To compare two nodes in a search tree to see if one is better than the other
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12) Which is the best way to go for Game playing problem?
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d) Optimal approach

13) Which is not a property of representation of knowledge?
a) Representational Verification
b) Representational Adequacy
c) Inferential Adequacy
d) Inferential Efficiency

14) The core idea of develop AI is building machines and algorithms to _____.
a) functions like anything
b) perform computation tasks and functions like human brain
c) perform only arithmetic tasks
d) perform logical comparisons only

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data wherever necessary.
4) Supplements will not be provided
5) Use of nonprogrammable calculator is permitted.
6) Draw neat sketches wherever necessary.

Section – I

Q.2 Solve any three questions. **12**
a) What is an Agent in AI? Explain types of Agents in Artificial Intelligence.
b) Explain A* Algorithm.
c) Explain Best First Search with example.
d) Explain various approaches to knowledge Representation.

Q.3 Solve any two questions. **16**
a) Differentiate between BFS and DFS in detail.
b) Explain PEAS in Artificial Intelligence.
c) Explain FOL in detail.

Section – II

Q.4 Solve any three questions. **12**
a) Explain Bayes Rule with suitable example.
b) Explain statistical Learning.
c) Explain elementary game theory.
d) Explain Bayesian networks.

Q.5 Solve any two questions. **16**
a) State the difference between supervised and unsupervised learning.
b) Justify the application of machine learning in Artificial Intelligence.
c) Explain Basic of utility theory.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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7) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) A heuristic is a way of trying _____.
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c) To compare two nodes in a search tree to see if one is better than the other
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c) 3 d) 4

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d) Representing your problem with variable and parameter

13) A production rule consists of _____.
a) A set of Rule
b) A sequence of steps
c) Both (a) and (b)
d) Arbitrary representation to problem

14) Which search method takes less memory?
a) Depth-First Search b) Breadth-First search
c) Both (a) and (b) d) Linear Search

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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Artificial Intelligence (BTN04517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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4) Supplements will not be provided
5) Use of nonprogrammable calculator is permitted.
6) Draw neat sketches wherever necessary.

Section – I

Q.2 Solve any three questions. **12**
a) What is an Agent in AI? Explain types of Agents in Artificial Intelligence.
b) Explain A* Algorithm.
c) Explain Best First Search with example.
d) Explain various approaches to knowledge Representation.

Q.3 Solve any two questions. **16**
a) Differentiate between BFS and DFS in detail.
b) Explain PEAS in Artificial Intelligence.
c) Explain FOL in detail.

Section – II

Q.4 Solve any three questions. **12**
a) Explain Bayes Rule with suitable example.
b) Explain statistical Learning.
c) Explain elementary game theory.
d) Explain Bayesian networks.

Q.5 Solve any two questions. **16**
a) State the difference between supervised and unsupervised learning.
b) Justify the application of machine learning in Artificial Intelligence.
c) Explain Basic of utility theory.

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Seat No.	

Set P

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Processing & Feature Engineering (BTN04518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) What are some examples of Data Quality problems?
a) Noisy and Outliers data b) Missing data
c) Duplicates d) All of these

2) Suitable central tendency for categorical features is _____.
a) Mean b) Median
c) Mode d) None

3) _____ is object whose values for one or more predictive attributes are very different from values found in the same attributes of other objects.
a) Inconsistent data b) Outliers
c) Redundant data d) Noisy data

4) What are the different types of attributes?
a) Nominal b) Ordinal
c) Quantitative d) All of above

5) Median can be used a central tendency to _____ kind of features.
a) Categorical b) Ordinal
c) Quantitative d) All

6) _____ is an example of Shape statistics.
a) Range b) Quartiles
c) Mode d) Kurtosis

7) In following type of feature selection method, we start with empty feature set _____.
a) forward feature selection b) backward feature selection
c) none of the above d) all of the above

8) Which of the following(s) is/are features scaling techniques?
a) Standardization b) Normalization
c) Min max Scaling d) All of above

9) Why do we need feature transformation?
a) Converting non numeric features into numeric
b) Resizing inputs to fix size
c) A and b
d) None

10) PCA is technique for _____.
a) Feature Extraction
b) Dimension Reduction
c) Variance Normalization
d) Data Augmentation

11) What are the types of feature Extraction?
a) PCA
b) LDA
c) A & B
d) None

12) Which are the techniques are comes under attributes aggregation
a) Principal component analysis
b) Independent component analysis
c) Multidimensional scaling
d) All of the above

13) Which of the following is an example of feature extraction?
a) Constructing bag of words vector from an email
b) Applying PCA projects to a large high-dimensional data
c) Removing stopwords in a sentence
d) All of the above

14) CNN is mostly used when there is an?
a) Structured data
b) unstructured data
c) Both A and B
d) None of the above

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Processing & Feature Engineering (BTN04518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) What is the Noisy data and Outliers? Explain with diagram.

b) Fill the missing values in the below table. Use the mode for qualitative values and rounded average for quantitative values; consider the object from same class (company) for the process of identification of missing value.

Food	Age	Distance	Company
Chinese	51	Close	Good
			Good
Italian	82		Good
Burgers	23	Far	Bad
Chinese	46		Good
Chinese			Bad
Burgers		Vary close	Good
Chinese	38	Close	Bad
Italian	31	Far	Good

c) Define Feature and Explain Kinds of Feature with example.

d) What are the differences between irrelevant, inconsistent and redundant data? Explain with the help of suitable example.

e) Explain the types of Feature Extraction.

Q.3 Attempt the following (Any Two) **12**

a) Explain the concept of dimensionality reduction and its benefits.

b) What is feature transformation? Explain thresholding and discretisation techniques in detail.

c) Explain the concept of Principal Component Analysis.

Section – II

Q.4 Attempt the following (Any Four) **16**

a) What is the Min-Max scaler technique with example Write a python code to implement Min-Max scaler technique.

b) What is the Normalization explain it with diagram?

c) Explain the Pros and Cons of Machine Learning and Deep Learning.

d) Explain the term Binarization and Quantization.

e) Draw and explain SIFT Architecture.

Q.5 Attempt the following (Any Two) **12**

a) Explain the Log Transformation with an example.

b) Write an algorithm k-Means Clustering with example.

c) Define the terms Data, Tasks, Models, Features, Scalars, Vectors, and Spaces, Perceptron.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Processing & Feature Engineering (BTN04518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following(s) is/are features scaling techniques?
a) Standardization b) Normalization
c) Min max Scaling d) All of above

2) Why do we need feature transformation?
a) Converting non numeric features into numeric
b) Resizing inputs to fix size
c) A and b
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c) Variance Normalization d) Data Augmentation

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c) Redundant data d) Noisy data

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a) Nominal b) Ordinal
c) Quantitative d) All of above

12) Median can be used a central tendency to _____ kind of features.
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c) Quantitative d) All

13) _____ is an example of Shape statistics.
a) Range b) Quartiles
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14) In following type of feature selection method, we start with empty feature set _____.
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c) none of the above d) all of the above

SLR-GF-196

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Processing & Feature Engineering (BTN04518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) What is the Noisy data and Outliers? Explain with diagram.

b) Fill the missing values in the below table. Use the mode for qualitative values and rounded average for quantitative values; consider the object from same class (company) for the process of identification of missing value.

Food	Age	Distance	Company
Chinese	51	Close	Good
			Good
Italian	82		Good
Burgers	23	Far	Bad
Chinese	46		Good
Chinese			Bad
Burgers		Vary close	Good
Chinese	38	Close	Bad
Italian	31	Far	Good

c) Define Feature and Explain Kinds of Feature with example.

d) What are the differences between irrelevant, inconsistent and redundant data? Explain with the help of suitable example.

e) Explain the types of Feature Extraction.

Q.3 Attempt the following (Any Two) **12**

a) Explain the concept of dimensionality reduction and its benefits.

b) What is feature transformation? Explain thresholding and discretisation techniques in detail.

c) Explain the concept of Principal Component Analysis.

Section – II

Q.4 Attempt the following (Any Four) **16**

a) What is the Min-Max scaler technique with example Write a python code to implement Min-Max scaler technique.

b) What is the Normalization explain it with diagram?

c) Explain the Pros and Cons of Machine Learning and Deep Learning.

d) Explain the term Binarization and Quantization.

e) Draw and explain SIFT Architecture.

Q.5 Attempt the following (Any Two) **12**

a) Explain the Log Transformation with an example.

b) Write an algorithm k-Means Clustering with example.

c) Define the terms Data, Tasks, Models, Features, Scalars, Vectors, and Spaces, Perceptron.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Processing & Feature Engineering (BTN04518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) What are the types of feature Extraction?
a) PCA b) LDA
c) A & B d) None

2) Which are the techniques are comes under attributes aggregation
a) Principal component analysis b) Independent component analysis
c) Multidimensional scaling d) All of the above

3) Which of the following is an example of feature extraction?
a) Constructing bag of words vector from an email
b) Applying PCA projects to a large high-dimensional data
c) Removing stopwords in a sentence
d) All of the above

4) CNN is mostly used when there is an?
a) Structured data b) unstructured data
c) Both A and B d) None of the above

5) What are some examples of Data Quality problems?
a) Noisy and Outliers data b) Missing data
c) Duplicates d) All of these

6) Suitable central tendency for categorical features is _____.
a) Mean b) Median
c) Mode d) None

7) _____ is object whose values for one or more predictive attributes are very different from values found in the same attributes of other objects.
a) Inconsistent data b) Outliers
c) Redundant data d) Noisy data

8) What are the different types of attributes?
a) Nominal b) Ordinal
c) Quantitative d) All of above

9) Median can be used a central tendency to _____ kind of features.
a) Categorical b) Ordinal
c) Quantitative d) All

10) _____ is an example of Shape statistics.

a) Range b) Quartiles
c) Mode d) Kurtosis

11) In following type of feature selection method, we start with empty feature set _____.

a) forward feature selection b) backward feature selection
c) none of the above d) all of the above

12) Which of the following(s) is/are features scaling techniques?

a) Standardization b) Normalization
c) Min max Scaling d) All of above

13) Why do we need feature transformation?

a) Converting non numeric features into numeric
b) Resizing inputs to fix size
c) A and b
d) None

14) PCA is technique for _____.

a) Feature Extraction b) Dimension Reduction
c) Variance Normalization d) Data Augmentation

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Seat No.	

Set R

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Processing & Feature Engineering (BTN04518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) What is the Noisy data and Outliers? Explain with diagram.

b) Fill the missing values in the below table. Use the mode for qualitative values and rounded average for quantitative values; consider the object from same class (company) for the process of identification of missing value.

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Chinese	38	Close	Bad
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c) Define Feature and Explain Kinds of Feature with example.

d) What are the differences between irrelevant, inconsistent and redundant data? Explain with the help of suitable example.

e) Explain the types of Feature Extraction.

Q.3 Attempt the following (Any Two) **12**

a) Explain the concept of dimensionality reduction and its benefits.

b) What is feature transformation? Explain thresholding and discretisation techniques in detail.

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Section – II

Q.4 Attempt the following (Any Four) **16**

a) What is the Min-Max scaler technique with example Write a python code to implement Min-Max scaler technique.

b) What is the Normalization explain it with diagram?

c) Explain the Pros and Cons of Machine Learning and Deep Learning.

d) Explain the term Binarization and Quantization.

e) Draw and explain SIFT Architecture.

Q.5 Attempt the following (Any Two) **12**

a) Explain the Log Transformation with an example.

b) Write an algorithm k-Means Clustering with example.

c) Define the terms Data, Tasks, Models, Features, Scalars, Vectors, and Spaces, Perceptron.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Processing & Feature Engineering (BTN04518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is an example of Shape statistics.
a) Range b) Quartiles
c) Mode d) Kurtosis

2) In following type of feature selection method, we start with empty feature set _____.
a) forward feature selection b) backward feature selection
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3) Which of the following(s) is/are features scaling techniques?
a) Standardization b) Normalization
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4) Why do we need feature transformation?
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5) PCA is technique for _____.
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6) What are the types of feature Extraction?
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c) Redundant data d) Noisy data

13) What are the different types of attributes?
a) Nominal b) Ordinal
c) Quantitative d) All of above

14) Median can be used a central tendency to _____ kind of features.
a) Categorical b) Ordinal
c) Quantitative d) All

SLR-GF-196

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Processing & Feature Engineering (BTN04518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) What is the Noisy data and Outliers? Explain with diagram.

b) Fill the missing values in the below table. Use the mode for qualitative values and rounded average for quantitative values; consider the object from same class (company) for the process of identification of missing value.

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Burgers		Vary close	Good
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c) Define Feature and Explain Kinds of Feature with example.

d) What are the differences between irrelevant, inconsistent and redundant data? Explain with the help of suitable example.

e) Explain the types of Feature Extraction.

Q.3 Attempt the following (Any Two) **12**

a) Explain the concept of dimensionality reduction and its benefits.

b) What is feature transformation? Explain thresholding and discretisation techniques in detail.

c) Explain the concept of Principal Component Analysis.

Section – II

Q.4 Attempt the following (Any Four) **16**

a) What is the Min-Max scaler technique with example Write a python code to implement Min-Max scaler technique.

b) What is the Normalization explain it with diagram?

c) Explain the Pros and Cons of Machine Learning and Deep Learning.

d) Explain the term Binarization and Quantization.

e) Draw and explain SIFT Architecture.

Q.5 Attempt the following (Any Two) **12**

a) Explain the Log Transformation with an example.

b) Write an algorithm k-Means Clustering with example.

c) Define the terms Data, Tasks, Models, Features, Scalars, Vectors, and Spaces, Perceptron.

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is NOT a consideration when designing data patterns for the edge?
a) Scalability b) Latency
c) Network bandwidth d) Cloud storage capacity

2) What is the main function of Stream Manager in the context of data streaming from the edge?
a) Data encryption and decryption
b) Data transformation and filtering
c) Data visualization and reporting
d) Data storage and retrieval

3) What is the purpose of building a data orchestration workflow on the edge?
a) To enable real-time data processing and analysis
b) To establish a secure connection with cloud data lakes
c) To synchronize edge devices with centralized databases
d) To automate device provisioning and management

4) What is the destination of data being streamed from the edge to a data lake on the cloud?
a) Local storage on edge devices
b) Edge analytics platforms
c) Centralized databases on the edge
d) Cloud-based data storage services

5) How is big data defined in the context of IoT workloads?
a) Large volumes of data generated by IoT devices
b) Data that requires high processing power for analysis
c) Data that is stored and processed exclusively on the cloud
d) Data that is collected from edge devices and centralized for analysis

6) What are Domain-Driven Design (DDD) concepts primarily concerned with?
a) Cloud infrastructure management
b) Data visualization and reporting
c) Designing scalable data flow patterns
d) Aligning software design with business domains

7) What is the main purpose of designing data flow patterns on the cloud?
a) To optimize data storage and retrieval efficiency
b) To ensure data privacy and security on the cloud
c) To enable real-time data processing and analytics
d) To establish seamless data synchronization with edge devices

8) What is the significance of remembering data flow anti-patterns for edge workloads?
a) To avoid common mistakes and pitfalls in data processing
b) To ensure data integrity and consistency on the cloud
c) To minimize latency and optimize network bandwidth
d) To maximize data storage capacity on edge devices

9) In the context of processing and consuming data on the cloud, what is the typical source of data for analysis?
a) Local databases on edge devices
b) Real-time sensor data from IoT devices
c) Historical data stored in cloud data lakes
d) Analytical models deployed on the cloud

10) What does the topology of the edge refer to?
a) The physical layout and arrangement of edge devices
b) The network architecture used for edge computing
c) The data transmission speed at the edge
d) The power consumption of edge devices

11) Which of the following is NOT a common standard or protocol used in edge computing?
a) MQTT
b) OPC UA
c) HTTP
d) Bluetooth

12) What is one of the main considerations for security at the edge?
a) Preventing unauthorized access to edge devices
b) Ensuring high-speed data transmission
c) Reducing power consumption of edge devices
d) Maximizing storage capacity at the edge

13) What is the primary purpose of connecting a device for sensing at the edge?
a) To collect and analyze real-time sensor data
b) To transmit processed data to the cloud
c) To actuate and control other edge devices
d) To establish a connection with centralized databases

14) What is the main function of connecting a device for actuating at the edge?
a) To sense and collect environmental data
b) To analyze and process data locally
c) To enable remote control and automation
d) To establish secure communication with the cloud

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate.
3) Assume suitable data if required.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) What are the three primary types of tools needed to deliver intelligence workloads at the edge?
b) Describe one use case for the smart home vertical that ties in with one more of the key benefits for ML-powered edge solutions?
c) What's the difference between a cyber-physical solution and an edge solution?
d) Has the telephone always been a cyber-physical solution? Why or why not?

Q.3 Attempt the following (Any Two) **16**

a) What is the benefit of decoupling services in your edge architecture?
b) What are three network topologies that are common in edge solutions? Which one is implemented by the HBS hub device and appliance monitoring kit?
c) What are the common components of an edge solution?

Section – II

Q.4 Attempt the following (Any Three) **12**

a) Which component of Greengrass is required to be run at the bare minimum for the device to be functional?
b) What is the benefit of performing a data modeling exercise?
c) Discuss at least one benefit of using a serverless function for processing IoT data?
d) What business intelligence (BI) services can you use for data exposition to end consumers?

Q.5 Attempt the following (Any Two) **16**

a) Why can't you write to artifact files that have been loaded onto the edge device through deployment?
b) What do you think is necessary to have an operational data store or a data lake/data warehouse?
c) Is there any relevance of ETL architectures for edge computing?

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) What is the significance of remembering data flow anti-patterns for edge workloads?
a) To avoid common mistakes and pitfalls in data processing
b) To ensure data integrity and consistency on the cloud
c) To minimize latency and optimize network bandwidth
d) To maximize data storage capacity on edge devices

2) In the context of processing and consuming data on the cloud, what is the typical source of data for analysis?
a) Local databases on edge devices
b) Real-time sensor data from IoT devices
c) Historical data stored in cloud data lakes
d) Analytical models deployed on the cloud

3) What does the topology of the edge refer to?
a) The physical layout and arrangement of edge devices
b) The network architecture used for edge computing
c) The data transmission speed at the edge
d) The power consumption of edge devices

4) Which of the following is NOT a common standard or protocol used in edge computing?
a) MQTT b) OPC UA
c) HTTP d) Bluetooth

5) What is one of the main considerations for security at the edge?
a) Preventing unauthorized access to edge devices
b) Ensuring high-speed data transmission
c) Reducing power consumption of edge devices
d) Maximizing storage capacity at the edge

6) What is the primary purpose of connecting a device for sensing at the edge?
a) To collect and analyze real-time sensor data
b) To transmit processed data to the cloud
c) To actuate and control other edge devices
d) To establish a connection with centralized databases

7) What is the main function of connecting a device for actuating at the edge?
a) To sense and collect environmental data
b) To analyze and process data locally
c) To enable remote control and automation
d) To establish secure communication with the cloud

8) Which of the following is NOT a consideration when designing data patterns for the edge?
a) Scalability
b) Latency
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9) What is the main function of Stream Manager in the context of data streaming from the edge?
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10) What is the purpose of building a data orchestration workflow on the edge?
a) To enable real-time data processing and analysis
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12) How is big data defined in the context of IoT workloads?
a) Large volumes of data generated by IoT devices
b) Data that requires high processing power for analysis
c) Data that is stored and processed exclusively on the cloud
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13) What are Domain-Driven Design (DDD) concepts primarily concerned with?
a) Cloud infrastructure management
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14) What is the main purpose of designing data flow patterns on the cloud?
a) To optimize data storage and retrieval efficiency
b) To ensure data privacy and security on the cloud
c) To enable real-time data processing and analytics
d) To establish seamless data synchronization with edge devices

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate.
3) Assume suitable data if required.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) What are the three primary types of tools needed to deliver intelligence workloads at the edge?
b) Describe one use case for the smart home vertical that ties in with one more of the key benefits for ML-powered edge solutions?
c) What's the difference between a cyber-physical solution and an edge solution?
d) Has the telephone always been a cyber-physical solution? Why or why not?

Q.3 Attempt the following (Any Two) **16**

a) What is the benefit of decoupling services in your edge architecture?
b) What are three network topologies that are common in edge solutions? Which one is implemented by the HBS hub device and appliance monitoring kit?
c) What are the common components of an edge solution?

Section – II

Q.4 Attempt the following (Any Three) **12**

a) Which component of Greengrass is required to be run at the bare minimum for the device to be functional?
b) What is the benefit of performing a data modeling exercise?
c) Discuss at least one benefit of using a serverless function for processing IoT data?
d) What business intelligence (BI) services can you use for data exposition to end consumers?

Q.5 Attempt the following (Any Two) **16**

a) Why can't you write to artifact files that have been loaded onto the edge device through deployment?
b) What do you think is necessary to have an operational data store or a data lake/data warehouse?
c) Is there any relevance of ETL architectures for edge computing?

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following is NOT a common standard or protocol used in edge computing?
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2) What is one of the main considerations for security at the edge?
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14) What does the topology of the edge refer to?
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c) The data transmission speed at the edge
d) The power consumption of edge devices

SLR-GF-197

Seat No.	

Set R

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt the following (Any Three) **12**

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Section – II

Q.4 Attempt the following (Any Three) **12**

a) Which component of Greengrass is required to be run at the bare minimum for the device to be functional?
b) What is the benefit of performing a data modeling exercise?
c) Discuss at least one benefit of using a serverless function for processing IoT data?
d) What business intelligence (BI) services can you use for data exposition to end consumers?

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a) Why can't you write to artifact files that have been loaded onto the edge device through deployment?
b) What do you think is necessary to have an operational data store or a data lake/data warehouse?
c) Is there any relevance of ETL architectures for edge computing?

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) What are Domain-Driven Design (DDD) concepts primarily concerned with?
a) Cloud infrastructure management
b) Data visualization and reporting
c) Designing scalable data flow patterns
d) Aligning software design with business domains

2) What is the main purpose of designing data flow patterns on the cloud?
a) To optimize data storage and retrieval efficiency
b) To ensure data privacy and security on the cloud
c) To enable real-time data processing and analytics
d) To establish seamless data synchronization with edge devices

3) What is the significance of remembering data flow anti-patterns for edge workloads?
a) To avoid common mistakes and pitfalls in data processing
b) To ensure data integrity and consistency on the cloud
c) To minimize latency and optimize network bandwidth
d) To maximize data storage capacity on edge devices

4) In the context of processing and consuming data on the cloud, what is the typical source of data for analysis?
a) Local databases on edge devices
b) Real-time sensor data from IoT devices
c) Historical data stored in cloud data lakes
d) Analytical models deployed on the cloud

5) What does the topology of the edge refer to?
a) The physical layout and arrangement of edge devices
b) The network architecture used for edge computing
c) The data transmission speed at the edge
d) The power consumption of edge devices

6) Which of the following is NOT a common standard or protocol used in edge computing?
a) MQTT b) OPC UA
c) HTTP d) Bluetooth

7) What is one of the main considerations for security at the edge?
a) Preventing unauthorized access to edge devices
b) Ensuring high-speed data transmission
c) Reducing power consumption of edge devices
d) Maximizing storage capacity at the edge

8) What is the primary purpose of connecting a device for sensing at the edge?
a) To collect and analyze real-time sensor data
b) To transmit processed data to the cloud
c) To actuate and control other edge devices
d) To establish a connection with centralized databases

9) What is the main function of connecting a device for actuating at the edge?
a) To sense and collect environmental data
b) To analyze and process data locally
c) To enable remote control and automation
d) To establish secure communication with the cloud

10) Which of the following is NOT a consideration when designing data patterns for the edge?
a) Scalability
b) Latency
c) Network bandwidth
d) Cloud storage capacity

11) What is the main function of Stream Manager in the context of data streaming from the edge?
a) Data encryption and decryption
b) Data transformation and filtering
c) Data visualization and reporting
d) Data storage and retrieval

12) What is the purpose of building a data orchestration workflow on the edge?
a) To enable real-time data processing and analysis
b) To establish a secure connection with cloud data lakes
c) To synchronize edge devices with centralized databases
d) To automate device provisioning and management

13) What is the destination of data being streamed from the edge to a data lake on the cloud?
a) Local storage on edge devices
b) Edge analytics platforms
c) Centralized databases on the edge
d) Cloud-based data storage services

14) How is big data defined in the context of IoT workloads?
a) Large volumes of data generated by IoT devices
b) Data that requires high processing power for analysis
c) Data that is stored and processed exclusively on the cloud
d) Data that is collected from edge devices and centralized for analysis

SLR-GF-197

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Industrial IoT (BTN04519)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate.
3) Assume suitable data if required.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) What are the three primary types of tools needed to deliver intelligence workloads at the edge?
b) Describe one use case for the smart home vertical that ties in with one more of the key benefits for ML-powered edge solutions?
c) What's the difference between a cyber-physical solution and an edge solution?
d) Has the telephone always been a cyber-physical solution? Why or why not?

Q.3 Attempt the following (Any Two) **16**

a) What is the benefit of decoupling services in your edge architecture?
b) What are three network topologies that are common in edge solutions? Which one is implemented by the HBS hub device and appliance monitoring kit?
c) What are the common components of an edge solution?

Section – II

Q.4 Attempt the following (Any Three) **12**

a) Which component of Greengrass is required to be run at the bare minimum for the device to be functional?
b) What is the benefit of performing a data modeling exercise?
c) Discuss at least one benefit of using a serverless function for processing IoT data?
d) What business intelligence (BI) services can you use for data exposition to end consumers?

Q.5 Attempt the following (Any Two) **16**

a) Why can't you write to artifact files that have been loaded onto the edge device through deployment?
b) What do you think is necessary to have an operational data store or a data lake/data warehouse?
c) Is there any relevance of ETL architectures for edge computing?

SLR-GF-198

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

2) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

3) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

4) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

5) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

6) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

7) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

8) Which of the following is international trade?

a) Trade between countries
b) Trade between regions
c) Trade between provinces
d) Both (b) and (c)

9) Who is the 'lender of the last resort' in the banking structure of India?

a) State Bank of India
b) Reserve Bank of India
c) EXIM Bank of India
d) Union Bank of India

10) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

SLR-GF-198

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

2) Fiscal policy is connected with _____
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c) Public revenue and expenditure
d) Controls of money supply

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c) EXIM Bank of India d) Union Bank of India

5) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

6) Law of demand must fail in case of _____.
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c) Inferior goods d) None of these

7) All things remain equal, if input prices increase _____.
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b) Public only
c) None
d) Bothe (a) public and (b) private

SLR-GF-198

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

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Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Who is the 'lender of the last resort' in the banking structure of India?
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SLR-GF-198

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

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Q.3 **Write short notes.** **10**
a) Consumption
b) Money

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Q.5 Discuss price determination through demand and supply forces. **10**

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SLR-GF-198

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

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c) Supply will decrease d) Demand will decrease

SLR-GF-198

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS ENGINEERING
Economics (BTN04506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

SLR-GF-199

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) The term 'Intellectual Property Rights' covers _____.
a) Copyrights b) Know-how
c) Trade dress d) All of these

2) The following cannot be exploited by assigning or by licensing the rights to others _____.
a) Patents b) Designs
c) Trademark d) All of these

3) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

4) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

5) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

6) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

7) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

8) What is the term of Patent?

a) 35 years b) 25 years

c) 20 years d) 15 years

9) Statutory requirement of “Abstract” is provided in _____ of Indian patents act,1970 and rules 2003.

a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)

c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

10) The following can be patented _____.

a) Machine b) Process

c) Composition of matter d) All of these

SLR-GF-199

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

SLR-GF-199

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

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2) What is copyright meant for?
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3) What is the term of Patent?
a) 35 years b) 25 years
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4) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

5) The following can be patented _____.
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c) Composition of matter d) All of these

6) The term 'Intellectual Property Rights' covers _____.
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9) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

10) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
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c) may include shapes of goods or combination of colors
d) All of the above

7) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

8) Who fills the invention disclosure form (IDF)?

a) Inventor
b) Patent Attorney
c) Assignee
d) Patent Searcher

9) What is copyright meant for?

a) Film work
b) Books
c) Essay
d) All of these

10) What is the term of Patent?

a) 35 years
b) 25 years
c) 20 years
d) 15 years

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
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a) Copy rights
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e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

2) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

3) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

4) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

5) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

6) What is the term of Patent?
a) 35 years b) 25 years
c) 20 years d) 15 years

7) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

8) The following can be patented _____.

a) Machine b) Process
c) Composition of matter d) All of these

9) The term 'Intellectual Property Rights' covers _____.

a) Copyrights b) Know-how
c) Trade dress d) All of these

10) The following cannot be exploited by assigning or by licensing the rights to others _____.

a) Patents b) Designs
c) Trademark d) All of these

SLR-GF-199

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN04507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

SLR-GF-200

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options. **10**

1) In which year the term sociology was coined?
a) 1798 b) 1815
c) 1839 d) 1857

2) The word sociology is made up of two words. These are ____.
a) Societies and logy b) Societia and logistia
c) Socious and logos d) Socia and logos

3) Who is the father of Sociology?
a) Karl Max b) Herbert Spencer
c) Auguste Comte d) Charles Darwin

4) The major component of demography are: _____
a) Mortality b) Fertility
c) Migration d) All of these

5) India occupies _____ rank among the population of the different countries of world?
a) Third b) First
c) Forth d) Second

6) Name of state having highest percentage of literacy level.
a) West Bengal b) Punjab
c) Kerala d) Maharashtra

7) Functions of Social Institutes is _____.
a) To meet fundamental needs of society
b) To improve the Society
c) To meet the needs of Family
d) None of above

8) Social change is change in _____.
a) Society b) Community
c) Individual d) Education

9) Which is recognized as one of the first environmental movements in country?

a) Chipko Movement
b) Kisan Movement
c) Loksatta Movement
d) Narmada Bachao Andolam

10) Science that deals with the relationship between living organism with their physical environment and each other is called _____.

a) Ecosystem
b) Biodiversity
c) Environment
d) Ecology

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any four. **40**

a) What is Sociology? And explain with concept like social structure, role, norms, values etc.

b) Explain in details demographic change in India and world along with Human Ecology.

c) Explain in details social institutions for marriage, family, cast, trib. Explain formal and informal organization.

d) Explain with details trend of Urbanization in developing countries and world.

e) Explain with details processes of social change like modernization, Industrialization, Environmental and Ecological changes and development.

f) Explain with details social movements like protest, reformist, radical in India

SLR-GF-200

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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9) The major component of demography are: _____

a) Mortality b) Fertility

c) Migration d) All of these

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Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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d) Explain with details trend of Urbanization in developing countries and world.

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Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Introduction to Sociology (BTN04508)

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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   c) To meet the needs of Family
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   b) Community
   c) Individual
   d) Education

SLR-GF-200

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Introduction to Sociology (BTN04508)

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Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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SLR-GF-200

Seat No.	

Set S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Introduction to Sociology (BTN04508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
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a) What is Sociology? And explain with concept like social structure, role, norms, values etc.

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SLR-GF-201

Seat No.		Set	P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Which factors improve coping?
a) Social support b) Optimism
c) Perceived control d) All of the above

2) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

3) Which of the following statements is true?
a) The stress response is nonspecific
b) Different kinds of stressors produce exactly the same response
c) Different people respond to the same stressor differently
d) All of the above

4) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
b) When he expects a positive outcome
c) When he thinks he does not have control over the situation
d) When he has a good social support network

5) Aches, shallow breathing and sweating, frequent colds are _____.
a) Physical symptoms of stress
b) Behavioral symptoms of stress
c) Emotional symptoms of stress
d) Cognitive symptoms of stress

6) What thoughts come to the mind when you're under negative stress?
a) You think that you can cope with the situation
b) You think that you cannot cope with the situation
c) You think that everything will get fine eventually
d) You think that you will get help immediately

7) Which of the following are the physical symptoms of anxiety?

a) Racing heart
b) Sweaty palms
c) Flushed cheeks
d) All of the above

8) Which of the following is true about 'deep breathing relaxation technique'?

a) It can be self-taught
b) It releases tension from the body and clears your mind
c) You have to do this under-water
d) Only 'a' & 'b' are true

9) Which of the following are stress busters?

a) Trying to find something funny in a difficult situation
b) Developing a support network
c) Taking a mindful walk
d) All of the above

10) When danger or stress is perceived/experienced, this response occurs in the body _____.

a) Exhaustion
b) Adaption
c) Fight-or-flight
d) Resistance

SLR-GF-201

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

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7) Which of the following statements is true?
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8) Which of the following statements is true?
a) The stress response is nonspecific
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c) Different people respond to the same stressor differently
d) All of the above

9) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
b) When he expects a positive outcome
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SLR-GF-201

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

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Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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9) Which of the following are the physical symptoms of anxiety?
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10) Which of the following is true about 'deep breathing relaxation technique'?
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b) It releases tension from the body and clears your mind
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SLR-GF-201

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
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Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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b) It releases tension from the body and clears your mind
c) You have to do this under-water
d) Only 'a' & 'b' are true

7) Which of the following are stress busters?
a) Trying to find something funny in a difficult situation
b) Developing a support network
c) Taking a mindful walk
d) All of the above

8) When danger or stress is perceived/experienced, this response occurs in the body _____.
a) Exhaustion
b) Adaption
c) Fight-or-flight
d) Resistance

9) Which factors improve coping?
a) Social support
b) Optimism
c) Perceived control
d) All of the above

10) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

SLR-GF-201

Seat No.	

Set S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Stress and Coping (BTN04509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

SLR-GF-202

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Professional Ethics & Human Value (BTN04510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

2) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

3) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

4) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

5) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

6) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

7) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

8) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

9) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

10) _____ is defined as the duty, obligation or even authority.
a) Work
b) Responsibility
c) Democracy
d) authority

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Professional Ethics & Human Value (BTN04510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Professional Ethics & Human Value (BTN04510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

2) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

3) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

4) Human values are essential for _____.
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b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

5) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

6) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

7) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

8) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

9) What is Integrity?

a) Unity of thought
b) Word and deed
c) Open mindedness
d) All of these

10) Ethical issues that can affect an engineer's professional and personal life are termed as _____.

a) Macro ethics
b) Micro ethics
c) Morals
d) Rights

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Professional Ethics & Human Value (BTN04510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Professional Ethics & Human Value (BTN04510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

2) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

3) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

4) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

5) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

6) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

7) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

8) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

9) Value and skills should go hand in hand _____.

a) True b) False
c) Cannot tell d) Wrong question

10) _____ are the basic Human aspirations.

a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Professional Ethics & Human Value (BTN04510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Professional Ethics & Human Value (BTN04510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

2) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

3) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

4) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

5) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

6) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

7) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

8) _____ is defined as the duty, obligation or even authority.

a) Work b) Responsibility
c) Democracy d) authority

9) Many complex social problems exist in the _____.

a) Industry/ Business b) Society
c) Home d) None of the above

10) Ethics is the word that refers to _____.

a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

SLR-GF-202

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Professional Ethics & Human Value (BTN04510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat diagrams.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Network device HUB is _____ layer device.
a) Physical b) Data Link
c) Network d) Application

2) The MAC id 09:12:EA:4F:30:98 is _____ type.
a) Unicast b) Multicast
c) Broadcast d) None of these

3) The ARQ stands for _____.
a) All Repeat Queue b) Automatic Repeat Request
c) Automatic Resolve Question d) None of these

4) Physical or logical arrangement of network is _____.
a) Topology b) Routing
c) Group d) None of these

5) Error Correction at the data link level is achieved by _____.
a) Bit stuffing b) Equalization
c) Frame formation d) Hamming Code

6) The maximum throughput for pure ALOHA is _____ percent.
a) 12.2 b) 18.4
c) 36.8 d) None of these

7) The network IP address or logical address present for each node in the network is of _____ bits.
a) 12 b) 32
c) 64 d) 48

8) The IP address 199.155.66.63 belongs to _____.
a) Class A b) Class B
c) Class C d) Class D

9) The data unit in transport layer in TCP/IP is called _____.

a) A datagram b) A segment
c) Frame d) Bit-string

10) Which of the following is false with respect to UDP?

a) Connection oriented b) Unreliable
c) Transport layer protocol d) All of the mentioned

11) TCP packets have size of header of _____ bytes.

a) 8 to 10 bytes b) 50 to 60 bytes
c) 20 to 40 bytes d) 20 to 60 bytes

12) Router can recognize and work with _____ addresses.

a) Data Link Layer b) Physical Layer
c) Network Layer d) Application Layer

13) Count to infinity problem is present _____ Routing Protocol.

a) Shortest Path b) Distance Vector
c) Link State d) None of these

14) A _____ is one endpoint of a two-way communication link between two programs running on the network.

a) Gateway b) Semaphore
c) Socket d) None of these

SLR-GF-203

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Draw neat diagrams.

Section – I

Q.2 Answer any four. **16**

a) With the help of diagram explain different network topologies.
b) How CRC is used to detect the error in message transmission? For given message bits "1110101011" and divisor polynomial "1011" calculate CRC.
c) Calculate Hamming code-word for an ASCII character - 1101011. Assume even parity during transmission.
d) With neat diagram discuss the Sliding window protocol Mechanism in detail?
e) What are different types of network devices? Discuss any one in detail.

Q.3 Attempt any two. **12**

a) Explain in detail IEEE 802.15 Bluetooth Protocol.
b) Draw and explain ISO-OSI reference model and discuss various issues handled by the layers.
c) Draw frame format of IEEE 802.4 protocol and explain each field in detail.

Section – II

Q.4 Attempt any four. **16**

a) Draw TCP packet format and explain its header in detail.
b) What are different IP address classes? Write ranges of different IP addresses. What is default network mask for IP address 10.10.10.11?
c) Explain IP packet Header in detail with help of diagram.
d) Give the difference between Virtual circuit switching and datagram switching techniques.
e) Differentiate between OSPF and BGP in computer networks.

Q.5 Attempt any two. **12**

a) What is encapsulation and Decapsulation in TCP/IP? Discuss three-way handshake in TCP.
b) With neat diagram explain Distance Vector Routing in detail.
c) With the help of diagram, explain Client - Server Model.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat diagrams.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The IP address 199.155.66.63 belongs to _____.
a) Class A b) Class B
c) Class C d) Class D

2) The data unit in transport layer in TCP/IP is called _____.
a) A datagram b) A segment
c) Frame d) Bit-string

3) Which of the following is false with respect to UDP?
a) Connection oriented b) Unreliable
c) Transport layer protocol d) All of the mentioned

4) TCP packets have size of header of _____ bytes.
a) 8 to 10 bytes b) 50 to 60 bytes
c) 20 to 40 bytes d) 20 to 60 bytes

5) Router can recognize and work with _____ addresses.
a) Data Link Layer b) Physical Layer
c) Network Layer d) Application Layer

6) Count to infinity problem is present _____ Routing Protocol.
a) Shortest Path b) Distance Vector
c) Link State d) None of these

7) A _____ is one endpoint of a two-way communication link between two programs running on the network.
a) Gateway b) Semaphore
c) Socket d) None of these

8) Network device HUB is _____ layer device.
a) Physical b) Data Link
c) Network d) Application

9) The MAC id 09:12:EA:4F:30:98 is _____ type.
a) Unicast b) Multicast
c) Broadcast d) None of these

10) The ARQ stands for _____.
a) All Repeat Queue b) Automatic Repeat Request
c) Automatic Resolve Question d) None of these

11) Physical or logical arrangement of network is _____.
a) Topology b) Routing
c) Group d) None of these

12) Error Correction at the data link level is achieved by _____.
a) Bit stuffing b) Equalization
c) Frame formation d) Hamming Code

13) The maximum throughput for pure ALOHA is _____ percent.
a) 12.2 b) 18.4
c) 36.8 d) None of these

14) The network IP address or logical address present for each node in the network is of _____ bits.
a) 12 b) 32
c) 64 d) 48

SLR-GF-203

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Draw neat diagrams.

Section – I

Q.2 Answer any four. **16**

a) With the help of diagram explain different network topologies.
b) How CRC is used to detect the error in message transmission? For given message bits "1110101011" and divisor polynomial "1011" calculate CRC.
c) Calculate Hamming code-word for an ASCII character - 1101011. Assume even parity during transmission.
d) With neat diagram discuss the Sliding window protocol Mechanism in detail?
e) What are different types of network devices? Discuss any one in detail.

Q.3 Attempt any two. **12**

a) Explain in detail IEEE 802.15 Bluetooth Protocol.
b) Draw and explain ISO-OSI reference model and discuss various issues handled by the layers.
c) Draw frame format of IEEE 802.4 protocol and explain each field in detail.

Section – II

Q.4 Attempt any four. **16**

a) Draw TCP packet format and explain its header in detail.
b) What are different IP address classes? Write ranges of different IP addresses. What is default network mask for IP address 10.10.10.11?
c) Explain IP packet Header in detail with help of diagram.
d) Give the difference between Virtual circuit switching and datagram switching techniques.
e) Differentiate between OSPF and BGP in computer networks.

Q.5 Attempt any two. **12**

a) What is encapsulation and Decapsulation in TCP/IP? Discuss three-way handshake in TCP.
b) With neat diagram explain Distance Vector Routing in detail.
c) With the help of diagram, explain Client - Server Model.

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat diagrams.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) TCP packets have size of header of _____ bytes.
a) 8 to 10 bytes b) 50 to 60 bytes
c) 20 to 40 bytes d) 20 to 60 bytes

2) Router can recognize and work with _____ addresses.
a) Data Link Layer b) Physical Layer
c) Network Layer d) Application Layer

3) Count to infinity problem is present _____ Routing Protocol.
a) Shortest Path b) Distance Vector
c) Link State d) None of these

4) A _____ is one endpoint of a two-way communication link between two programs running on the network.
a) Gateway b) Semaphore
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6) The MAC id 09:12:EA:4F:30:98 is _____ type.
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a) All Repeat Queue b) Automatic Repeat Request
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a) Bit stuffing b) Equalization
c) Frame formation d) Hamming Code

10) The maximum throughput for pure ALOHA is _____ percent.

a) 12.2 b) 18.4
c) 36.8 d) None of these

11) The network IP address or logical address present for each node in the network is of _____ bits.

a) 12 b) 32
c) 64 d) 48

12) The IP address 199.155.66.63 belongs to _____.

a) Class A b) Class B
c) Class C d) Class D

13) The data unit in transport layer in TCP/IP is called _____.

a) A datagram b) A segment
c) Frame d) Bit-string

14) Which of the following is false with respect to UDP?

a) Connection oriented b) Unreliable
c) Transport layer protocol d) All of the mentioned

SLR-GF-203

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Draw neat diagrams.

Section – I

Q.2 Answer any four. **16**

a) With the help of diagram explain different network topologies.
b) How CRC is used to detect the error in message transmission? For given message bits "1110101011" and divisor polynomial "1011" calculate CRC.
c) Calculate Hamming code-word for an ASCII character - 1101011. Assume even parity during transmission.
d) With neat diagram discuss the Sliding window protocol Mechanism in detail?
e) What are different types of network devices? Discuss any one in detail.

Q.3 Attempt any two. **12**

a) Explain in detail IEEE 802.15 Bluetooth Protocol.
b) Draw and explain ISO-OSI reference model and discuss various issues handled by the layers.
c) Draw frame format of IEEE 802.4 protocol and explain each field in detail.

Section – II

Q.4 Attempt any four. **16**

a) Draw TCP packet format and explain its header in detail.
b) What are different IP address classes? Write ranges of different IP addresses. What is default network mask for IP address 10.10.10.11?
c) Explain IP packet Header in detail with help of diagram.
d) Give the difference between Virtual circuit switching and datagram switching techniques.
e) Differentiate between OSPF and BGP in computer networks.

Q.5 Attempt any two. **12**

a) What is encapsulation and Decapsulation in TCP/IP? Discuss three-way handshake in TCP.
b) With neat diagram explain Distance Vector Routing in detail.
c) With the help of diagram, explain Client - Server Model.

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat diagrams.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The maximum throughput for pure ALOHA is _____ percent.
a) 12.2 b) 18.4
c) 36.8 d) None of these

2) The network IP address or logical address present for each node in the network is of _____ bits.
a) 12 b) 32
c) 64 d) 48

3) The IP address 199.155.66.63 belongs to _____.
a) Class A b) Class B
c) Class C d) Class D

4) The data unit in transport layer in TCP/IP is called _____.
a) A datagram b) A segment
c) Frame d) Bit-string

5) Which of the following is false with respect to UDP?
a) Connection oriented b) Unreliable
c) Transport layer protocol d) All of the mentioned

6) TCP packets have size of header of _____ bytes.
a) 8 to 10 bytes b) 50 to 60 bytes
c) 20 to 40 bytes d) 20 to 60 bytes

7) Router can recognize and work with _____ addresses.
a) Data Link Layer b) Physical Layer
c) Network Layer d) Application Layer

8) Count to infinity problem is present _____ Routing Protocol.
a) Shortest Path b) Distance Vector
c) Link State d) None of these

9) A _____ is one endpoint of a two-way communication link between two programs running on the network.

a) Gateway b) Semaphore
c) Socket d) None of these

10) Network device HUB is _____ layer device.

a) Physical b) Data Link
c) Network d) Application

11) The MAC id 09:12:EA:4F:30:98 is _____ type.

a) Unicast b) Multicast
c) Broadcast d) None of these

12) The ARQ stands for _____.

a) All Repeat Queue b) Automatic Repeat Request
c) Automatic Resolve Question d) None of these

13) Physical or logical arrangement of network is _____.

a) Topology b) Routing
c) Group d) None of these

14) Error Correction at the data link level is achieved by _____.

a) Bit stuffing b) Equalization
c) Frame formation d) Hamming Code

SLR-GF-203

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (BTN04601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Draw neat diagrams.

Section – I

Q.2 Answer any four. **16**

a) With the help of diagram explain different network topologies.
b) How CRC is used to detect the error in message transmission? For given message bits "1110101011" and divisor polynomial "1011" calculate CRC.
c) Calculate Hamming code-word for an ASCII character - 1101011. Assume even parity during transmission.
d) With neat diagram discuss the Sliding window protocol Mechanism in detail?
e) What are different types of network devices? Discuss any one in detail.

Q.3 Attempt any two. **12**

a) Explain in detail IEEE 802.15 Bluetooth Protocol.
b) Draw and explain ISO-OSI reference model and discuss various issues handled by the layers.
c) Draw frame format of IEEE 802.4 protocol and explain each field in detail.

Section – II

Q.4 Attempt any four. **16**

a) Draw TCP packet format and explain its header in detail.
b) What are different IP address classes? Write ranges of different IP addresses. What is default network mask for IP address 10.10.10.11?
c) Explain IP packet Header in detail with help of diagram.
d) Give the difference between Virtual circuit switching and datagram switching techniques.
e) Differentiate between OSPF and BGP in computer networks.

Q.5 Attempt any two. **12**

a) What is encapsulation and Decapsulation in TCP/IP? Discuss three-way handshake in TCP.
b) With neat diagram explain Distance Vector Routing in detail.
c) With the help of diagram, explain Client - Server Model.

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable date wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) ARM stands for _____.
a) Advanced RISC Machine
b) Advanced RISC Methodology
c) Advanced Reduced Machine
d) Advanced Reduced Methodology

2) PINSEL0 register is used to configure the functionality of _____.
a) P0.16 to P0.31 b) P0.0 to P0.15
c) P1.0 to P1.15 d) P1.16 to P1.31

3) The ARM7TDMI-S uses which pipelining?
a) 2-Stage b) 4-Stage
c) 3-Stage d) 5-Stage

4) What should be load into IO0SET register to set the pins P0.4 to P0.7?
a) 0x FFFFFF0F b) 0x 0000FF0F
c) 0x FFFFFF1F d) 000000F0

5) A _____ processor has large number of general purpose registers.
a) CICS b) RISC
c) Both a & b d) None of the above

6) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.
a) Supervisor b) System
c) Undefined d) Abort

7) Let r0=0x02020202 and r1=0x00009000. What will be the content of r1 after execution of instruction "LDR r0, [r1], #4"?
a) 0x00009000 b) 0x02020202
c) 0x00009004 d) 0x00008ffb

8) In ARM _____ exception is having the highest priority.
a) Reset b) Supervisor
c) System d) Interrupt request

9) _____ software allows the system activities to be divided into multiple independent elements called tasks.
a) Kernel b) Shell
c) Processor d) Device Driver

10) TCB stands for _____.
a) Task Control Block b) Task Condition Block
c) Task Communication Block d) None of the above

11) A _____ is software for controlling, receiving, and sending a byte or stream of bytes from or to device.
a) Kernel b) Shell
c) Processor d) Device Driver

12) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.
a) IOCLR1 b) IODIR0
c) PINSEL2 d) IODIR1

13) In LPC2148 32 KB ON-CHIP STATIC DATA RAM starts from an address ___.
a) 0x40000000 b) 0x00000004
c) 0x40000FFFF d) 0x40001111

14) Maximum amount of time interrupts are disabled + Time to start executing first instruction in the ISR is called _____ time.
a) Interrupt response b) Interrupt latency
c) Interrupt execution d) Interrupt recovery

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable date wherever necessary.

Section – I

Q.2 Solve any four. **16**

a) Evaluate the RISC philosophy with four design rules.
b) Explain the ARM7 operating modes and their causes.
c) Explain a simplified Harvard architecture with caches and TCMs.
d) List out the features of LPC 2148.
e) Write an ARM ASM code to add two 64 bit numbers.

Q.3 Solve any two. **12**

a) Draw an ARM based microcontroller architecture with major hardware components. Write the functions of shown components.
b) Explain the working of following instructions. (R7=0x00004000)

i) LDMIA R7, {R0, R2-R4}
ii) LDMDB R7!, {R0, R2-R4}
iii) STMIA R7!, {R1-R3}
iv) STMDA R7!, {R1-R3}

c) Write an ARM ASM code to find length of null terminated string.

Section – II

Q.4 Solve any four. **16**

a) Explain critical section of code in $\mu C/OS$.
b) What is the need of RTOS? Compare traditional OS and embedded OS.
c) Define interrupt latency, response and recovery times.
d) List out feature of LPC2148.
e) Explain different registers to configure function of a GPIO pin and their direction with example.

Q.5 Solve any two. **12**

a) Define Semaphores, Mailboxes, Message queues, and Pipes.
b) What is task scheduler? Explain Non-preemptive Scheduling.
c) Interface a stepper motor to LPC 2148 and write a program to rotate it.

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable date wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In ARM _____ exception is having the highest priority.
a) Reset b) Supervisor
c) System d) Interrupt request

2) _____ software allows the system activities to be divided into multiple independent elements called tasks.
a) Kernel b) Shell
c) Processor d) Device Driver

3) TCB stands for _____.
a) Task Control Block b) Task Condition Block
c) Task Communication Block d) None of the above

4) A _____ is software for controlling, receiving, and sending a byte or stream of bytes from or to device.
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c) Processor d) Device Driver

5) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.
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a) 0x40000000 b) 0x00000004
c) 0x40000FFFF d) 0x40001111

7) Maximum amount of time interrupts are disabled + Time to start executing first instruction in the ISR is called _____ time.
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c) Interrupt execution d) Interrupt recovery

8) ARM stands for _____.
a) Advanced RISC Machine
b) Advanced RISC Methodology
c) Advanced Reduced Machine
d) Advanced Reduced Methodology

9) PINSEL0 register is used to configure the functionality of _____.
a) P0.16 to P0.31 b) P0.0 to P0.15
c) P1.0 to P1.15 d) P1.16 to P1.31

10) The ARM7TDMI-S uses which pipelining?
a) 2-Stage b) 4-Stage
c) 3-Stage d) 5-Stage

11) What should be load into IO0SET register to set the pins P0.4 to P0.7?
a) 0x FFFFFF0F b) 0x 0000FF0F
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12) A _____ processor has large number of general purpose registers.
a) CICS b) RISC
c) Both a & b d) None of the above

13) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.
a) Supervisor b) System
c) Undefined d) Abort

14) Let r0=0x02020202 and r1=0x00009000. What will be the content of r1 after execution of instruction “LDR r0, [r1], #4”?
a) 0x00009000 b) 0x02020202
c) 0x00009004 d) 0x00008ffb

Seat No.		Set	Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable date wherever necessary.

Section – I

Q.2 Solve any four. **16**

a) Evaluate the RISC philosophy with four design rules.
b) Explain the ARM7 operating modes and their causes.
c) Explain a simplified Harvard architecture with caches and TCMs.
d) List out the features of LPC 2148.
e) Write an ARM ASM code to add two 64 bit numbers.

Q.3 Solve any two. **12**

a) Draw an ARM based microcontroller architecture with major hardware components. Write the functions of shown components.
b) Explain the working of following instructions. (R7=0x00004000)

i) LDMIA R7, {R0, R2-R4}
ii) LDMDB R7!, {R0, R2-R4}
iii) STMIA R7!, {R1-R3}
iv) STMDA R7!, {R1-R3}

c) Write an ARM ASM code to find length of null terminated string.

Section – II

Q.4 Solve any four. **16**

a) Explain critical section of code in $\mu C/OS$.
b) What is the need of RTOS? Compare traditional OS and embedded OS.
c) Define interrupt latency, response and recovery times.
d) List out feature of LPC2148.
e) Explain different registers to configure function of a GPIO pin and their direction with example.

Q.5 Solve any two. **12**

a) Define Semaphores, Mailboxes, Message queues, and Pipes.
b) What is task scheduler? Explain Non-preemptive Scheduling.
c) Interface a stepper motor to LPC 2148 and write a program to rotate it.

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable date wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A _____ is software for controlling, receiving, and sending a byte or stream of bytes from or to device.
a) Kernel b) Shell
c) Processor d) Device Driver

2) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.
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c) PINSEL2 d) IODIR1

3) In LPC2148 32 KB ON-CHIP STATIC DATA RAM starts from an address ___.
a) 0x40000000 b) 0x00000004
c) 0x40000FFFF d) 0x40001111

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10) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.
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11) Let r0=0x02020202 and r1=0x00009000. What will be the content of r1 after execution of instruction “LDR r0, [r1], #4”?
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c) Processor d) Device Driver

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c) Task Communication Block d) None of the above

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable date wherever necessary.

Section – I

Q.2 Solve any four. **16**

a) Evaluate the RISC philosophy with four design rules.
b) Explain the ARM7 operating modes and their causes.
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iii) STMIA R7!, {R1-R3}
iv) STMDA R7!, {R1-R3}

c) Write an ARM ASM code to find length of null terminated string.

Section – II

Q.4 Solve any four. **16**

a) Explain critical section of code in $\mu C/OS$.
b) What is the need of RTOS? Compare traditional OS and embedded OS.
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a) Define Semaphores, Mailboxes, Message queues, and Pipes.
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c) Interface a stepper motor to LPC 2148 and write a program to rotate it.

Seat No.	

Set | S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable date wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.
a) Supervisor b) System
c) Undefined d) Abort

2) Let r0=0x02020202 and r1=0x00009000. What will be the content of r1 after execution of instruction "LDR r0, [r1], #4"?
a) 0x00009000 b) 0x02020202
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a) 2-Stage b) 4-Stage
c) 3-Stage d) 5-Stage

13) What should be load into IO0SET register to set the pins P0.4 to P0.7?
a) 0x FFFFFF0F b) 0x 0000FF0F
c) 0x FFFFFF1F d) 000000F0

14) A _____ processor has large number of general purpose registers.
a) CICS b) RISC
c) Both a & b d) None of the above

SLR-GF-204

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (BTN04602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable date wherever necessary.

Section – I

Q.2 Solve any four. **16**

a) Evaluate the RISC philosophy with four design rules.
b) Explain the ARM7 operating modes and their causes.
c) Explain a simplified Harvard architecture with caches and TCMs.
d) List out the features of LPC 2148.
e) Write an ARM ASM code to add two 64 bit numbers.

Q.3 Solve any two. **12**

a) Draw an ARM based microcontroller architecture with major hardware components. Write the functions of shown components.
b) Explain the working of following instructions. (R7=0x00004000)

i) LDMIA R7, {R0, R2-R4}
ii) LDMDB R7!, {R0, R2-R4}
iii) STMIA R7!, {R1-R3}
iv) STMDA R7!, {R1-R3}

c) Write an ARM ASM code to find length of null terminated string.

Section – II

Q.4 Solve any four. **16**

a) Explain critical section of code in $\mu C/OS$.
b) What is the need of RTOS? Compare traditional OS and embedded OS.
c) Define interrupt latency, response and recovery times.
d) List out feature of LPC2148.
e) Explain different registers to configure function of a GPIO pin and their direction with example.

Q.5 Solve any two. **12**

a) Define Semaphores, Mailboxes, Message queues, and Pipes.
b) What is task scheduler? Explain Non-preemptive Scheduling.
c) Interface a stepper motor to LPC 2148 and write a program to rotate it.

SLR-GF-205

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In a VHDL code, statements that are placed inside _____ are executed sequentially.
a) Entity b) Library
c) Process d) with - select

2) VHDL statement Op <= input when e = '1' else 'z'; infers _____.
a) 2:1 multiplexer b) Tristate buffer
c) Buffer d) None of these

3) Which of the following statement is not used in the behavioral architecture?
a) Loop b) Exit
c) Wait d) Port map

4) Assuming the left operand as BIT - vector, "1001010" sll 3 is _____.
a) "1010000" b) "1010111"
c) "0010010" d) None of these

5) Which of the following is a valid signal declaration?
a) signal x : std_logic ='2' b) signal x <= 5;
c) signal x := 5; d) signal x : std_logic := '1';

6) _____ delay model models the delays often found in switching circuits.
a) Transport b) Inertial
c) Delta d) None of these

7) A single pattern that may be interpreted as a result of all the applied tests in testing is _____.
a) MIC b) PRBSG
c) SIC d) Signature

8) Which of the following is sequential statement?
a) Signal assignment b) Variable assignment
c) wait statement d) All of these a, b, c

9) To check the functional correctness of the design, _____ can be done.
a) Simulation b) Synthesis
c) Translate d) Filter

10) Under steady state condition power dissipated in CMOS circuit is _____.

a) $0\ w$ b) $10\ \mu w$

c) μw d) None of above

11) Which of the following analog controls are provided in CPLD XC9500 IO Block?

a) Slew rate control b) Pull down resistor

c) I/P buffer d) All above

12) Number of function blocks in XC 95144 CPLD is _____.

a) 8 b) 144

c) 12 d) None of these

13) _____ is almost a perfect switch when ’0’ is to be passed from input to output.

a) Buffer b) N-switch

c) p-switch d) None of these

14) To sensitize a path through an input of an AND or NAND gate, all the other inputs must be set to?

a) 0 b) 1

c) 0 and 1 d) ‘z’

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain with suitable example different forms of wait statement. What is the significance of wait for 0 ns?
b) Consider A = "100", B = "110" and C = "011110" obtain following
i) C sra 3 ii) C rol 2 iii) (A & B) or C iv) not B xor A
c) Explain the transport and inertial delays in VHDL.
d) Write VHDL code for 4:1 multiplexer.
e) Write VHDL code for D flip flop with asynchronous reset.

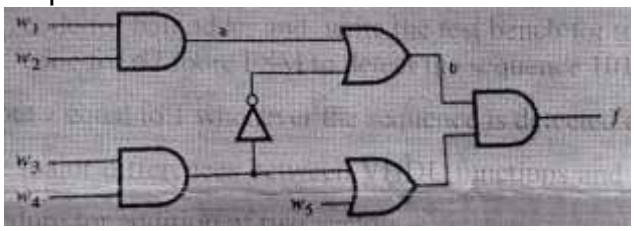
Q.3 Attempt Any Two. **12**

a) Write VHDL code for half adder and write the test bench for testing it.
b) Write VHDL code for a Moore FSM to detect the sequence 101 at the input. It should produce output z equal to 1 whenever the sequence is detected on input x.
c) What are the major differences between VHDL functions and VHDL Procedures? Write VHDL procedure for addition of two vectors.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain the architecture of macrocell in Xilinx 9500 series CPLD.
b) Draw and explain 3 input CMOS NAND gate.
c) Explain path sensitizing. Determine the input $w_1w_2w_3w_4w_5$ required to detect all the faults on the path w_1-a-b-f.



d) Draw and explain the schematic arrangement for testing sequential circuits.
e) Explain place and route process of EDA tools.

Q.5 Attempt Any Two. **12**

a) Draw and Explain Xilinx Spartan 4000 FPGA architecture.
b) What do you mean by synthesis? What are the inputs and outputs of synthesis? Explain synthesis process in brief.
c) Draw and Explain DC characteristics of CMOS Inverter.

Seat No.	

Set | Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following is sequential statement?
a) Signal assignment b) Variable assignment
c) wait statement d) All of these a, b, c

2) To check the functional correctness of the design, _____ can be done.
a) Simulation b) Synthesis
c) Translate d) Filter

3) Under steady state condition power dissipated in CMOS circuit is _____.
a) $0\ w$ b) $10\ \mu w$
c) μw d) None of above

4) Which of the following analog controls are provided in CPLD XC9500 IO Block?
a) Slew rate control b) Pull down resistor
c) I/P buffer d) All above

5) Number of function blocks in XC 95144 CPLD is _____.
a) 8 b) 144
c) 12 d) None of these

6) _____ is almost a perfect switch when '0' is to be passed from input to output.
a) Buffer b) N-switch
c) p-switch d) None of these

7) To sensitize a path through an input of an AND or NAND gate, all the other inputs must be set to?
a) 0 b) 1
c) 0 and 1 d) 'z'

8) In a VHDL code, statements that are placed inside _____ are executed sequentially.
a) Entity b) Library
c) Process d) with - select

9) VHDL statement Op <= input when e = '1' else 'z'; infers _____.
a) 2:1 multiplexer b) Tristate buffer
c) Buffer d) None of these

10) Which of the following statement is not used in the behavioral architecture?
a) Loop b) Exit
c) Wait d) Port map

11) Assuming the left operand as BIT - vector, "1001010" sll 3 is _____.
a) "1010000" b) "1010111"
c) "0010010" d) None of these

12) Which of the following is a valid signal declaration?
a) signal x : std_logic ='2' b) signal x <= 5;
c) signal x := 5; d) signal x : std_logic := '1';

13) _____ delay model models the delays often found in switching circuits.
a) Transport b) Inertial
c) Delta d) None of these

14) A single pattern that may be interpreted as a result of all the applied tests in testing is _____.
a) MIC b) PRBSG
c) SIC d) Signature

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain with suitable example different forms of wait statement. What is the significance of wait for 0 ns?
b) Consider A = "100", B = "110" and C = "011110" obtain following
i) C sra 3 ii) C rol 2 iii) (A & B) or C iv) not B xor A
c) Explain the transport and inertial delays in VHDL.
d) Write VHDL code for 4:1 multiplexer.
e) Write VHDL code for D flip flop with asynchronous reset.

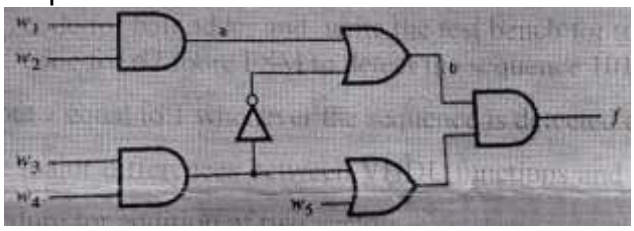
Q.3 Attempt Any Two. **12**

a) Write VHDL code for half adder and write the test bench for testing it.
b) Write VHDL code for a Moore FSM to detect the sequence 101 at the input. It should produce output z equal to 1 whenever the sequence is detected on input x.
c) What are the major differences between VHDL functions and VHDL Procedures? Write VHDL procedure for addition of two vectors.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain the architecture of macrocell in Xilinx 9500 series CPLD.
b) Draw and explain 3 input CMOS NAND gate.
c) Explain path sensitizing. Determine the input $w_1w_2w_3w_4w_5$ required to detect all the faults on the path w_1-a-b-f.



d) Draw and explain the schematic arrangement for testing sequential circuits.
e) Explain place and route process of EDA tools.

Q.5 Attempt Any Two. **12**

a) Draw and Explain Xilinx Spartan 4000 FPGA architecture.
b) What do you mean by synthesis? What are the inputs and outputs of synthesis? Explain synthesis process in brief.
c) Draw and Explain DC characteristics of CMOS Inverter.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following analog controls are provided in CPLD XC9500 IO Block?
a) Slew rate control b) Pull down resistor
c) I/P buffer d) All above

2) Number of function blocks in XC 95144 CPLD is _____.
a) 8 b) 144
c) 12 d) None of these

3) _____ is almost a perfect switch when '0' is to be passed from input to output.
a) Buffer b) N-switch
c) p-switch d) None of these

4) To sensitize a path through an input of an AND or NAND gate, all the other inputs must be set to?
a) 0 b) 1
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5) In a VHDL code, statements that are placed inside _____ are executed sequentially.
a) Entity b) Library
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6) VHDL statement Op <= input when e = '1' else 'z'; infers _____.
a) 2:1 multiplexer b) Tristate buffer
c) Buffer d) None of these

7) Which of the following statement is not used in the behavioral architecture?
a) Loop b) Exit
c) Wait d) Port map

8) Assuming the left operand as BIT - vector, "1001010" sll 3 is _____.
a) "1010000" b) "1010111"
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9) Which of the following is a valid signal declaration?
a) signal x : std_logic =’2’ b) signal x <= 5;
c) signal x := 5; d) signal x : std_logic := ‘1’;

10) _____ delay model models the delays often found in switching circuits.
a) Transport b) Inertial
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11) A single pattern that may be interpreted as a result of all the applied tests in testing is _____.
a) MIC b) PRBSG
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12) Which of the following is sequential statement?
a) Signal assignment b) Variable assignment
c) wait statement d) All of these a, b, c

13) To check the functional correctness of the design, _____ can be done.
a) Simulation b) Synthesis
c) Translate d) Filter

14) Under steady state condition power dissipated in CMOS circuit is _____.
a) $0\ w$ b) $10\ \mu w$
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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain with suitable example different forms of wait statement. What is the significance of wait for 0 ns?
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b) Write VHDL code for a Moore FSM to detect the sequence 101 at the input. It should produce output z equal to 1 whenever the sequence is detected on input x.
c) What are the major differences between VHDL functions and VHDL Procedures? Write VHDL procedure for addition of two vectors.

Section – II

Q.4 Attempt Any Four. **16**

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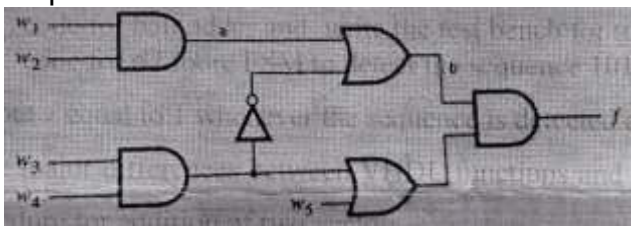
c) Explain path sensitizing. Determine the input $w_1w_2w_3w_4w_5$ required to detect all the faults on the path w_1-a-b-f.



d) Draw and explain the schematic arrangement for testing sequential circuits.
e) Explain place and route process of EDA tools.

Q.5 Attempt Any Two. **12**

a) Draw and Explain Xilinx Spartan 4000 FPGA architecture.
b) What do you mean by synthesis? What are the inputs and outputs of synthesis? Explain synthesis process in brief.
c) Draw and Explain DC characteristics of CMOS Inverter.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

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2) A single pattern that may be interpreted as a result of all the applied tests in testing is _____.
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9) To sensitize a path through an input of an AND or NAND gate, all the other inputs must be set to?

a) 0 b) 1
c) 0 and 1 d) ‘z’

10) In a VHDL code, statements that are placed inside _____ are executed sequentially.

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c) Process d) with - select

11) VHDL statement Op <= input when e = ‘1’ else ‘z’; infers _____.

a) 2:1 multiplexer b) Tristate buffer
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12) Which of the following statement is not used in the behavioral architecture?

a) Loop b) Exit
c) Wait d) Port map

13) Assuming the left operand as BIT - vector, “1001010” sll 3 is _____.

a) “1010000” b) “1010111”
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14) Which of the following is a valid signal declaration?

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c) signal x := 5; d) signal x : std_logic := ‘1’;

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (BTN04603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain with suitable example different forms of wait statement. What is the significance of wait for 0 ns?
b) Consider A = "100", B = "110" and C = "011110" obtain following
i) C sra 3 ii) C rol 2 iii) (A & B) or C iv) not B xor A
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d) Write VHDL code for 4:1 multiplexer.
e) Write VHDL code for D flip flop with asynchronous reset.

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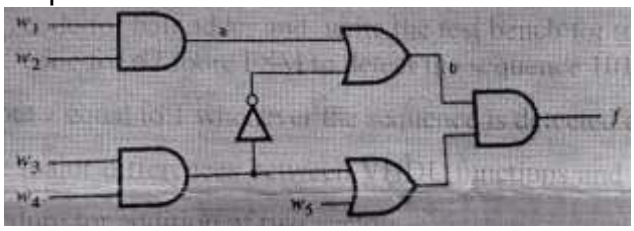
a) Write VHDL code for half adder and write the test bench for testing it.
b) Write VHDL code for a Moore FSM to detect the sequence 101 at the input. It should produce output z equal to 1 whenever the sequence is detected on input x.
c) What are the major differences between VHDL functions and VHDL Procedures? Write VHDL procedure for addition of two vectors.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain the architecture of macrocell in Xilinx 9500 series CPLD.
b) Draw and explain 3 input CMOS NAND gate.
c) Explain path sensitizing. Determine the input $w_1w_2w_3w_4w_5$ required to detect all the faults on the path w_1-a-b-f.



d) Draw and explain the schematic arrangement for testing sequential circuits.
e) Explain place and route process of EDA tools.

Q.5 Attempt Any Two. **12**

a) Draw and Explain Xilinx Spartan 4000 FPGA architecture.
b) What do you mean by synthesis? What are the inputs and outputs of synthesis? Explain synthesis process in brief.
c) Draw and Explain DC characteristics of CMOS Inverter.

SLR-GF-206

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) An _____ a place where there is a rapid change in the brightness (or other property) of an image.
a) edge b) point
c) line d) none of above

2) region-based segmentation (seeded region growing)
a) advantage: With edge connectivity
b) advantage: With loose connectivity
c) advantage: With good connectivity
d) none of above

3) What kind of information we can use for Image Representation and Description?
a) Boundary, shape b) Region
c) Texture d) all of above

4) Fourier Approach for _____ Concept: convert 2D spectrum into 1D graphs.
a) Texture Descriptor b) Regional Descriptor
c) Topological Descriptor d) None of above

5) Which of the following is not a commonly used image compression format?
a) JPEG b) PNG
c) GIF d) MP3

6) Lossless compression techniques are used when:
a) preserving all details in an image is not important
b) reducing the file size is the primary objective
c) high-quality image reconstruction is required
d) compressing audio files

7) Which of the following image formats is best suited for image enhancement?
a) JPEG b) TIFF
c) PNG d) GIF

8) What is image restoration?
a) The process of enhancing the quality of an image
b) The process of removing noise or other artifacts from an image
c) The process of transforming an image into a different format
d) None of the above

9) Which of the following is not a common image restoration technique?
a) Median filtering b) Gaussian filtering
c) Wiener filtering d) Motion blur

10) Histogram matching is also called as _____.
a) Histogram Equalization b) Histogram linearization
c) Histogram Specification d) None

11) Which one of the edge detection mask is of size 2x2 mask?
a) Prewitt b) Sobel
c) Robert d) None

12) The type of Interpolation where for each new location the intensity of the immediate pixel is assigned is _____.
a) bucubic interpolation b) cubic interpolation
c) bilinear interpolation d) nearest neighbor interpolation

13) Dynamic range of imaging system is a ratio where the upper limit is determined by _____.
a) Saturation b) Noise
c) Brightness d) Contrast

14) Gradient computation equation is _____.
a) $|Gx| + |Gy|$ b) $|Gx|/|Gy|$
c) $|Gx| - |Gy|$ d) $|Gx| \times |Gy|$

Seat No.	

Set | P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary

Section – I

Q.2 Attempt Any Four. **16**

a) Compute the Euclidean Distance (D1), City-block Distance (D2) and Chessboard distance (D3) for points p and q, where p and q be (5, 2) and (1, 5) respectively. Give answer in the form (D1, D2, D3).
b) Write the expression to find the number of bits to store a digital image.
c) Explain model of image degradation/restoration process with a block diagram.
d) Explain in detail about different types of order statistic filters for Restoration.
e) Write about Noise Probability Density Functions for all noise models.

Q.3 Attempt Any Two. **12**

a) With neat sketch explain the components of image processing system.
b) Perform Histogram Equalization of given image.

$$A = \begin{bmatrix} 4 & 4 & 4 & 4 & 4 \\ 3 & 4 & 5 & 4 & 3 \\ 3 & 5 & 5 & 5 & 3 \\ 3 & 4 & 5 & 4 & 3 \\ 4 & 4 & 4 & 4 & 4 \end{bmatrix}$$

c) What are the basic gray level transformations?

Section – II

Q.4 Attempt Any Four. **16**

a) What is data redundancy? Explain three basic data redundancy.
b) Explain region growing.
c) Write note on signatures.
d) Explain different Compression Methods.
e) Write a note on signatures and skeletons.

Q.5 Attempt Any Two. **12**

a) Explain following techniques for boundary approximations using polygon.
i) Minimum perimeter Polygon
ii) Splitting techniques
b) What is global threshold for segmentation? Give algorithm for obtaining threshold value.
c) Explain JPEG Compression and Decompression.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

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4) Which one of the edge detection mask is of size 2x2 mask?
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5) The type of Interpolation where for each new location the intensity of the immediate pixel is assigned is _____.
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6) Dynamic range of imaging system is a ratio where the upper limit is determined by _____.
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Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Professional Elective - I)
Image Processing (BTN04609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt Any Four. **16**

a) Compute the Euclidean Distance (D1), City-block Distance (D2) and Chessboard distance (D3) for points p and q, where p and q be (5, 2) and (1, 5) respectively. Give answer in the form (D1, D2, D3).
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d) Explain in detail about different types of order statistic filters for Restoration.
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Section – II

Q.4 Attempt Any Four. **16**

a) What is data redundancy? Explain three basic data redundancy.
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b) What is global threshold for segmentation? Give algorithm for obtaining threshold value.
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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

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6) region-based segmentation (seeded region growing)
a) advantage: With edge connectivity
b) advantage: With loose connectivity
c) advantage: With good connectivity
d) none of above

7) What kind of information we can use for Image Representation and Description?
a) Boundary, shape b) Region
c) Texture d) all of above

8) Fourier Approach for _____ Concept: convert 2D spectrum into 1D graphs.
a) Texture Descriptor b) Regional Descriptor
c) Topological Descriptor d) None of above

9) Which of the following is not a commonly used image compression format?
a) JPEG b) PNG
c) GIF d) MP3

10) Lossless compression techniques are used when:
a) preserving all details in an image is not important
b) reducing the file size is the primary objective
c) high-quality image reconstruction is required
d) compressing audio files

11) Which of the following image formats is best suited for image enhancement?
a) JPEG b) TIFF
c) PNG d) GIF

12) What is image restoration?
a) The process of enhancing the quality of an image
b) The process of removing noise or other artifacts from an image
c) The process of transforming an image into a different format
d) None of the above

13) Which of the following is not a common image restoration technique?
a) Median filtering b) Gaussian filtering
c) Wiener filtering d) Motion blur

14) Histogram matching is also called as _____.
a) Histogram Equalization b) Histogram linearization
c) Histogram Specification d) None

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Professional Elective - I)
Image Processing (BTN04609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary

Section – I

Q.2 Attempt Any Four. **16**

a) Compute the Euclidean Distance (D1), City-block Distance (D2) and Chessboard distance (D3) for points p and q, where p and q be (5, 2) and (1, 5) respectively. Give answer in the form (D1, D2, D3).
b) Write the expression to find the number of bits to store a digital image.
c) Explain model of image degradation/restoration process with a block diagram.
d) Explain in detail about different types of order statistic filters for Restoration.
e) Write about Noise Probability Density Functions for all noise models.

Q.3 Attempt Any Two. **12**

a) With neat sketch explain the components of image processing system.
b) Perform Histogram Equalization of given image.

$$A = \begin{bmatrix} 4 & 4 & 4 & 4 & 4 \\ 3 & 4 & 5 & 4 & 3 \\ 3 & 5 & 5 & 5 & 3 \\ 3 & 4 & 5 & 4 & 3 \\ 4 & 4 & 4 & 4 & 4 \end{bmatrix}$$

c) What are the basic gray level transformations?

Section – II

Q.4 Attempt Any Four. **16**

a) What is data redundancy? Explain three basic data redundancy.
b) Explain region growing.
c) Write note on signatures.
d) Explain different Compression Methods.
e) Write a note on signatures and skeletons.

Q.5 Attempt Any Two. **12**

a) Explain following techniques for boundary approximations using polygon.
i) Minimum perimeter Polygon
ii) Splitting techniques
b) What is global threshold for segmentation? Give algorithm for obtaining threshold value.
c) Explain JPEG Compression and Decompression.

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) Lossless compression techniques are used when:
a) preserving all details in an image is not important
b) reducing the file size is the primary objective
c) high-quality image reconstruction is required
d) compressing audio files

2) Which of the following image formats is best suited for image enhancement?
a) JPEG b) TIFF
c) PNG d) GIF

3) What is image restoration?
a) The process of enhancing the quality of an image
b) The process of removing noise or other artifacts from an image
c) The process of transforming an image into a different format
d) None of the above

4) Which of the following is not a common image restoration technique?
a) Median filtering b) Gaussian filtering
c) Wiener filtering d) Motion blur

5) Histogram matching is also called as _____.
a) Histogram Equalization b) Histogram linearization
c) Histogram Specification d) None

6) Which one of the edge detection mask is of size 2x2 mask?
a) Prewitt b) Sobel
c) Robert d) None

7) The type of Interpolation where for each new location the intensity of the immediate pixel is assigned is _____.
a) bucubic interpolation b) cubic interpolation
c) bilinear interpolation d) nearest neighbor interpolation

8) Dynamic range of imaging system is a ratio where the upper limit is determined by _____.
a) Saturation b) Noise
c) Brightness d) Contrast

9) Gradient computation equation is _____.

a) $|Gx| + |Gy|$ b) $|Gx|/|Gy|$

c) $|Gx| - |Gy|$ d) $|Gx| \times |Gy|$

10) An _____ a place where there is a rapid change in the brightness (or other property) of an image.

a) edge b) point

c) line d) none of above

11) region-based segmentation (seeded region growing)

a) advantage: With edge connectivity

b) advantage: With loose connectivity

c) advantage: With good connectivity

d) none of above

12) What kind of information we can use for Image Representation and Description?

a) Boundary, shape b) Region

c) Texture d) all of above

13) Fourier Approach for _____ Concept: convert 2D spectrum into 1D graphs.

a) Texture Descriptor b) Regional Descriptor

c) Topological Descriptor d) None of above

14) Which of the following is not a commonly used image compression format?

a) JPEG b) PNG

c) GIF d) MP3

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Image Processing (BTN04609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary

Section – I

Q.2 Attempt Any Four. **16**

a) Compute the Euclidean Distance (D1), City-block Distance (D2) and Chessboard distance (D3) for points p and q, where p and q be (5, 2) and (1, 5) respectively. Give answer in the form (D1, D2, D3).
b) Write the expression to find the number of bits to store a digital image.
c) Explain model of image degradation/restoration process with a block diagram.
d) Explain in detail about different types of order statistic filters for Restoration.
e) Write about Noise Probability Density Functions for all noise models.

Q.3 Attempt Any Two. **12**

a) With neat sketch explain the components of image processing system.
b) Perform Histogram Equalization of given image.

$$A = \begin{bmatrix} 4 & 4 & 4 & 4 & 4 \\ 3 & 4 & 5 & 4 & 3 \\ 3 & 5 & 5 & 5 & 3 \\ 3 & 4 & 5 & 4 & 3 \\ 4 & 4 & 4 & 4 & 4 \end{bmatrix}$$

c) What are the basic gray level transformations?

Section – II

Q.4 Attempt Any Four. **16**

a) What is data redundancy? Explain three basic data redundancy.
b) Explain region growing.
c) Write note on signatures.
d) Explain different Compression Methods.
e) Write a note on signatures and skeletons.

Q.5 Attempt Any Two. **12**

a) Explain following techniques for boundary approximations using polygon.
i) Minimum perimeter Polygon
ii) Splitting techniques
b) What is global threshold for segmentation? Give algorithm for obtaining threshold value.
c) Explain JPEG Compression and Decompression.

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (BTN04605)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is not the state of a process?
a) New b) Old
c) Waiting d) Running

2) A thread is also called _____.
a) Light Weight Process (LWP) b) Heavy Weight Process (HWP)
c) Process d) None of these

3) A process is selected from the _____ queue by the _____ scheduler, to be executed.
a) blocked, short term b) wait, long term
c) ready, short term d) ready, long term

4) In UNIX, the return value for the fork system call is _____ for the child process and _____ for the parent process.
a) A Negative integer, Zero b) Zero, A Negative integer
c) Zero, A nonzero integer d) A nonzero integer, Zero

5) What is inter process communication?
a) Communication within the process
b) Communication between two processes
c) Communication between two threads of same process
d) None of the mentioned

6) Time quantum is defined in _____.
a) Shortest job scheduling algorithm
b) Round robin scheduling algorithm
c) Priority based scheduling algorithm
d) Multilevel queue scheduling algorithm

7) The real difficulty with SJF in short term scheduling is _____.
a) It is too good algorithm
b) Knowing the length of the next CPU request
c) It is too complex to understand
d) None of these

8) One difficulty of contiguous allocation is _____.
a) finding space for a new file b) inefficient
c) costly d) time taking

9) A process is thrashing if _____.
a) It spends a lot of time executing, rather than paging
b) It spends a lot of time paging than executing
c) It has no memory allocated to it
d) None of the mentioned

10) The segment limit contains the _____.
a) Starting logical address of the process
b) Starting physical address of the segment in memory
c) Segment length
d) None of the mentioned

11) Which of the following condition is required for a deadlock to be possible?
a) Mutual exclusion
b) A process may hold allocated resources while awaiting assignment of other resources
c) No resource can be forcibly removed from a process holding it
d) All the mentioned

12) Deadlock prevention is a set of methods _____.
a) To ensure that at least one of the necessary conditions cannot hold
b) To ensure that all the necessary conditions do not hold
c) To decide if the requested resources for a process must be given or not
d) To recover from a deadlock

13) Each _____ has its own index block.
a) partition b) address
c) file d) all mentioned

14) Which of the following is not a contiguous memory management technique?
a) Partitioning b) Paging
c) Buddy system d) Over lays

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (BTN04605)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Attempt Any Four: **16**

a) Write a short note on Multiprogramming Operating Systems.
b) What are the different types of Semaphores? Explain the mutual exclusion implementation with Semaphores.
c) State and explain the various states that a process can be in with a neat sketch of process state diagram.
d) Describe the First Come First Served (FCFS) scheduling algorithm with one example.
e) Define thread. How is it different from a process?

Q.3 Attempt Any Two: **12**

a) Explain the Round Robin (RR) Scheduling algorithm with an example. Find the average waiting time and average turnaround time for RR scheduling algorithm for the following processes with a time quantum of 4 ms.

Process	CPU Burst Time
P1	10
P2	5
P3	2
P4	3

b) Write short note on:
i) Critical Section Problem
ii) System calls
c) Explain process creation and termination operations in detail.

Section – II

Q.4 Attempt Any Four: **16**

a) Explain with suitable diagram internal and external fragmentation.

b) Elaborate logical and physical address in operating system. Explain mapping of virtual address to physical address.

c) What is page fault? How is it handled?

d) Elaborate necessary conditions to produce deadlock in operating systems.

e) For a system with five processes P1 through P5 and three resources A with 10 instances, B with 5 instances and C with 7 instances have a following snapshot:

Process	Allocated			Requested			Available		
	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	3	3	2
P2	2	0	0	3	2	2			
P3	3	0	2	9	0	2			
P4	2	1	1	2	2	2			
P5	0	0	2	4	3	3			

i) Determine need matrix.

ii) Is system safe?

iii) If system safe, mention safe sequence of execution.

Q.5 Attempt Any Two: **12**

a) What is segmentation? Explain what is demand segmentation.

b) Consider a reference string: 4, 7, 6, 1, 7, 6, 1, 2, 7, 2. The number of frames in the memory is 3. Find out the number of page faults respective to: FIFO and optimal page replacement algorithm.

c) Explain various free space management approaches in OS.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (BTN04605)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) One difficulty of contiguous allocation is _____.
a) finding space for a new file b) inefficient
c) costly d) time taking

2) A process is thrashing if _____.
a) It spends a lot of time executing, rather than paging
b) It spends a lot of time paging than executing
c) It has no memory allocated to it
d) None of the mentioned

3) The segment limit contains the _____.
a) Starting logical address of the process
b) Starting physical address of the segment in memory
c) Segment length
d) None of the mentioned

4) Which of the following condition is required for a deadlock to be possible?
a) Mutual exclusion
b) A process may hold allocated resources while awaiting assignment of other resources
c) No resource can be forcibly removed from a process holding it
d) All the mentioned

5) Deadlock prevention is a set of methods _____.
a) To ensure that at least one of the necessary conditions cannot hold
b) To ensure that all the necessary conditions do not hold
c) To decide if the requested resources for a process must be given or not
d) To recover from a deadlock

6) Each _____ has its own index block.
a) partition b) address
c) file d) all mentioned

7) Which of the following is not a contiguous memory management technique?
a) Partitioning b) Paging
c) Buddy system d) Over lays

8) Which of the following is not the state of a process?
a) New b) Old
c) Waiting d) Running

9) A thread is also called _____.
a) Light Weight Process (LWP) b) Heavy Weight Process (HWP)
c) Process d) None of these

10) A process is selected from the _____ queue by the _____ scheduler, to be executed.
a) blocked, short term b) wait, long term
c) ready, short term d) ready, long term

11) In UNIX, the return value for the fork system call is _____ for the child process and _____ for the parent process.
a) A Negative integer, Zero b) Zero, A Negative integer
c) Zero, A nonzero integer d) A nonzero integer, Zero

12) What is inter process communication?
a) Communication within the process
b) Communication between two processes
c) Communication between two threads of same process
d) None of the mentioned

13) Time quantum is defined in _____.
a) Shortest job scheduling algorithm
b) Round robin scheduling algorithm
c) Priority based scheduling algorithm
d) Multilevel queue scheduling algorithm

14) The real difficulty with SJF in short term scheduling is _____.
a) It is too good algorithm
b) Knowing the length of the next CPU request
c) It is too complex to understand
d) None of these

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (BTN04605)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Attempt Any Four: **16**

a) Write a short note on Multiprogramming Operating Systems.
b) What are the different types of Semaphores? Explain the mutual exclusion implementation with Semaphores.
c) State and explain the various states that a process can be in with a neat sketch of process state diagram.
d) Describe the First Come First Served (FCFS) scheduling algorithm with one example.
e) Define thread. How is it different from a process?

Q.3 Attempt Any Two: **12**

a) Explain the Round Robin (RR) Scheduling algorithm with an example. Find the average waiting time and average turnaround time for RR scheduling algorithm for the following processes with a time quantum of 4 ms.

Process	CPU Burst Time
P1	10
P2	5
P3	2
P4	3

b) Write short note on:
i) Critical Section Problem
ii) System calls
c) Explain process creation and termination operations in detail.

Section – II

Q.4 Attempt Any Four: **16**

a) Explain with suitable diagram internal and external fragmentation.

b) Elaborate logical and physical address in operating system. Explain mapping of virtual address to physical address.

c) What is page fault? How is it handled?

d) Elaborate necessary conditions to produce deadlock in operating systems.

e) For a system with five processes P1 through P5 and three resources A with 10 instances, B with 5 instances and C with 7 instances have a following snapshot:

Process	Allocated			Requested			Available		
	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	3	3	2
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P3	3	0	2	9	0	2			
P4	2	1	1	2	2	2			
P5	0	0	2	4	3	3			

i) Determine need matrix.

ii) Is system safe?

iii) If system safe, mention safe sequence of execution.

Q.5 Attempt Any Two: **12**

a) What is segmentation? Explain what is demand segmentation.

b) Consider a reference string: 4, 7, 6, 1, 7, 6, 1, 2, 7, 2. The number of frames in the memory is 3. Find out the number of page faults respective to: FIFO and optimal page replacement algorithm.

c) Explain various free space management approaches in OS.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (BTN04605)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following condition is required for a deadlock to be possible?
a) Mutual exclusion
b) A process may hold allocated resources while awaiting assignment of other resources
c) No resource can be forcibly removed from a process holding it
d) All the mentioned

2) Deadlock prevention is a set of methods _____.
a) To ensure that at least one of the necessary conditions cannot hold
b) To ensure that all the necessary conditions do not hold
c) To decide if the requested resources for a process must be given or not
d) To recover from a deadlock

3) Each _____ has its own index block.
a) partition b) address
c) file d) all mentioned

4) Which of the following is not a contiguous memory management technique?
a) Partitioning b) Paging
c) Buddy system d) Over lays

5) Which of the following is not the state of a process?
a) New b) Old
c) Waiting d) Running

6) A thread is also called _____.
a) Light Weight Process (LWP) b) Heavy Weight Process (HWP)
c) Process d) None of these

7) A process is selected from the _____ queue by the _____ scheduler, to be executed.
a) blocked, short term b) wait, long term
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8) In UNIX, the return value for the fork system call is _____ for the child process and _____ for the parent process.
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9) What is inter process communication?
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10) Time quantum is defined in _____.
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11) The real difficulty with SJF in short term scheduling is _____.
a) It is too good algorithm
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12) One difficulty of contiguous allocation is _____.
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13) A process is thrashing if _____.
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14) The segment limit contains the _____.
a) Starting logical address of the process
b) Starting physical address of the segment in memory
c) Segment length
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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (BTN04605)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Attempt Any Four: **16**

a) Write a short note on Multiprogramming Operating Systems.
b) What are the different types of Semaphores? Explain the mutual exclusion implementation with Semaphores.
c) State and explain the various states that a process can be in with a neat sketch of process state diagram.
d) Describe the First Come First Served (FCFS) scheduling algorithm with one example.
e) Define thread. How is it different from a process?

Q.3 Attempt Any Two: **12**

a) Explain the Round Robin (RR) Scheduling algorithm with an example. Find the average waiting time and average turnaround time for RR scheduling algorithm for the following processes with a time quantum of 4 ms.

Process	CPU Burst Time
P1	10
P2	5
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P4	3

b) Write short note on:
i) Critical Section Problem
ii) System calls
c) Explain process creation and termination operations in detail.

Section – II

Q.4 Attempt Any Four: **16**

a) Explain with suitable diagram internal and external fragmentation.

b) Elaborate logical and physical address in operating system. Explain mapping of virtual address to physical address.

c) What is page fault? How is it handled?

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i) Determine need matrix.

ii) Is system safe?

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Q.5 Attempt Any Two: **12**

a) What is segmentation? Explain what is demand segmentation.

b) Consider a reference string: 4, 7, 6, 1, 7, 6, 1, 2, 7, 2. The number of frames in the memory is 3. Find out the number of page faults respective to: FIFO and optimal page replacement algorithm.

c) Explain various free space management approaches in OS.

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (BTN04605)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Time quantum is defined in _____.
a) Shortest job scheduling algorithm
b) Round robin scheduling algorithm
c) Priority based scheduling algorithm
d) Multilevel queue scheduling algorithm

2) The real difficulty with SJF in short term scheduling is _____.
a) It is too good algorithm
b) Knowing the length of the next CPU request
c) It is too complex to understand
d) None of these

3) One difficulty of contiguous allocation is _____.
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c) costly d) time taking

4) A process is thrashing if _____.
a) It spends a lot of time executing, rather than paging
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b) A process may hold allocated resources while awaiting assignment of other resources
c) No resource can be forcibly removed from a process holding it
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7) Deadlock prevention is a set of methods _____.
a) To ensure that at least one of the necessary conditions cannot hold
b) To ensure that all the necessary conditions do not hold
c) To decide if the requested resources for a process must be given or not
d) To recover from a deadlock

8) Each _____ has its own index block.
a) partition b) address
c) file d) all mentioned

9) Which of the following is not a contiguous memory management technique?
a) Partitioning b) Paging
c) Buddy system d) Over lays

10) Which of the following is not the state of a process?
a) New b) Old
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11) A thread is also called _____.
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c) Process d) None of these

12) A process is selected from the _____ queue by the _____ scheduler, to be executed.
a) blocked, short term b) wait, long term
c) ready, short term d) ready, long term

13) In UNIX, the return value for the fork system call is _____ for the child process and _____ for the parent process.
a) A Negative integer, Zero b) Zero, A Negative integer
c) Zero, A nonzero integer d) A nonzero integer, Zero

14) What is inter process communication?
a) Communication within the process
b) Communication between two processes
c) Communication between two threads of same process
d) None of the mentioned

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (BTN04605)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Attempt Any Four: **16**

a) Write a short note on Multiprogramming Operating Systems.

b) What are the different types of Semaphores? Explain the mutual exclusion implementation with Semaphores.

c) State and explain the various states that a process can be in with a neat sketch of process state diagram.

d) Describe the First Come First Served (FCFS) scheduling algorithm with one example.

e) Define thread. How is it different from a process?

Q.3 Attempt Any Two: **12**

a) Explain the Round Robin (RR) Scheduling algorithm with an example. Find the average waiting time and average turnaround time for RR scheduling algorithm for the following processes with a time quantum of 4 ms.

Process	CPU Burst Time
P1	10
P2	5
P3	2
P4	3

b) Write short note on:
i) Critical Section Problem
ii) System calls

c) Explain process creation and termination operations in detail.

Section – II

Q.4 Attempt Any Four: **16**

a) Explain with suitable diagram internal and external fragmentation.

b) Elaborate logical and physical address in operating system. Explain mapping of virtual address to physical address.

c) What is page fault? How is it handled?

d) Elaborate necessary conditions to produce deadlock in operating systems.

e) For a system with five processes P1 through P5 and three resources A with 10 instances, B with 5 instances and C with 7 instances have a following snapshot:

Process	Allocated			Requested			Available		
	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	3	3	2
P2	2	0	0	3	2	2			
P3	3	0	2	9	0	2			
P4	2	1	1	2	2	2			
P5	0	0	2	4	3	3			

i) Determine need matrix.

ii) Is system safe?

iii) If system safe, mention safe sequence of execution.

Q.5 Attempt Any Two: **12**

a) What is segmentation? Explain what is demand segmentation.

b) Consider a reference string: 4, 7, 6, 1, 7, 6, 1, 2, 7, 2. The number of frames in the memory is 3. Find out the number of page faults respective to: FIFO and optimal page replacement algorithm.

c) Explain various free space management approaches in OS.

SLR-GF-210

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (OPEN ELECTIVE - II)
Sensors & Applications (BTN04606)

Day & Date: Friday,22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Active sensors contain _____.
a) ICS b) Active devices
c) Excitation circuits d) None above

2) Actuators _____.
a) Convert electrical signal to physical
b) Convert Physical signal to electrical
c) Both above
d) None above

3) SI unit for amount of substance is _____.
a) kg- m b) Newton
c) Mole d) None above

4) Solenoid coil can be used as _____.
a) Switch b) Fluid control
c) Fuel control d) all above

5) Stimulus is associated with _____.
a) input of sensor b) output of sensor
c) processing unit d) none above

6) Input impedance of Ideal Amp should be _____.
a) infinity b) zero
c) moderate d) none above

7) Transfer function of charge to voltage converter is _____.
a) $\mathrm{Vout} = \Delta Q/C$ b) $\mathrm{Vout} = \Delta Q\, C$
c) $\mathrm{Vout} = C/\Delta Q$ d) None above

8) Which device is used for converting light to voltage?
a) Photo diode b) Photo Transistor
c) Photo resistor d) all above can be used

9) Capacitive sensors convert _____.
a) Force-Cap-Voltage b) Pressure-Cap-Voltage
c) Velocity-Cap-Voltage d) None

10) A battery with 100 mAH with current consumption 5mA works for 3 min every hour. For what duration battery will work?

a) 400 hrs b) 110 hrs
c) 120 hrs d) Ever last

11) Pressure sensors make use of _____ effect.

a) tunneling b) siebeck
c) torque d) none

12) For Analog to digital conversion of sensors technique popularly used is _____.

a) PPM b) PWM
c) PAM d) none

13) An output of actuator is _____.

a) Mechanical work b) Electrical signal
c) Potential difference d) Current

14) External power source is required for _____.

a) Sensor b) Actuator
c) Transducer d) none

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (OPEN ELECTIVE - II)
Sensors & Applications (BTN04606)

Day & Date: Friday,22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four **16**

a) With suitable example explain use of different kinds of sensors in data acquisition system.
b) Compare transducer and sensor.
c) What is the effect of adding dielectric in Capacitance? What is effect of temp on it?
d) Calculate value of resistance printed on substrate in rectangular pattern with length 20 and breadth 10 with specific resistivity of 10 KOhm
e) Derive an expression for electric field intensity on Gaussian Sphere.

Q.3 Attempt any two **12**

a) Differentiate between sensors and Transducers.
b) Explain static and dynamic characteristics of sensors.
c) Explain design of typical liquid level controller deploying hall effect.

Section – II

Q.4 Attempt any four **16**

a) Differentiate between sensors and actuators.
b) What are types of actuators explain any two in detail.
c) What are processes involved in surface mounting. Explain screen Printing in brief.
d) Which sensor will you use for sensing fuel in the tank of your bike explain with relevant figure.
e) Explain working of solenoid valve.

Q.5 Attempt any two **12**

a) Explain sensor actuator cycle with block diagram and relevant example.
b) Explain role of whetstone's bridge in sensor circuits.
c) What is linear motor? Where it is used?

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (OPEN ELECTIVE - II)
Sensors & Applications (BTN04606)

Day & Date: Friday,22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which device is used for converting light to voltage?
a) Photo diode b) Photo Transistor
c) Photo resistor d) all above can be used

2) Capacitive sensors convert _____.
a) Force-Cap-Voltage b) Pressure-Cap-Voltage
c) Velocity-Cap-Voltage d) None

3) A battery with 100 mAH with current consumption 5mA works for 3 min every hour. For what duration battery will work?
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c) 120 hrs d) Ever last

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c) torque d) none

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a) PPM b) PWM
c) PAM d) none

6) An output of actuator is _____.
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c) Potential difference d) Current

7) External power source is required for _____.
a) Sensor b) Actuator
c) Transducer d) none

8) Active sensors contain _____.
a) ICS b) Active devices
c) Excitation circuits d) None above

9) Actuators _____.
a) Convert electrical signal to physical
b) Convert Physical signal to electrical
c) Both above
d) None above

10) SI unit for amount of substance is _____.

a) kg- m b) Newton
c) Mole d) None above

11) Solenoid coil can be used as _____.

a) Switch b) Fluid control
c) Fuel control d) all above

12) Stimulus is associated with _____.

a) input of sensor b) output of sensor
c) processing unit d) none above

13) Input impedance of Ideal Amp should be _____.

a) infinity b) zero
c) moderate d) none above

14) Transfer function of charge to voltage converter is _____.

a) $\mathrm{Vout} = \Delta \mathrm{Q}/\mathrm{C}$ b) $\mathrm{Vout} = \Delta \mathrm{Q}\ \mathrm{C}$
c) $\mathrm{Vout} = \mathrm{C}/\Delta \mathrm{Q}$ d) None above

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (OPEN ELECTIVE - II)
Sensors & Applications (BTN04606)

Day & Date: Friday,22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four **16**

a) With suitable example explain use of different kinds of sensors in data acquisition system.
b) Compare transducer and sensor.
c) What is the effect of adding dielectric in Capacitance? What is effect of temp on it?
d) Calculate value of resistance printed on substrate in rectangular pattern with length 20 and breadth 10 with specific resistivity of 10 KOhm
e) Derive an expression for electric field intensity on Gaussian Sphere.

Q.3 Attempt any two **12**

a) Differentiate between sensors and Transducers.
b) Explain static and dynamic characteristics of sensors.
c) Explain design of typical liquid level controller deploying hall effect.

Section – II

Q.4 Attempt any four **16**

a) Differentiate between sensors and actuators.
b) What are types of actuators explain any two in detail.
c) What are processes involved in surface mounting. Explain screen Printing in brief.
d) Which sensor will you use for sensing fuel in the tank of your bike explain with relevant figure.
e) Explain working of solenoid valve.

Q.5 Attempt any two **12**

a) Explain sensor actuator cycle with block diagram and relevant example.
b) Explain role of whetstone's bridge in sensor circuits.
c) What is linear motor? Where it is used?

Seat No.		Set	R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (OPEN ELECTIVE - II)
Sensors & Applications (BTN04606)

Day & Date: Friday,22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Pressure sensors make use of _____ effect.
a) tunneling b) siebeck
c) torque d) none

2) For Analog to digital conversion of sensors technique popularly used is _____.
a) PPM b) PWM
c) PAM d) none

3) An output of actuator is _____.
a) Mechanical work b) Electrical signal
c) Potential difference d) Current

4) External power source is required for _____.
a) Sensor b) Actuator
c) Transducer d) none

5) Active sensors contain _____.
a) ICS b) Active devices
c) Excitation circuits d) None above

6) Actuators _____.
a) Convert electrical signal to physical
b) Convert Physical signal to electrical
c) Both above
d) None above

7) SI unit for amount of substance is _____.
a) kg- m b) Newton
c) Mole d) None above

8) Solenoid coil can be used as _____.
a) Switch b) Fluid control
c) Fuel control d) all above

9) Stimulus is associated with _____.
a) input of sensor b) output of sensor
c) processing unit d) none above

10) Input impedance of Ideal Amp should be _____.

a) infinity b) zero
c) moderate d) none above

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a) $\mathrm{Vout} = \Delta\mathrm{Q}/\mathrm{C}$ b) $\mathrm{Vout} = \Delta\mathrm{Q}\ \mathrm{C}$
c) $\mathrm{Vout} = \mathrm{C}/\Delta\mathrm{Q}$ d) None above

12) Which device is used for converting light to voltage?

a) Photo diode b) Photo Transistor
c) Photo resistor d) all above can be used

13) Capacitive sensors convert _____.

a) Force-Cap-Voltage b) Pressure-Cap-Voltage
c) Velocity-Cap-Voltage d) None

14) A battery with 100 mAH with current consumption 5mA works for 3 min every hour. For what duration battery will work?

a) 400 hrs b) 110 hrs
c) 120 hrs d) Ever last

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (OPEN ELECTIVE - II)
Sensors & Applications (BTN04606)

Day & Date: Friday,22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four **16**

a) With suitable example explain use of different kinds of sensors in data acquisition system.
b) Compare transducer and sensor.
c) What is the effect of adding dielectric in Capacitance? What is effect of temp on it?
d) Calculate value of resistance printed on substrate in rectangular pattern with length 20 and breadth 10 with specific resistivity of 10 KOhm
e) Derive an expression for electric field intensity on Gaussian Sphere.

Q.3 Attempt any two **12**

a) Differentiate between sensors and Transducers.
b) Explain static and dynamic characteristics of sensors.
c) Explain design of typical liquid level controller deploying hall effect.

Section – II

Q.4 Attempt any four **16**

a) Differentiate between sensors and actuators.
b) What are types of actuators explain any two in detail.
c) What are processes involved in surface mounting. Explain screen Printing in brief.
d) Which sensor will you use for sensing fuel in the tank of your bike explain with relevant figure.
e) Explain working of solenoid valve.

Q.5 Attempt any two **12**

a) Explain sensor actuator cycle with block diagram and relevant example.
b) Explain role of whetstone's bridge in sensor circuits.
c) What is linear motor? Where it is used?

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (OPEN ELECTIVE - II)
Sensors & Applications (BTN04606)

Day & Date: Friday,22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Input impedance of Ideal Amp should be _____.
a) infinity b) zero
c) moderate d) none above

2) Transfer function of charge to voltage converter is _____.
a) $\mathrm{Vout} = \Delta\mathrm{Q}/\mathrm{C}$ b) $\mathrm{Vout} = \Delta\mathrm{Q}\ \mathrm{C}$
c) $\mathrm{Vout} = \mathrm{C}/\Delta\mathrm{Q}$ d) None above

3) Which device is used for converting light to voltage?
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c) Velocity-Cap-Voltage d) None

5) A battery with 100 mAH with current consumption 5mA works for 3 min every hour. For what duration battery will work?
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c) 120 hrs d) Ever last

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a) tunneling b) siebeck
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7) For Analog to digital conversion of sensors technique popularly used is _____.
a) PPM b) PWM
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8) An output of actuator is _____.
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a) Convert electrical signal to physical
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c) Both above
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12) SI unit for amount of substance is _____.
a) kg- m b) Newton
c) Mole d) None above

13) Solenoid coil can be used as _____.
a) Switch b) Fluid control
c) Fuel control d) all above

14) Stimulus is associated with _____.
a) input of sensor b) output of sensor
c) processing unit d) none above

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (OPEN ELECTIVE - II)
Sensors & Applications (BTN04606)

Day & Date: Friday,22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four **16**

a) With suitable example explain use of different kinds of sensors in data acquisition system.
b) Compare transducer and sensor.
c) What is the effect of adding dielectric in Capacitance? What is effect of temp on it?
d) Calculate value of resistance printed on substrate in rectangular pattern with length 20 and breadth 10 with specific resistivity of 10 KOhm
e) Derive an expression for electric field intensity on Gaussian Sphere.

Q.3 Attempt any two **12**

a) Differentiate between sensors and Transducers.
b) Explain static and dynamic characteristics of sensors.
c) Explain design of typical liquid level controller deploying hall effect.

Section – II

Q.4 Attempt any four **16**

a) Differentiate between sensors and actuators.
b) What are types of actuators explain any two in detail.
c) What are processes involved in surface mounting. Explain screen Printing in brief.
d) Which sensor will you use for sensing fuel in the tank of your bike explain with relevant figure.
e) Explain working of solenoid valve.

Q.5 Attempt any two **12**

a) Explain sensor actuator cycle with block diagram and relevant example.
b) Explain role of whetstone's bridge in sensor circuits.
c) What is linear motor? Where it is used?

SLR-GF-213

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI/MI -Machine Learning (BTN04612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) While training a machine, if a white Queen is at a4 on the following 4×4 chess board, then to avoid the attack the labelled data for a black piece should be _____.

a4	b4	c4	d4
a3	b3	c3	d3
a2	b2	c2	d2
a1	b1	c1	d1

a) c3, d3, d2 b) b2, b1, c1
c) Both A and B d) only c1

2) The model learns through labelled data in case of _____.
a) Supervised learning algorithm
b) Unsupervised learning algorithm
c) Semi-supervised learning algorithm
d) Reinforcement learning algorithm

3) Let's assume the confusion matrix of the win/loss prediction of cricket match problem to be as below:

	ACTUAL WIN	ACTUAL LOSS
PREDICTED WIN	85	4
PREDICTED LOSS	2	9

The accuracy of the classification is _____.
a) 96% b) 98%
c) 94% d) 90%

4) SVM is an example of _____?
a) Linear Classifier and Maximum Margin Classifier
b) Non-linear Classifier and Maximum Margin Classifier
c) Linear Classifier and Minimum Margin Classifier
d) Non-linear Classifier and Minimum Margin Classifier

5) Let us consider two examples, say 'predicting whether a tumor is malignant or benign' and 'price prediction in the domain of real estate'. These two problems are same in nature.
a) True b) False

6) A 4-input neuron has weights 1, 2, 2 and 3. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be: _____.
a) 178 b) 188
c) 198 d) 208

7) Decision Nodes are represented by _____.
a) Disks b) Squares
c) Circles d) Triangles

8) Which layer in ANN can receive data from external sources?
a) Input b) Hidden
c) Output d) All of them

9) Random Forest has _____ as base learning models.
a) Multiple Decision Trees b) Entropy
c) Bagging d) None of these

10) Fraud Detection, Image Classification, Diagnostic, and Customer Retention are applications in which of the following?
a) Unsupervised Learning: Regression
b) Supervised Learning: Classification
c) Unsupervised Learning: Clustering
d) Reinforcement Learning

11) The principle underlying the Market Basket Analysis is known as _____.
a) Association rule b) Bisecting rule
c) k-means d) Bayes' theorem

12) Recurrent networks _____.
a) are similar to multi-layer feed forward networks
b) may have self-loops
c) have feedback loops
d) all of the above

13) A bipolar sigmoid function has range of _____.
a) (-1, +1) b) (0, -1)
c) (0, 1) d) (1, 0)

14) Early detection of mental disorders using machine learning and data science: diagnosing clinical depression, bipolar disorder, anxiety are applications of ML in: _____.
a) Image Detection b) Medical Diagnosis
c) Learning Language d) Stock Analysis

SLR-GF-213

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI/MI -Machine Learning (BTN04612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) What is Machine Learning? Give examples of Machine Learning Problems.
b) Differentiate between Supervised and Unsupervised Learning.
c) Explain Unsupervised Learning with examples?
d) Define following terms with suitable examples:
i) Linear Regression
ii) Logistic Regression
e) Explain the Terms True positive, True Negative, False Positive and False Negative in Confusion Matrix.

Q.3 Solve any two. **12**

a) Why Random Forest Model is an ensemble method? What is bagging in Random Forest Model?
b) What are Support Vectors in SVMs? What is a Margin? How is the classification made in SVM?
c) Explain Linear and Multiple regressions with suitable examples, graphs and Equations.

Section – II

Q.4 Solve any four. **16**

a) Explain basic steps of Apriori algorithm for association rule learning.
b) Draw the simple structure of MP Neuron? Implement Logical OR GATE with suitable example.
c) Define the following Terms in DBSCAN:
i) Epsilon
ii) Core Point
iii) Minimum Points
iv) Noise
d) Explain K-Nearest Neighbor classification with an example.
e) What are the applications of unsupervised learning?

Q.5 Solve any two **12**

a) For the following given Transaction Data-set, Generate Rules using Apriori Algorithm. Consider the values as Support=50% and Confidence=75%.

Transaction ID	Items Purchased
1	Bread, Cheese, Egg, Juice
2	Bread, Cheese, Juice
3	Bread, Milk, Yogurt
4	Bread, Juice, Milk
5	Cheese, Juice, Milk

b) Explain ML application in Traffic Prediction?

c) Write a short note on Deep Learning.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI/MI -Machine Learning (BTN04612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which layer in ANN can receive data from external sources?
a) Input b) Hidden
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2) Random Forest has _____ as base learning models.
a) Multiple Decision Trees b) Entropy
c) Bagging d) None of these

3) Fraud Detection, Image Classification, Diagnostic, and Customer Retention are applications in which of the following?
a) Unsupervised Learning: Regression
b) Supervised Learning: Classification
c) Unsupervised Learning: Clustering
d) Reinforcement Learning

4) The principle underlying the Market Basket Analysis is known as _____.
a) Association rule b) Bisecting rule
c) k-means d) Bayes' theorem

5) Recurrent networks _____.
a) are similar to multi-layer feed forward networks
b) may have self-loops
c) have feedback loops
d) all of the above

6) A bipolar sigmoid function has range of _____.
a) (-1, +1) b) (0, -1)
c) (0, 1) d) (1, 0)

7) Early detection of mental disorders using machine learning and data science: diagnosing clinical depression, bipolar disorder, anxiety are applications of ML in: _____.
a) Image Detection b) Medical Diagnosis
c) Learning Language d) Stock Analysis

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a4	b4	c4	d4
a3	b3	c3	d3
a2	b2	c2	d2
a1	b1	c1	d1

a) c3, d3, d2 b) b2, b1, c1
c) Both A and B d) only c1

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b) Unsupervised learning algorithm
c) Semi-supervised learning algorithm
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11) SVM is an example of _____?
a) Linear Classifier and Maximum Margin Classifier
b) Non-linear Classifier and Maximum Margin Classifier
c) Linear Classifier and Minimum Margin Classifier
d) Non-linear Classifier and Minimum Margin Classifier

12) Let us consider two examples, say 'predicting whether a tumor is malignant or benign' and 'price prediction in the domain of real estate'. These two problems are same in nature.
a) True b) False

13) A 4-input neuron has weights 1, 2, 2 and 3. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be: _____.
a) 178 b) 188
c) 198 d) 208

14) Decision Nodes are represented by _____.
a) Disks b) Squares
c) Circles d) Triangles

SLR-GF-213

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI/MI -Machine Learning (BTN04612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) What is Machine Learning? Give examples of Machine Learning Problems.
b) Differentiate between Supervised and Unsupervised Learning.
c) Explain Unsupervised Learning with examples?
d) Define following terms with suitable examples:
i) Linear Regression
ii) Logistic Regression
e) Explain the Terms True positive, True Negative, False Positive and False Negative in Confusion Matrix.

Q.3 Solve any two. **12**

a) Why Random Forest Model is an ensemble method? What is bagging in Random Forest Model?
b) What are Support Vectors in SVMs? What is a Margin? How is the classification made in SVM?
c) Explain Linear and Multiple regressions with suitable examples, graphs and Equations.

Section – II

Q.4 Solve any four. **16**

a) Explain basic steps of Apriori algorithm for association rule learning.
b) Draw the simple structure of MP Neuron? Implement Logical OR GATE with suitable example.
c) Define the following Terms in DBSCAN:
i) Epsilon
ii) Core Point
iii) Minimum Points
iv) Noise
d) Explain K-Nearest Neighbor classification with an example.
e) What are the applications of unsupervised learning?

Q.5 Solve any two **12**

a) For the following given Transaction Data-set, Generate Rules using Apriori Algorithm. Consider the values as Support=50% and Confidence=75%.

Transaction ID	Items Purchased
1	Bread, Cheese, Egg, Juice
2	Bread, Cheese, Juice
3	Bread, Milk, Yogurt
4	Bread, Juice, Milk
5	Cheese, Juice, Milk

b) Explain ML application in Traffic Prediction?

c) Write a short note on Deep Learning.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI/MI -Machine Learning (BTN04612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The principle underlying the Market Basket Analysis is known as _____.
a) Association rule b) Bisecting rule
c) k-means d) Bayes' theorem

2) Recurrent networks _____.
a) are similar to multi-layer feed forward networks
b) may have self-loops
c) have feedback loops
d) all of the above

3) A bipolar sigmoid function has range of _____.
a) (-1, +1) b) (0, -1)
c) (0, 1) d) (1, 0)

4) Early detection of mental disorders using machine learning and data science: diagnosing clinical depression, bipolar disorder, anxiety are applications of ML in: _____.
a) Image Detection b) Medical Diagnosis
c) Learning Language d) Stock Analysis

5) While training a machine, if a white Queen is at a4 on the following 4×4 chess board, then to avoid the attack the labelled data for a black piece should be _____.

a4	b4	c4	d4
a3	b3	c3	d3
a2	b2	c2	d2
a1	b1	c1	d1

a) c3, d3, d2 b) b2, b1, c1
c) Both A and B d) only c1

6) The model learns through labelled data in case of _____.
a) Supervised learning algorithm
b) Unsupervised learning algorithm
c) Semi-supervised learning algorithm
d) Reinforcement learning algorithm

7) Let's assume the confusion matrix of the win/loss prediction of cricket match problem to be as below:

	ACTUAL WIN	ACTUAL LOSS
PREDICTED WIN	85	4
PREDICTED LOSS	2	9

The accuracy of the classification is _____.
a) 96% b) 98%
c) 94% d) 90%

8) SVM is an example of _____?
a) Linear Classifier and Maximum Margin Classifier
b) Non-linear Classifier and Maximum Margin Classifier
c) Linear Classifier and Minimum Margin Classifier
d) Non-linear Classifier and Minimum Margin Classifier

9) Let us consider two examples, say 'predicting whether a tumor is malignant or benign' and 'price prediction in the domain of real estate'. These two problems are same in nature.
a) True b) False

10) A 4-input neuron has weights 1, 2, 2 and 3. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be: _____.
a) 178 b) 188
c) 198 d) 208

11) Decision Nodes are represented by _____.
a) Disks b) Squares
c) Circles d) Triangles

12) Which layer in ANN can receive data from external sources?
a) Input b) Hidden
c) Output d) All of them

13) Random Forest has _____ as base learning models.
a) Multiple Decision Trees b) Entropy
c) Bagging d) None of these

14) Fraud Detection, Image Classification, Diagnostic, and Customer Retention are applications in which of the following?
a) Unsupervised Learning: Regression
b) Supervised Learning: Classification
c) Unsupervised Learning: Clustering
d) Reinforcement Learning

SLR-GF-213

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI/MI -Machine Learning (BTN04612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) What is Machine Learning? Give examples of Machine Learning Problems.
b) Differentiate between Supervised and Unsupervised Learning.
c) Explain Unsupervised Learning with examples?
d) Define following terms with suitable examples:
i) Linear Regression
ii) Logistic Regression
e) Explain the Terms True positive, True Negative, False Positive and False Negative in Confusion Matrix.

Q.3 Solve any two. **12**

a) Why Random Forest Model is an ensemble method? What is bagging in Random Forest Model?
b) What are Support Vectors in SVMs? What is a Margin? How is the classification made in SVM?
c) Explain Linear and Multiple regressions with suitable examples, graphs and Equations.

Section – II

Q.4 Solve any four. **16**

a) Explain basic steps of Apriori algorithm for association rule learning.
b) Draw the simple structure of MP Neuron? Implement Logical OR GATE with suitable example.
c) Define the following Terms in DBSCAN:
i) Epsilon
ii) Core Point
iii) Minimum Points
iv) Noise
d) Explain K-Nearest Neighbor classification with an example.
e) What are the applications of unsupervised learning?

Q.5 Solve any two **12**

a) For the following given Transaction Data-set, Generate Rules using Apriori Algorithm. Consider the values as Support=50% and Confidence=75%.

Transaction ID	Items Purchased
1	Bread, Cheese, Egg, Juice
2	Bread, Cheese, Juice
3	Bread, Milk, Yogurt
4	Bread, Juice, Milk
5	Cheese, Juice, Milk

b) Explain ML application in Traffic Prediction?

c) Write a short note on Deep Learning.

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI/MI -Machine Learning (BTN04612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

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c) Circles d) Triangles

3) Which layer in ANN can receive data from external sources?
a) Input b) Hidden
c) Output d) All of them

4) Random Forest has _____ as base learning models.
a) Multiple Decision Trees b) Entropy
c) Bagging d) None of these

5) Fraud Detection, Image Classification, Diagnostic, and Customer Retention are applications in which of the following?
a) Unsupervised Learning: Regression
b) Supervised Learning: Classification
c) Unsupervised Learning: Clustering
d) Reinforcement Learning

6) The principle underlying the Market Basket Analysis is known as _____.
a) Association rule b) Bisecting rule
c) k-means d) Bayes' theorem

7) Recurrent networks _____.
a) are similar to multi-layer feed forward networks
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c) have feedback loops
d) all of the above

8) A bipolar sigmoid function has range of _____.
a) (-1, +1) b) (0, -1)
c) (0, 1) d) (1, 0)

9) Early detection of mental disorders using machine learning and data science: diagnosing clinical depression, bipolar disorder, anxiety are applications of ML in: _____.

a) Image Detection
b) Medical Diagnosis
c) Learning Language
d) Stock Analysis

10) While training a machine, if a white Queen is at a4 on the following 4×4 chess board, then to avoid the attack the labelled data for a black piece should be _____.

a4	b4	c4	d4
a3	b3	c3	d3
a2	b2	c2	d2
a1	b1	c1	d1

a) c3, d3, d2
b) b2, b1, c1
c) Both A and B
d) only c1

11) The model learns through labelled data in case of _____.

a) Supervised learning algorithm
b) Unsupervised learning algorithm
c) Semi-supervised learning algorithm
d) Reinforcement learning algorithm

12) Let's assume the confusion matrix of the win/loss prediction of cricket match problem to be as below:

	ACTUAL WIN	ACTUAL LOSS
PREDICTED WIN	85	4
PREDICTED LOSS	2	9

The accuracy of the classification is _____.

a) 96%
b) 98%
c) 94%
d) 90%

13) SVM is an example of _____?

a) Linear Classifier and Maximum Margin Classifier
b) Non-linear Classifier and Maximum Margin Classifier
c) Linear Classifier and Minimum Margin Classifier
d) Non-linear Classifier and Minimum Margin Classifier

14) Let us consider two examples, say 'predicting whether a tumor is malignant or benign' and 'price prediction in the domain of real estate'. These two problems are same in nature.

a) True
b) False

SLR-GF-213

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI/MI -Machine Learning (BTN04612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) What is Machine Learning? Give examples of Machine Learning Problems.
b) Differentiate between Supervised and Unsupervised Learning.
c) Explain Unsupervised Learning with examples?
d) Define following terms with suitable examples:
i) Linear Regression
ii) Logistic Regression
e) Explain the Terms True positive, True Negative, False Positive and False Negative in Confusion Matrix.

Q.3 Solve any two. **12**

a) Why Random Forest Model is an ensemble method? What is bagging in Random Forest Model?
b) What are Support Vectors in SVMs? What is a Margin? How is the classification made in SVM?
c) Explain Linear and Multiple regressions with suitable examples, graphs and Equations.

Section – II

Q.4 Solve any four. **16**

a) Explain basic steps of Apriori algorithm for association rule learning.
b) Draw the simple structure of MP Neuron? Implement Logical OR GATE with suitable example.
c) Define the following Terms in DBSCAN:
i) Epsilon
ii) Core Point
iii) Minimum Points
iv) Noise
d) Explain K-Nearest Neighbor classification with an example.
e) What are the applications of unsupervised learning?

Q.5 Solve any two **12**

a) For the following given Transaction Data-set, Generate Rules using Apriori Algorithm. Consider the values as Support=50% and Confidence=75%.

Transaction ID	Items Purchased
1	Bread, Cheese, Egg, Juice
2	Bread, Cheese, Juice
3	Bread, Milk, Yogurt
4	Bread, Juice, Milk
5	Cheese, Juice, Milk

b) Explain ML application in Traffic Prediction?

c) Write a short note on Deep Learning.

SLR-GF-214

Seat No.	

Set P

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) Is _____ a widely used and effective machine learning algorithm based on the idea of bagging.
a) Regression b) Classification
c) Decision Tree d) Random Forest

2) Machine learning algorithms build a model based on sample data, known as _____.
a) Training Data b) Transfer Data
c) Data Training d) None of the above

3) A Machine learning technique that helps in detecting the outliers in data _____.
a) Clustering b) Classification
c) Anomaly Detection d) All of the above

4) Which of the following is not a supervised learning?
a) PCA b) Naive Bayesian
c) Linear Regression d) Decision Tree Answer

5) What kind of learning algorithm for "Facial identities or facial expressions"?
a) Prediction b) Recognition Patterns
c) Generating Patterns d) Recognizing Anomalies Answer

6) Which of the following are not numerical functions in the various function representation of Machine Learning?
a) Neural Network b) Support Vector Machines
c) Case-based d) Linear Regression

7) What is perceptron?
a) A single layer feed-forward neural network with pre-processing
b) A neural network that contains feedback
c) A double layer auto-associative neural network
d) An auto-associative neural network

8) Which is true for neural networks?
- a) Each node computes its weighted input
- b) Node could be in excited state or non-excited state
- c) It has set of nodes and connections
- d) all of the above

9) What is the objective of back-propagation algorithm?
- a) To develop learning algorithm for multilayer feed forward neural network, so that network can be trained to capture the mapping implicitly
- b) To develop learning algorithm for multilayer feed forward neural network
- c) To develop learning algorithm for single layer feed forward neural network
- d) All of the above

10) Which of the following is true?
- a) On average, neural networks have higher computational rates than conventional computers.
- b) Neural networks learn by Neurons
- c) Neural networks mimic the way the human brain
- d) All The Above

11) Which of the following is correct about the Naive Bayes?
- a) Assumes that all the features in a dataset are independent
- b) Assumes that all the features in a dataset are equally important
- c) Both (a) & (b)
- d) None of the above

12) What are the advantages of nearest neighbor algorithm?
- a) Training is very fast
- b) Can learn complex target functions
- c) Don’t lose information
- d) All of these

13) What is/are true about Distance-weighted KNN?
- a) The weight of the neighbor is considered
- b) The distance of the neighbor is considered
- c) Both a & b
- d) None of these

14) Features of Reinforcement learning _____.
- a) Set of problem rather than set of techniques
- b) RL is training by reward and
- c) RL is learning from trial and error with the
- d) All of these

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any Four: **16**
- **a)** Differentiate between predictive and descriptive tasks of Machine Learning?
- **b)** Explain the different types of Machine Learning with tree diagram?
- **c)** What is Reinforcement learning Explain with examples?
- **d)** Explain Naïve Bayes Classifier with Examples?
- **e)** Explain the Feature construction and Feature Transformation of Machine Learning?

Q.3 Attempt any two. **12**
- **a)** Explain in detail the different types of databases used in ML?
- **b)** Explain in detail about accessing Performance of Regression and Classification.
- **c)** Explain in detail the different Characteristics of Machine Learning?

Section – II

Q.4 Attempt any three. **16**
- **a)** Write a note on DBSCAN?
- **b)** Explain Hierarchical Clustering With Examples.
- **c)** Explain the architecture of Artificial Neural Network.
- **d)** What is Associative Rule, how it is helpful in Finding Patterns?
- **e)** Write a note on K-Mediods?

Q.5 Attempt any two. **12**
- **a)** Explain Feed forward Network and Back Propagation Algorithm with examples?
- **b)** Differentiate between Supervised & Un-supervised ML?
- **c)** Explain any two applications of Machine Learning?

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) Which is true for neural networks?
a) Each node computes its weighted input
b) Node could be in excited state or non-excited state
c) It has set of nodes and connections
d) all of the above

2) What is the objective of back-propagation algorithm?
a) To develop learning algorithm for multilayer feed forward neural network, so that network can be trained to capture the mapping implicitly
b) To develop learning algorithm for multilayer feed forward neural network
c) To develop learning algorithm for single layer feed forward neural network
d) All of the above

3) Which of the following is true?
a) On average, neural networks have higher computational rates than conventional computers.
b) Neural networks learn by Neurons
c) Neural networks mimic the way the human brain
d) All The Above

4) Which of the following is correct about the Naive Bayes?
a) Assumes that all the features in a dataset are independent
b) Assumes that all the features in a dataset are equally important
c) Both (a) & (b)
d) None of the above

5) What are the advantages of nearest neighbor algorithm?
a) Training is very fast
b) Can learn complex target functions
c) Don't lose information
d) All of these

6) What is/are true about Distance-weighted KNN?
a) The weight of the neighbor is considered
b) The distance of the neighbor is considered
c) Both a & b
d) None of these

7) Features of Reinforcement learning _____.
a) Set of problem rather than set of techniques
b) RL is training by reward and
c) RL is learning from trial and error with the
d) All of these

8) Is _____ a widely used and effective machine learning algorithm based on the idea of bagging.
a) Regression b) Classification
c) Decision Tree d) Random Forest

9) Machine learning algorithms build a model based on sample data, known as _____.
a) Training Data b) Transfer Data
c) Data Training d) None of the above

10) A Machine learning technique that helps in detecting the outliers in data _____.
a) Clustering b) Classification
c) Anomaly Detection d) All of the above

11) Which of the following is not a supervised learning?
a) PCA b) Naive Bayesian
c) Linear Regression d) Decision Tree Answer

12) What kind of learning algorithm for “Facial identities or facial expressions”?
a) Prediction b) Recognition Patterns
c) Generating Patterns d) Recognizing Anomalies Answer

13) Which of the following are not numerical functions in the various function representation of Machine Learning?
a) Neural Network b) Support Vector Machines
c) Case-based d) Linear Regression

14) What is perceptron?
a) A single layer feed-forward neural network with pre-processing
b) A neural network that contains feedback
c) A double layer auto-associative neural network
d) An auto-associative neural network

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any Four: **16**
- **a)** Differentiate between predictive and descriptive tasks of Machine Learning?
- **b)** Explain the different types of Machine Learning with tree diagram?
- **c)** What is Reinforcement learning Explain with examples?
- **d)** Explain Naïve Bayes Classifier with Examples?
- **e)** Explain the Feature construction and Feature Transformation of Machine Learning?

Q.3 Attempt any two. **12**
- **a)** Explain in detail the different types of databases used in ML?
- **b)** Explain in detail about accessing Performance of Regression and Classification.
- **c)** Explain in detail the different Characteristics of Machine Learning?

Section – II

Q.4 Attempt any three. **16**
- **a)** Write a note on DBSCAN?
- **b)** Explain Hierarchical Clustering With Examples.
- **c)** Explain the architecture of Artificial Neural Network.
- **d)** What is Associative Rule, how it is helpful in Finding Patterns?
- **e)** Write a note on K-Mediods?

Q.5 Attempt any two. **12**
- **a)** Explain Feed forward Network and Back Propagation Algorithm with examples?
- **b)** Differentiate between Supervised & Un-supervised ML?
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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) Which of the following is correct about the Naive Bayes?
a) Assumes that all the features in a dataset are independent
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d) All of the above

14) Which of the following is true?

a) On average, neural networks have higher computational rates than conventional computers.
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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any Four: **16**
- **a)** Differentiate between predictive and descriptive tasks of Machine Learning?
- **b)** Explain the different types of Machine Learning with tree diagram?
- **c)** What is Reinforcement learning Explain with examples?
- **d)** Explain Naïve Bayes Classifier with Examples?
- **e)** Explain the Feature construction and Feature Transformation of Machine Learning?

Q.3 Attempt any two. **12**
- **a)** Explain in detail the different types of databases used in ML?
- **b)** Explain in detail about accessing Performance of Regression and Classification.
- **c)** Explain in detail the different Characteristics of Machine Learning?

Section – II

Q.4 Attempt any three. **16**
- **a)** Write a note on DBSCAN?
- **b)** Explain Hierarchical Clustering With Examples.
- **c)** Explain the architecture of Artificial Neural Network.
- **d)** What is Associative Rule, how it is helpful in Finding Patterns?
- **e)** Write a note on K-Mediods?

Q.5 Attempt any two. **12**
- **a)** Explain Feed forward Network and Back Propagation Algorithm with examples?
- **b)** Differentiate between Supervised & Un-supervised ML?
- **c)** Explain any two applications of Machine Learning?

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) Which of the following are not numerical functions in the various function representation of Machine Learning?
a) Neural Network b) Support Vector Machines
c) Case-based d) Linear Regression

2) What is perceptron?
a) A single layer feed-forward neural network with pre-processing
b) A neural network that contains feedback
c) A double layer auto-associative neural network
d) An auto-associative neural network

3) Which is true for neural networks?
a) Each node computes its weighted input
b) Node could be in excited state or non-excited state
c) It has set of nodes and connections
d) all of the above

4) What is the objective of back-propagation algorithm?
a) To develop learning algorithm for multilayer feed forward neural network, so that network can be trained to capture the mapping implicitly
b) To develop learning algorithm for multilayer feed forward neural network
c) To develop learning algorithm for single layer feed forward neural network
d) All of the above

5) Which of the following is true?
a) On average, neural networks have higher computational rates than conventional computers.
b) Neural networks learn by Neurons
c) Neural networks mimic the way the human brain
d) All The Above

6) Which of the following is correct about the Naive Bayes?
a) Assumes that all the features in a dataset are independent
b) Assumes that all the features in a dataset are equally important
c) Both (a) & (b)
d) None of the above

7) What are the advantages of nearest neighbor algorithm?
a) Training is very fast
b) Can learn complex target functions
c) Don't lose information
d) All of these

8) What is/are true about Distance-weighted KNN?
a) The weight of the neighbor is considered
b) The distance of the neighbor is considered
c) Both a & b
d) None of these

9) Features of Reinforcement learning _____.
a) Set of problem rather than set of techniques
b) RL is training by reward and
c) RL is learning from trial and error with the
d) All of these

10) Is _____ a widely used and effective machine learning algorithm based on the idea of bagging.
a) Regression b) Classification
c) Decision Tree d) Random Forest

11) Machine learning algorithms build a model based on sample data, known as _____.
a) Training Data b) Transfer Data
c) Data Training d) None of the above

12) A Machine learning technique that helps in detecting the outliers in data _____.
a) Clustering b) Classification
c) Anomaly Detection d) All of the above

13) Which of the following is not a supervised learning?
a) PCA b) Naive Bayesian
c) Linear Regression d) Decision Tree Answer

14) What kind of learning algorithm for "Facial identities or facial expressions"?
a) Prediction b) Recognition Patterns
c) Generating Patterns d) Recognizing Anomalies Answer

SLR-GF-214

Seat No.	

Set S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science Machine Learning (BTN04613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any Four: **16**

a) Differentiate between predictive and descriptive tasks of Machine Learning?
b) Explain the different types of Machine Learning with tree diagram?
c) What is Reinforcement learning Explain with examples?
d) Explain Naïve Bayes Classifier with Examples?
e) Explain the Feature construction and Feature Transformation of Machine Learning?

Q.3 Attempt any two. **12**

a) Explain in detail the different types of databases used in ML?
b) Explain in detail about accessing Performance of Regression and Classification.
c) Explain in detail the different Characteristics of Machine Learning?

Section – II

Q.4 Attempt any three. **16**

a) Write a note on DBSCAN?
b) Explain Hierarchical Clustering With Examples.
c) Explain the architecture of Artificial Neural Network.
d) What is Associative Rule, how it is helpful in Finding Patterns?
e) Write a note on K-Mediods?

Q.5 Attempt any two. **12**

a) Explain Feed forward Network and Back Propagation Algorithm with examples?
b) Differentiate between Supervised & Un-supervised ML?
c) Explain any two applications of Machine Learning?

SLR-GF-215

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options **14**

1) What does TCO stand for in the context of comparing AWS cloud and on-premises data centers?
a) Total Cost of Ownership b) Technical Cloud Operations
c) Time to Customer Onboarding d) Targeted Customer Outreach

2) Which AWS service provides disaster recovery capabilities?
a) Amazon EC2 b) Amazon S3
c) Amazon RDS d) Amazon Glacier

3) What is the purpose of the AWS Command Line Interface (CLI)?
a) Managing virtual machines in AWS
b) Monitoring AWS service usage
c) Configuring security groups in AWS
d) Interacting with AWS services using the command line

4) In IAM, what is a group?
a) A collection of IAM policies
b) A group of users with similar access requirements
c) A role assigned to an IAM user
d) A policy that defines resource permissions

5) Which of the following is NOT an IAM best practice in AWS?
a) Regularly reviewing and rotating access keys
b) Using AWS root user for everyday tasks
c) Granting least privilege to IAM users
d) Enforcing strong password policies

6) What is the purpose of IP addressing in AWS VPC?
a) Identifying VPC instances within a subnet
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a) Using the AWS CLI only
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a) Connecting two VPCs in different regions
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a) Running, stopped, terminated
b) Pending, running, terminated
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d) Creating, active, archived

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a) A feature for managing different versions of an object in a bucket
b) A way to categorize objects based on their content type
c) A process for automatically migrating data between S3 storage classes
d) A mechanism for distributing data across multiple S3 regions

SLR-GF-215

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any THREE **12**

a) Explain the basic concepts of AWS and its key services.
b) What are the benefits of using AWS over traditional data centers in terms of cost, scalability, and flexibility?
c) Describe the differences between SaaS, PaaS, and IaaS in the context of AWS.
d) What is Identity and Access Management (IAM)? Explain how IAM is used in AWS to manage user access to AWS resources.

Q.3 Attempt any TWO **16**

a) What are IAM policies? Explain the different types of policies available in IAM and how they are used to control user access to AWS resources.
b) Explain the key components of AWS VPC, including subnets, IP addressing, and routing tables. Describe how these components work together to create a custom network topology within VPC.
c) What is VPC peering? How does it work and what are some use cases for VPC peering?

Section – II

Q.4 Attempt any THREE **12**

a) What is an Amazon Machine Image (AMI) in the context of EC2?
b) What is Elastic Block Store (EBS) and why is it important in EC2?
c) What is the difference between basic and detailed monitoring in CloudWatch?
d) What is Amazon Simple Storage Service (S3) and how does it function as an object storage service?

Q.5 Attempt any TWO **16**

a) How can CloudWatch alarms be used to trigger actions based on certain threshold conditions?
b) What are the different storage classes available in S3 and how do they differ in terms of durability, availability, and cost?
c) How does lifecycle management in S3 allow for the automatic transition of objects between different storage classes or deletion based on predefined rules?

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options **14**

1) What is VPC peering in AWS?
a) Connecting two VPCs in different regions
b) Sharing VPC resources with external entities
c) Extending a VPC's private network to on-premises
d) Establishing private communication between VPCs

2) What is the lifecycle of an EC2 instance?
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d) Creating, active, archived

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d) Contacting AWS support for VPC creation

SLR-GF-215

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any THREE **12**

a) Explain the basic concepts of AWS and its key services.
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c) Describe the differences between SaaS, PaaS, and IaaS in the context of AWS.
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Q.3 Attempt any TWO **16**

a) What are IAM policies? Explain the different types of policies available in IAM and how they are used to control user access to AWS resources.
b) Explain the key components of AWS VPC, including subnets, IP addressing, and routing tables. Describe how these components work together to create a custom network topology within VPC.
c) What is VPC peering? How does it work and what are some use cases for VPC peering?

Section – II

Q.4 Attempt any THREE **12**

a) What is an Amazon Machine Image (AMI) in the context of EC2?
b) What is Elastic Block Store (EBS) and why is it important in EC2?
c) What is the difference between basic and detailed monitoring in CloudWatch?
d) What is Amazon Simple Storage Service (S3) and how does it function as an object storage service?

Q.5 Attempt any TWO **16**

a) How can CloudWatch alarms be used to trigger actions based on certain threshold conditions?
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SLR-GF-215

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options **14**

1) How does Amazon CloudWatch work in AWS?
a) It collects and tracks metrics from AWS services and resources
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6) Which AWS service provides disaster recovery capabilities?
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d) Amazon Machine Identifier

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any THREE **12**

a) Explain the basic concepts of AWS and its key services.
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Q.3 Attempt any TWO **16**

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Section – II

Q.4 Attempt any THREE **12**

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d) What is Amazon Simple Storage Service (S3) and how does it function as an object storage service?

Q.5 Attempt any TWO **16**

a) How can CloudWatch alarms be used to trigger actions based on certain threshold conditions?
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Seat No.	

Set | S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options **14**

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c) Granting least privilege to IAM users
d) Enforcing strong password policies

SLR-GF-215

Seat No.	

Set S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IoT Cloud Platform (BTN04614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any THREE **12**

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b) What are the benefits of using AWS over traditional data centers in terms of cost, scalability, and flexibility?
c) Describe the differences between SaaS, PaaS, and IaaS in the context of AWS.
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c) What is VPC peering? How does it work and what are some use cases for VPC peering?

Section – II

Q.4 Attempt any THREE **12**

a) What is an Amazon Machine Image (AMI) in the context of EC2?
b) What is Elastic Block Store (EBS) and why is it important in EC2?
c) What is the difference between basic and detailed monitoring in CloudWatch?
d) What is Amazon Simple Storage Service (S3) and how does it function as an object storage service?

Q.5 Attempt any TWO **16**

a) How can CloudWatch alarms be used to trigger actions based on certain threshold conditions?
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Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (197047601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Draw neat diagrams.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Network device HUB is _____ layer device.
a) Physical b) Data Link
c) Network d) Application

2) The MAC id 09:12:EA:4F:30:98 is _____ type.
a) Unicast b) Multicast
c) Broadcast d) None of these

3) The ARQ stands for _____.
a) All Repeat Queue b) Automatic Repeat Request
c) Automatic Resolve Question d) None of these

4) Physical or logical arrangement of network is _____.
a) Topology b) Routing
c) Group d) None of these

5) Error Correction at the data link level is achieved by _____.
a) Bit stuffing b) Equalization
c) Frame formation d) Hamming Code

6) The maximum throughput for pure ALOHA is _____ percent.
a) 12.2 b) 18.4
c) 36.8 d) None of these

7) The network IP address or logical address present for each node in the network is of _____ bits.
a) 12 b) 32
c) 64 d) 48

8) The IP address 199.155.66.63 belongs to _____.
a) Class A b) Class B
c) Class C d) Class D

9) The data unit in transport layer in TCP/IP is called _____.
a) A datagram b) A segment
c) Frame d) Bit-string

10) Which of the following is false with respect to UDP?
a) Connection oriented b) Unreliable
c) Transport layer protocol d) All of the mentioned

11) TCP packets have size of header of _____ bytes.
a) 8 to 10 bytes b) 50 to 60 bytes
c) 20 to 40 bytes d) 20 to 60 bytes

12) Router can recognize and work with _____ addresses.
a) Data Link Layer b) Physical Layer
c) Network Layer d) Application Layer

13) Count to infinity problem is present _____ Routing Protocol.
a) Shortest Path b) Distance Vector
c) Link State d) None of these

14) A _____ is one endpoint of a two-way communication link between two programs running on the network.
a) Gateway b) Semaphore
c) Socket d) None of these

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (197047601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Draw neat diagrams.

Section – I

Q.2 Answer any four. **16**

a) With the help of diagram, explain different network topologies.
b) How CRC is used to detect the error in message communication? For given message bit string “1110101011” and divisor polynomial bit string “1011” calculate CRC.
c) Calculate Hamming code-word for an ASCII character -1101011. Assume even parity during transmission (11,7).
d) With neat diagram discuss the Sliding window protocol mechanism in detail?
e) What are different types of network devices? Discuss any one in detail.

Q.3 Solve any two. **12**

a) Explain in detail IEEE 802.15 Bluetooth Protocol.
b) Draw and explain ISO-OSI reference model and discuss various issues handled by the layers.
c) Draw frame format of IEEE 802.4 protocol and explain each field in detail.

Section – II

Q.4 Attempt any four. **16**

a) Draw TCP packet format and explain its header in detail.
b) What are different IP address classes? Write ranges of different IP addresses. What is default network mask for IP address 10.10.10.11?
c) Explain IP packet Header in detail with help of diagram.
d) Give the difference between Virtual circuit switching and datagram switching techniques.
e) Differentiate between OSPF and BGP in computer networks.

Q.6 Attempt any two. **12**

a) What is encapsulation and Decapsulation in TCP/IP? Discuss three-way handshake in TCP.
b) With neat diagram, explain Distance Vector Routing in detail.
c) With the help of diagram, explain Client - Server Model.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (197047601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Draw neat diagrams.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The IP address 199.155.66.63 belongs to _____.
a) Class A b) Class B
c) Class C d) Class D

2) The data unit in transport layer in TCP/IP is called _____.
a) A datagram b) A segment
c) Frame d) Bit-string

3) Which of the following is false with respect to UDP?
a) Connection oriented b) Unreliable
c) Transport layer protocol d) All of the mentioned

4) TCP packets have size of header of _____ bytes.
a) 8 to 10 bytes b) 50 to 60 bytes
c) 20 to 40 bytes d) 20 to 60 bytes

5) Router can recognize and work with _____ addresses.
a) Data Link Layer b) Physical Layer
c) Network Layer d) Application Layer

6) Count to infinity problem is present _____ Routing Protocol.
a) Shortest Path b) Distance Vector
c) Link State d) None of these

7) A _____ is one endpoint of a two-way communication link between two programs running on the network.
a) Gateway b) Semaphore
c) Socket d) None of these

8) Network device HUB is _____ layer device.
a) Physical b) Data Link
c) Network d) Application

9) The MAC id 09:12:EA:4F:30:98 is _____ type.
a) Unicast b) Multicast
c) Broadcast d) None of these

10) The ARQ stands for _____.
a) All Repeat Queue b) Automatic Repeat Request
c) Automatic Resolve Question d) None of these

11) Physical or logical arrangement of network is _____.
a) Topology b) Routing
c) Group d) None of these

12) Error Correction at the data link level is achieved by _____.
a) Bit stuffing b) Equalization
c) Frame formation d) Hamming Code

13) The maximum throughput for pure ALOHA is _____ percent.
a) 12.2 b) 18.4
c) 36.8 d) None of these

14) The network IP address or logical address present for each node in the network is of _____ bits.
a) 12 b) 32
c) 64 d) 48

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Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (197047601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Draw neat diagrams.

Section – I

Q.2 Answer any four. **16**

a) With the help of diagram, explain different network topologies.
b) How CRC is used to detect the error in message communication? For given message bit string "1110101011" and divisor polynomial bit string "1011" calculate CRC.
c) Calculate Hamming code-word for an ASCII character -1101011. Assume even parity during transmission (11,7).
d) With neat diagram discuss the Sliding window protocol mechanism in detail?
e) What are different types of network devices? Discuss any one in detail.

Q.3 Solve any two. **12**

a) Explain in detail IEEE 802.15 Bluetooth Protocol.
b) Draw and explain ISO-OSI reference model and discuss various issues handled by the layers.
c) Draw frame format of IEEE 802.4 protocol and explain each field in detail.

Section – II

Q.4 Attempt any four. **16**

a) Draw TCP packet format and explain its header in detail.
b) What are different IP address classes? Write ranges of different IP addresses. What is default network mask for IP address 10.10.10.11?
c) Explain IP packet Header in detail with help of diagram.
d) Give the difference between Virtual circuit switching and datagram switching techniques.
e) Differentiate between OSPF and BGP in computer networks.

Q.6 Attempt any two. **12**

a) What is encapsulation and Decapsulation in TCP/IP? Discuss three-way handshake in TCP.
b) With neat diagram, explain Distance Vector Routing in detail.
c) With the help of diagram, explain Client - Server Model.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (197047601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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4) Assume suitable data if necessary.
5) Draw neat diagrams.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) TCP packets have size of header of _____ bytes.
a) 8 to 10 bytes b) 50 to 60 bytes
c) 20 to 40 bytes d) 20 to 60 bytes

2) Router can recognize and work with _____ addresses.
a) Data Link Layer b) Physical Layer
c) Network Layer d) Application Layer

3) Count to infinity problem is present _____ Routing Protocol.
a) Shortest Path b) Distance Vector
c) Link State d) None of these

4) A _____ is one endpoint of a two-way communication link between two programs running on the network.
a) Gateway b) Semaphore
c) Socket d) None of these

5) Network device HUB is _____ layer device.
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c) Network d) Application

6) The MAC id 09:12:EA:4F:30:98 is _____ type.
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7) The ARQ stands for _____.
a) All Repeat Queue b) Automatic Repeat Request
c) Automatic Resolve Question d) None of these

8) Physical or logical arrangement of network is _____.
a) Topology b) Routing
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a) Bit stuffing b) Equalization
c) Frame formation d) Hamming Code

10) The maximum throughput for pure ALOHA is _____ percent.

a) 12.2 b) 18.4
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11) The network IP address or logical address present for each node in the network is of _____ bits.

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12) The IP address 199.155.66.63 belongs to _____.

a) Class A b) Class B
c) Class C d) Class D

13) The data unit in transport layer in TCP/IP is called _____.

a) A datagram b) A segment
c) Frame d) Bit-string

14) Which of the following is false with respect to UDP?

a) Connection oriented b) Unreliable
c) Transport layer protocol d) All of the mentioned

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Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (197047601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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3) Assume suitable data wherever necessary.
4) Draw neat diagrams.

Section – I

Q.2 Answer any four. **16**

a) With the help of diagram, explain different network topologies.
b) How CRC is used to detect the error in message communication? For given message bit string “1110101011” and divisor polynomial bit string “1011” calculate CRC.
c) Calculate Hamming code-word for an ASCII character -1101011. Assume even parity during transmission (11,7).
d) With neat diagram discuss the Sliding window protocol mechanism in detail?
e) What are different types of network devices? Discuss any one in detail.

Q.3 Solve any two. **12**

a) Explain in detail IEEE 802.15 Bluetooth Protocol.
b) Draw and explain ISO-OSI reference model and discuss various issues handled by the layers.
c) Draw frame format of IEEE 802.4 protocol and explain each field in detail.

Section – II

Q.4 Attempt any four. **16**

a) Draw TCP packet format and explain its header in detail.
b) What are different IP address classes? Write ranges of different IP addresses. What is default network mask for IP address 10.10.10.11?
c) Explain IP packet Header in detail with help of diagram.
d) Give the difference between Virtual circuit switching and datagram switching techniques.
e) Differentiate between OSPF and BGP in computer networks.

Q.6 Attempt any two. **12**

a) What is encapsulation and Decapsulation in TCP/IP? Discuss three-way handshake in TCP.
b) With neat diagram, explain Distance Vector Routing in detail.
c) With the help of diagram, explain Client - Server Model.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (197047601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.
5) Draw neat diagrams.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The maximum throughput for pure ALOHA is _____ percent.
a) 12.2 b) 18.4
c) 36.8 d) None of these

2) The network IP address or logical address present for each node in the network is of _____ bits.
a) 12 b) 32
c) 64 d) 48

3) The IP address 199.155.66.63 belongs to _____.
a) Class A b) Class B
c) Class C d) Class D

4) The data unit in transport layer in TCP/IP is called _____.
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c) Network Layer d) Application Layer

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c) Link State d) None of these

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a) Gateway b) Semaphore
c) Socket d) None of these

10) Network device HUB is _____ layer device.
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11) The MAC id 09:12:EA:4F:30:98 is _____ type.
a) Unicast b) Multicast
c) Broadcast d) None of these

12) The ARQ stands for _____.
a) All Repeat Queue b) Automatic Repeat Request
c) Automatic Resolve Question d) None of these

13) Physical or logical arrangement of network is _____.
a) Topology b) Routing
c) Group d) None of these

14) Error Correction at the data link level is achieved by _____.
a) Bit stuffing b) Equalization
c) Frame formation d) Hamming Code

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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Networks (197047601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Draw neat diagrams.

Section – I

Q.2 Answer any four. **16**

a) With the help of diagram, explain different network topologies.
b) How CRC is used to detect the error in message communication? For given message bit string "1110101011" and divisor polynomial bit string "1011" calculate CRC.
c) Calculate Hamming code-word for an ASCII character -1101011. Assume even parity during transmission (11,7).
d) With neat diagram discuss the Sliding window protocol mechanism in detail?
e) What are different types of network devices? Discuss any one in detail.

Q.3 Solve any two. **12**

a) Explain in detail IEEE 802.15 Bluetooth Protocol.
b) Draw and explain ISO-OSI reference model and discuss various issues handled by the layers.
c) Draw frame format of IEEE 802.4 protocol and explain each field in detail.

Section – II

Q.4 Attempt any four. **16**

a) Draw TCP packet format and explain its header in detail.
b) What are different IP address classes? Write ranges of different IP addresses. What is default network mask for IP address 10.10.10.11?
c) Explain IP packet Header in detail with help of diagram.
d) Give the difference between Virtual circuit switching and datagram switching techniques.
e) Differentiate between OSPF and BGP in computer networks.

Q.6 Attempt any two. **12**

a) What is encapsulation and Decapsulation in TCP/IP? Discuss three-way handshake in TCP.
b) With neat diagram, explain Distance Vector Routing in detail.
c) With the help of diagram, explain Client - Server Model.

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Seat No.		Set	P

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (197047602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) A _____ processor has large number of general purpose registers.
a) CICS b) RISC
c) Both a & b d) None of the above

2) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.
a) Supervisor b) System
c) Undefined d) Abort

3) Let r0=0×02020202 and r1=0×00009000. What will be the content of r1 after execution of instruction "LDR r0, [r1], #4"?
a) 0×00009000 b) 0×02020202
c) 0×00009004 d) 0×00008ffb

4) In ARM _____ exception is having the highest priority.
a) Reset b) Supervisor
c) System d) Interrupt request

5) ARM uses the thumb _____ bit instruction set to improve code density.
a) 32 b) 8
c) 64 d) 16

6) Let r0=0×00000000 and r1=0×00000005. What will be the content of r0 after execution of instruction "ADD r0, r1, r1, LSL #1"?
a) 0x00000000 b) 0x00000005
c) 0x0000000a d) 0x0000000f

7) The ARM register _____ is the program counter.
a) R12 b) R13
c) R14 d) R15

8) The on-chip ADC's of LPC2148 has _____ bit resolution and _____ conversion time.
a) $8, 2.44\ \mu sec$ b) $10, 2.44\ \mu sec$
c) $12, 1.44\ \mu sec$ d) $10, 1.44\ \mu sec$

9) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.

a) IOCLR1 b) IODIR0
c) PINSEL2 d) IODIR1

10) TCB stands for _____.

a) Task Control Block b) Task Condition Block
c) Task Communication Block d) None of the above

11) Information about a task is maintained in a _____.

a) Stack
b) Translation Look aside Buffer
c) Task Control Block
d) Task Condition Block

12) A _____ is software for controlling, receiving, and sending a byte or stream of bytes from or to device.

a) Kernel b) Shell
c) Processor d) Device Driver

13) Binary, Mutual exclusion, Counting are the types of _____.

a) Queues b) Pipes
c) Semaphores d) Mailboxes

14) Inter task communication can be done through _____.

a) Mailboxes b) Queues
c) Pipes d) All of above

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (197047602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data wherever necessary.

Section – I

Q.2 Solve any four. **16**

a) Write an ARM assembly program to add two 32 bit numbers.
b) List down the differences between RISC and CISC architecture.
c) Explain nomenclature used for ARM processors.
d) What is an exception? Explain vector addresses and vector table.
e) Define embedded system. Explain major characteristics which differs embedded system from desktop computer.

Q.3 Solve any two. **12**

a) Explain the use of PINSELx, IODIRx, IOSETx and IOCLRx registers in LPC 2148.
b) Draw and explain ARM core data flow model.
c) Explain hardware and software architecture of embedded system.

Section – II

Q.4 Solve any four. **16**

a) Explain features of μC/OS.
b) Interface LCD to LPC 2148 and explain it.
c) Explain different inter-process communication techniques.
d) Define RTOS. Explain its function.
e) Define Program, Process, Threads and Task in RTOS.

Q.5 Solve any two. **12**

a) Interface 8 LEDs to LPC 2148 and write a program to turn on & off the LEDs continuously.
b) Explain μC/OS kernel application services.
c) What is context switch or task switch? Explain with neat diagram.

Seat No.		Set	Q

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (197047602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The on-chip ADC's of LPC2148 has _____ bit resolution and _____ conversion time.
a) $8, 2.44\ \mu sec$ b) $10, 2.44\ \mu sec$
c) $12, 1.44\ \mu sec$ d) $10, 1.44\ \mu sec$

2) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.
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c) PINSEL2 d) IODIR1

3) TCB stands for _____.
a) Task Control Block b) Task Condition Block
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4) Information about a task is maintained in a _____.
a) Stack
b) Translation Look aside Buffer
c) Task Control Block
d) Task Condition Block

5) A _____ is software for controlling, receiving, and sending a byte or stream of bytes from or to device.
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c) Processor d) Device Driver

6) Binary, Mutual exclusion, Counting are the types of _____.
a) Queues b) Pipes
c) Semaphores d) Mailboxes

7) Inter task communication can be done through _____.
a) Mailboxes b) Queues
c) Pipes d) All of above

8) A _____ processor has large number of general purpose registers.
a) CICS b) RISC
c) Both a & b d) None of the above

9) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.

a) Supervisor b) System
c) Undefined d) Abort

10) Let r0=0×02020202 and r1=0×00009000. What will be the content of r1 after execution of instruction “LDR r0, [r1], #4”?

a) 0×00009000 b) 0×02020202
c) 0×00009004 d) 0×00008ffb

11) In ARM _____ exception is having the highest priority.

a) Reset b) Supervisor
c) System d) Interrupt request

12) ARM uses the thumb _____ bit instruction set to improve code density.

a) 32 b) 8
c) 64 d) 16

13) Let r0=0×00000000 and r1=0×00000005. What will be the content of r0 after execution of instruction “ADD r0, r1, r1, LSL #1”?

a) 0x00000000 b) 0x00000005
c) 0x0000000a d) 0x0000000f

14) The ARM register _____ is the program counter.

a) R12 b) R13
c) R14 d) R15

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (197047602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data wherever necessary.

Section – I

Q.2 Solve any four. **16**

a) Write an ARM assembly program to add two 32 bit numbers.
b) List down the differences between RISC and CISC architecture.
c) Explain nomenclature used for ARM processors.
d) What is an exception? Explain vector addresses and vector table.
e) Define embedded system. Explain major characteristics which differs embedded system from desktop computer.

Q.3 Solve any two. **12**

a) Explain the use of PINSELx, IODIRx, IOSETx and IOCLRx registers in LPC 2148.
b) Draw and explain ARM core data flow model.
c) Explain hardware and software architecture of embedded system.

Section – II

Q.4 Solve any four. **16**

a) Explain features of μC/OS.
b) Interface LCD to LPC 2148 and explain it.
c) Explain different inter-process communication techniques.
d) Define RTOS. Explain its function.
e) Define Program, Process, Threads and Task in RTOS.

Q.5 Solve any two. **12**

a) Interface 8 LEDs to LPC 2148 and write a program to turn on & off the LEDs continuously.
b) Explain μC/OS kernel application services.
c) What is context switch or task switch? Explain with neat diagram.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (197047602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Information about a task is maintained in a _____.
a) Stack
b) Translation Look aside Buffer
c) Task Control Block
d) Task Condition Block

2) A _____ is software for controlling, receiving, and sending a byte or stream of bytes from or to device.
a) Kernel b) Shell
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3) Binary, Mutual exclusion, Counting are the types of _____.
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a) Mailboxes b) Queues
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a) Supervisor b) System
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8) In ARM _____ exception is having the highest priority.
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c) System d) Interrupt request

9) ARM uses the thumb _____ bit instruction set to improve code density.
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10) Let r0=0×00000000 and r1=0×00000005. What will be the content of r0 after execution of instruction "ADD r0, r1, r1, LSL #1"?
a) 0x00000000 b) 0x00000005
c) 0x0000000a d) 0x0000000f

11) The ARM register _____ is the program counter.
a) R12 b) R13
c) R14 d) R15

12) The on-chip ADC's of LPC2148 has _____ bit resolution and _____ conversion time.
a) $8, 2.44\ \mu\text{sec}$ b) $10, 2.44\ \mu\text{sec}$
c) $12, 1.44\ \mu\text{sec}$ d) $10, 1.44\ \mu\text{sec}$

13) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.
a) IOCLR1 b) IODIR0
c) PINSEL2 d) IODIR1

14) TCB stands for _____.
a) Task Control Block b) Task Condition Block
c) Task Communication Block d) None of the above

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (197047602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Solve any four. **16**

a) Write an ARM assembly program to add two 32 bit numbers.
b) List down the differences between RISC and CISC architecture.
c) Explain nomenclature used for ARM processors.
d) What is an exception? Explain vector addresses and vector table.
e) Define embedded system. Explain major characteristics which differs embedded system from desktop computer.

Q.3 Solve any two. **12**

a) Explain the use of PINSELx, IODIRx, IOSETx and IOCLRx registers in LPC 2148.
b) Draw and explain ARM core data flow model.
c) Explain hardware and software architecture of embedded system.

Section – II

Q.4 Solve any four. **16**

a) Explain features of μC/OS.
b) Interface LCD to LPC 2148 and explain it.
c) Explain different inter-process communication techniques.
d) Define RTOS. Explain its function.
e) Define Program, Process, Threads and Task in RTOS.

Q.5 Solve any two. **12**

a) Interface 8 LEDs to LPC 2148 and write a program to turn on & off the LEDs continuously.
b) Explain μC/OS kernel application services.
c) What is context switch or task switch? Explain with neat diagram.

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (197047602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Let r0=0×00000000 and r1=0×00000005. What will be the content of r0 after execution of instruction "ADD r0, r1, r1, LSL #1"?
a) 0x00000000 b) 0x00000005
c) 0x0000000a d) 0x0000000f

2) The ARM register _____ is the program counter.
a) R12 b) R13
c) R14 d) R15

3) The on-chip ADC's of LPC2148 has _____ bit resolution and _____ conversion time.
a) $8, 2.44\ \mu sec$ b) $10, 2.44\ \mu sec$
c) $12, 1.44\ \mu sec$ d) $10, 1.44\ \mu sec$

4) In LPC2148 the _____ register is used to select the direction of port pins P1.0 to P1.31.
a) IOCLR1 b) IODIR0
c) PINSEL2 d) IODIR1

5) TCB stands for _____.
a) Task Control Block b) Task Condition Block
c) Task Communication Block d) None of the above

6) Information about a task is maintained in a _____.
a) Stack
b) Translation Look aside Buffer
c) Task Control Block
d) Task Condition Block

7) A _____ is software for controlling, receiving, and sending a byte or stream of bytes from or to device.
a) Kernel b) Shell
c) Processor d) Device Driver

8) Binary, Mutual exclusion, Counting are the types of _____.
a) Queues b) Pipes
c) Semaphores d) Mailboxes

9) Inter task communication can be done through _____.
a) Mailboxes b) Queues
c) Pipes d) All of above

10) A _____ processor has large number of general purpose registers.
a) CICS b) RISC
c) Both a & b d) None of the above

11) _____ mode is used when the processor encounters an instruction that is not supported by the implementation.
a) Supervisor b) System
c) Undefined d) Abort

12) Let r0=0×02020202 and r1=0×00009000. What will be the content of r1 after execution of instruction “LDR r0, [r1], #4”?
a) 0×00009000 b) 0×02020202
c) 0×00009004 d) 0×00008ffb

13) In ARM _____ exception is having the highest priority.
a) Reset b) Supervisor
c) System d) Interrupt request

14) ARM uses the thumb _____ bit instruction set to improve code density.
a) 32 b) 8
c) 64 d) 16

SLR-GF-217

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Embedded Systems (197047602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Solve any four. **16**

a) Write an ARM assembly program to add two 32 bit numbers.
b) List down the differences between RISC and CISC architecture.
c) Explain nomenclature used for ARM processors.
d) What is an exception? Explain vector addresses and vector table.
e) Define embedded system. Explain major characteristics which differs embedded system from desktop computer.

Q.3 Solve any two. **12**

a) Explain the use of PINSELx, IODIRx, IOSETx and IOCLRx registers in LPC 2148.
b) Draw and explain ARM core data flow model.
c) Explain hardware and software architecture of embedded system.

Section – II

Q.4 Solve any four. **16**

a) Explain features of μC/OS.
b) Interface LCD to LPC 2148 and explain it.
c) Explain different inter-process communication techniques.
d) Define RTOS. Explain its function.
e) Define Program, Process, Threads and Task in RTOS.

Q.5 Solve any two. **12**

a) Interface 8 LEDs to LPC 2148 and write a program to turn on & off the LEDs continuously.
b) Explain μC/OS kernel application services.
c) What is context switch or task switch? Explain with neat diagram.

SLR-GF-218

Seat No.	

Set P

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Electronics System Design (197047603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Electronic product are classified into three different categories based on _____.
a) Operating temperature range b) Reliability of quality
c) Either a or b d) Both a and b

2) The software structure design uses _____.
a) Bottom-to-top approach b) Top-to-Bottom approach
c) Linear approach d) can't say

3) A good program must satisfy _____ requirements.
a) User's expectations b) Error free, efficient
c) User friendly d) All the above

4) The capacity of a battery is expressed in terms of _____.
a) Current rating b) Voltage rating
c) Ampere hour rating d) None of the above

5) The storage battery generally used in electric power station is _____.
a) Nickel-cadmium battery b) Zinc carbon battery
c) Lead-acid battery d) None of the above

6) Transducer is used to convert a _____.
a) Physical quantity into an electrical signal
b) Electrical signal into a physical quantity
c) Physical quantity into a mechanical quantity
d) Physical quantity into a chemical quantity

7) Signal conditioner is used for _____.
a) Attenuating the voltage b) Maintaining a constant voltage
c) Keeping the voltage zero d) Boosting the voltage

8) Which of the following is the logic level understood by the micro-controller/ micro-processor?
a) TTL logic level b) RS232 logic level
c) RS485 logic level d) TTL & RS232 logic level

9) Which of the following best states the reason that why baud rate is mentioned in serial communication?

a) to know about the no of bits being transmitted per second
b) to make the two devices compatible with each other, so that the transmission becomes easy and error free
c) to use Timer 1
d) for wasting memory

10) Which of the following can be used for long distance communication?

a) I2C
b) Parallel port
c) SPI
d) RS232

11) High current circuits are purposely located or placed near the edge of PCB in accordance to the supply lines for _____.

a) Removal of heat
b) Isolation of stray current
c) Reduction of path length
d) All of the above

12) A separate power and ground on different planes in a multi layer circuit board will give a _____.

a) low resistance
b) low capacitance
c) low inductance
d) low current

13) In MAX232 standards logic “0” is represented by _____.

a) -3 to -25 V
b) 3 to 25 V
c) 0 to 0.8 V
d) 2 to 5 V

14) In 128x64 GLCD _____ pixels are on X-axis and _____ pixels on Y-axis.

a) 128, 64
b) 64, 128
c) 64, 64
d) 128, 128

Seat No.		Set	P

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Electronics System Design (197047603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Solve Any Four **16**

a) What are the different stages in product development?
b) Compare major design considerations in consumer, industrial and military products.
c) Compare the properties of various rechargeable batteries
d) Classify the rechargeable batteries with their specifications and applications.
e) Interface DS18B2 with any suitable microcontroller and explain it.

Q.3 Solve Any Two **12**

a) Analyze the customer needs so as to arrive at detailed specifications, for the product “Five volt DC power supply for laboratory use”. Also devise suitable environment tests for this product.
b) Design a battery charger to charge a 12V Ni-Cd or Ni-MH battery at 2.6A
c) Interface LM 35 with any suitable microcontroller and explain it.

Section – II

Q.4 Solve Any Four **16**

a) Explain PCB design for digital circuits.
b) Interface the capacitive touch sensor with 8051 and write a program to detect the touch.
c) Compare RS235 and RS485 serial standards.
d) What is noise due to ground and supply line in PCB design?
e) Write a short note on smart card systems.

Q.5 Solve Any Two **12**

a) Interface microcontroller 8051 with PC through RS232 port. Write the algorithm for serial data transmission between 8051 and PC.
b) Explain types of PCB and design consideration in PCB design.
c) Explain Hardware components used in digital camera.

Seat No.	

Set **Q**

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Electronics System Design (197047603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following is the logic level understood by the micro-controller/ micro-processor?
a) TTL logic level b) RS232 logic level
c) RS485 logic level d) TTL & RS232 logic level

2) Which of the following best states the reason that why baud rate is mentioned in serial communication?
a) to know about the no of bits being transmitted per second
b) to make the two devices compatible with each other, so that the transmission becomes easy and error free
c) to use Timer 1
d) for wasting memory

3) Which of the following can be used for long distance communication?
a) I2C b) Parallel port
c) SPI d) RS232

4) High current circuits are purposely located or placed near the edge of PCB in accordance to the supply lines for _____.
a) Removal of heat b) Isolation of stray current
c) Reduction of path length d) All of the above

5) A separate power and ground on different planes in a multi layer circuit board will give a _____.
a) low resistance b) low capacitance
c) low inductance d) low current

6) In MAX232 standards logic "0" is represented by _____.
a) -3 to -25 V b) 3 to 25 V
c) 0 to 0.8 V d) 2 to 5 V

7) In 128x64 GLCD _____ pixels are on X-axis and _____ pixels on Y-axis.
a) 128, 64 b) 64, 128
c) 64, 64 d) 128, 128

8) Electronic product are classified into three different categories based on _____.
a) Operating temperature range b) Reliability of quality
c) Either a or b d) Both a and b

9) The software structure design uses _____.
a) Bottom-to-top approach b) Top-to-Bottom approach
c) Linear approach d) can't say

10) A good program must satisfy _____ requirements.
a) User's expectations b) Error free, efficient
c) User friendly d) All the above

11) The capacity of a battery is expressed in terms of _____.
a) Current rating b) Voltage rating
c) Ampere hour rating d) None of the above

12) The storage battery generally used in electric power station is _____.
a) Nickel-cadmium battery b) Zinc carbon battery
c) Lead-acid battery d) None of the above

13) Transducer is used to convert a _____.
a) Physical quantity into an electrical signal
b) Electrical signal into a physical quantity
c) Physical quantity into a mechanical quantity
d) Physical quantity into a chemical quantity

14) Signal conditioner is used for _____.
a) Attenuating the voltage b) Maintaining a constant voltage
c) Keeping the voltage zero d) Boosting the voltage

Seat No.	

Set **Q**

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Electronics System Design (197047603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Solve Any Four **16**

a) What are the different stages in product development?
b) Compare major design considerations in consumer, industrial and military products.
c) Compare the properties of various rechargeable batteries
d) Classify the rechargeable batteries with their specifications and applications.
e) Interface DS18B2 with any suitable microcontroller and explain it.

Q.3 Solve Any Two **12**

a) Analyze the customer needs so as to arrive at detailed specifications, for the product “Five volt DC power supply for laboratory use”. Also devise suitable environment tests for this product.
b) Design a battery charger to charge a 12V Ni-Cd or Ni-MH battery at 2.6A
c) Interface LM 35 with any suitable microcontroller and explain it.

Section – II

Q.4 Solve Any Four **16**

a) Explain PCB design for digital circuits.
b) Interface the capacitive touch sensor with 8051 and write a program to detect the touch.
c) Compare RS235 and RS485 serial standards.
d) What is noise due to ground and supply line in PCB design?
e) Write a short note on smart card systems.

Q.5 Solve Any Two **12**

a) Interface microcontroller 8051 with PC through RS232 port. Write the algorithm for serial data transmission between 8051 and PC.
b) Explain types of PCB and design consideration in PCB design.
c) Explain Hardware components used in digital camera.

Seat No.		Set	R

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Electronics System Design (197047603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) High current circuits are purposely located or placed near the edge of PCB in accordance to the supply lines for _____.
a) Removal of heat b) Isolation of stray current
c) Reduction of path length d) All of the above

2) A separate power and ground on different planes in a multi layer circuit board will give a _____.
a) low resistance b) low capacitance
c) low inductance d) low current

3) In MAX232 standards logic "0" is represented by _____.
a) -3 to -25 V b) 3 to 25 V
c) 0 to 0.8 V d) 2 to 5 V

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a) 128, 64 b) 64, 128
c) 64, 64 d) 128, 128

5) Electronic product are classified into three different categories based on _____.
a) Operating temperature range b) Reliability of quality
c) Either a or b d) Both a and b

6) The software structure design uses _____.
a) Bottom-to-top approach b) Top-to-Bottom approach
c) Linear approach d) can't say

7) A good program must satisfy _____ requirements.
a) User's expectations b) Error free, efficient
c) User friendly d) All the above

8) The capacity of a battery is expressed in terms of _____.
a) Current rating b) Voltage rating
c) Ampere hour rating d) None of the above

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a) Physical quantity into an electrical signal
b) Electrical signal into a physical quantity
c) Physical quantity into a mechanical quantity
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11) Signal conditioner is used for _____.
a) Attenuating the voltage
b) Maintaining a constant voltage
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d) Boosting the voltage

12) Which of the following is the logic level understood by the micro-controller/ micro-processor?
a) TTL logic level
b) RS232 logic level
c) RS485 logic level
d) TTL & RS232 logic level

13) Which of the following best states the reason that why baud rate is mentioned in serial communication?
a) to know about the no of bits being transmitted per second
b) to make the two devices compatible with each other, so that the transmission becomes easy and error free
c) to use Timer 1
d) for wasting memory

14) Which of the following can be used for long distance communication?
a) I2C
b) Parallel port
c) SPI
d) RS232

Seat No.	

Set **R**

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Electronics System Design (197047603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Solve Any Four **16**

a) What are the different stages in product development?
b) Compare major design considerations in consumer, industrial and military products.
c) Compare the properties of various rechargeable batteries
d) Classify the rechargeable batteries with their specifications and applications.
e) Interface DS18B2 with any suitable microcontroller and explain it.

Q.3 Solve Any Two **12**

a) Analyze the customer needs so as to arrive at detailed specifications, for the product “Five volt DC power supply for laboratory use”. Also devise suitable environment tests for this product.
b) Design a battery charger to charge a 12V Ni-Cd or Ni-MH battery at 2.6A
c) Interface LM 35 with any suitable microcontroller and explain it.

Section – II

Q.4 Solve Any Four **16**

a) Explain PCB design for digital circuits.
b) Interface the capacitive touch sensor with 8051 and write a program to detect the touch.
c) Compare RS235 and RS485 serial standards.
d) What is noise due to ground and supply line in PCB design?
e) Write a short note on smart card systems.

Q.5 Solve Any Two **12**

a) Interface microcontroller 8051 with PC through RS232 port. Write the algorithm for serial data transmission between 8051 and PC.
b) Explain types of PCB and design consideration in PCB design.
c) Explain Hardware components used in digital camera.

Seat No.		Set	S

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Electronics System Design (197047603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Transducer is used to convert a _____.
a) Physical quantity into an electrical signal
b) Electrical signal into a physical quantity
c) Physical quantity into a mechanical quantity
d) Physical quantity into a chemical quantity

2) Signal conditioner is used for _____.
a) Attenuating the voltage b) Maintaining a constant voltage
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3) Which of the following is the logic level understood by the micro-controller/ micro-processor?
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c) RS485 logic level d) TTL & RS232 logic level

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a) to know about the no of bits being transmitted per second
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c) to use Timer 1
d) for wasting memory

5) Which of the following can be used for long distance communication?
a) I2C b) Parallel port
c) SPI d) RS232

6) High current circuits are purposely located or placed near the edge of PCB in accordance to the supply lines for _____.
a) Removal of heat b) Isolation of stray current
c) Reduction of path length d) All of the above

7) A separate power and ground on different planes in a multi layer circuit board will give a _____.

a) low resistance b) low capacitance
c) low inductance d) low current

8) In MAX232 standards logic “0” is represented by _____.

a) -3 to -25 V b) 3 to 25 V
c) 0 to 0.8 V d) 2 to 5 V

9) In 128x64 GLCD _____ pixels are on X-axis and _____ pixels on Y-axis.

a) 128, 64 b) 64, 128
c) 64, 64 d) 128, 128

10) Electronic product are classified into three different categories based on _____.

a) Operating temperature range b) Reliability of quality
c) Either a or b d) Both a and b

11) The software structure design uses _____.

a) Bottom-to-top approach b) Top-to-Bottom approach
c) Linear approach d) can’t say

12) A good program must satisfy _____ requirements.

a) User’s expectations b) Error free, efficient
c) User friendly d) All the above

13) The capacity of a battery is expressed in terms of _____.

a) Current rating b) Voltage rating
c) Ampere hour rating d) None of the above

14) The storage battery generally used in electric power station is _____.

a) Nickel-cadmium battery b) Zinc carbon battery
c) Lead-acid battery d) None of the above

Seat No.		Set	S

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Electronics System Design (197047603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Solve Any Four **16**

a) What are the different stages in product development?
b) Compare major design considerations in consumer, industrial and military products.
c) Compare the properties of various rechargeable batteries
d) Classify the rechargeable batteries with their specifications and applications.
e) Interface DS18B2 with any suitable microcontroller and explain it.

Q.3 Solve Any Two **12**

a) Analyze the customer needs so as to arrive at detailed specifications, for the product “Five volt DC power supply for laboratory use”. Also devise suitable environment tests for this product.
b) Design a battery charger to charge a 12V Ni-Cd or Ni-MH battery at 2.6A
c) Interface LM 35 with any suitable microcontroller and explain it.

Section – II

Q.4 Solve Any Four **16**

a) Explain PCB design for digital circuits.
b) Interface the capacitive touch sensor with 8051 and write a program to detect the touch.
c) Compare RS235 and RS485 serial standards.
d) What is noise due to ground and supply line in PCB design?
e) Write a short note on smart card systems.

Q.5 Solve Any Two **12**

a) Interface microcontroller 8051 with PC through RS232 port. Write the algorithm for serial data transmission between 8051 and PC.
b) Explain types of PCB and design consideration in PCB design.
c) Explain Hardware components used in digital camera.

SLR-GF-219

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (197047604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) When the signal assignment statement appears within a process, it is considered as _____.
a) sequential b) concurrent
c) conditional d) none of these

2) Which is default delay in VHDL _____.
a) Delta delay b) Inertial delay
c) Transport delay d) None of the above

3) Process in VHDL becomes active, when _____.
a) There is change in the value of signal in sensitivity list
b) Change in clock statement
c) Change in reset signal
d) None of the signal

4) Which of the following is sequential statement _____.
a) Signal assignment b) Variable assignment
c) Wait statement d) All of these

5) VHDL statement _____.
Op <= input when e = '1' else 'z'; infers
a) 2 : 1 multiplexer b) Tristate buffer
c) Buffer d) None of these

6) The delay model models the delays introduced by wiring which simply delays the signal by specified delay is _____.
a) Transport b) Inertial
c) Delta d) None of these

7) With S, a signal object, the attribute that returns the time elapsed since the last event on S is _____.
a) S'LAST_EVENT b) S' TIME_ELAPSED
c) S'LAST_TIME d) S' LAST_ACTIVE

8) The functional blocks that perform combinatorial or sequential logic, and also have the added flexibility for true or complement, along with varied feedback paths in a CPLD are known as _____.

a) Product term allocator b) Macrocell
c) Programmable switch matrix d) None of these

9) RTL simulation does _____.

a) Preparation of Net lists b) Verifying correctness
c) Preparing Timing analysis d) None of above

10) _____ is almost a perfect switch when '1' is to be passed from input to output.

a) Buffer b) N-switch
c) p-switch d) None of these

11) The pattern generated by signal input compressor circuit is called _____ of tested circuit.

a) pseudo random sequence
b) signature
c) random sequence
d) None of above

12) The element in product term allocator that connect their input to one of their two or three outputs is _____.

a) product term OE
b) multiplexer
c) programmable signal steering element
d) None of these

13) Input of synthesis process are _____.

a) RTL VHDL description
b) Circuit constraints and attributes design
c) Technology library
d) All of above

14) The Ability to Tolerate noise without affecting the correct operation of circuit is known as _____.

a) Dynamic power Dissipation b) Noise Margin
c) Static Power Dissipation d) None of above

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (197047604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

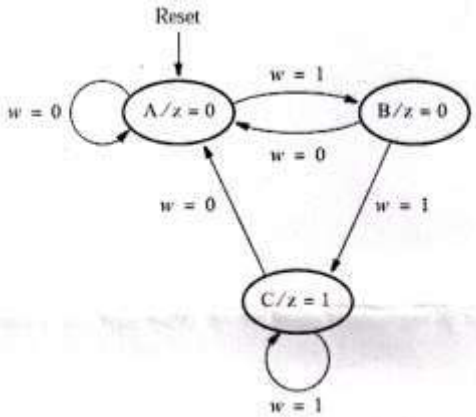
Section – I

Q.2 Attempt any FOUR of the following. **16**

a) Explain in brief different shift operators in VHDL with suitable example.
b) Write VHDL code for 2:4 decoder with behavioral Architecture.
c) Write VHDL code for 3 bit up counter.
d) Explain following attributes of VHDL with suitable example of using these attributes.
i) T'HIGH
ii) S' Delayed (T)
iii) S' Active
iv) A' range (N)
e) Draw the waveform generated on A with following statement is executed at 0 ns. A<= '0', 1 after 6 ns, '0' after 9 ns, '1' after 16 ns, '0' after 22 ns, '1' after 28ns, 0 after 30ns;
Draw the waveforms on B & C considering following statements.
1) B <= reject 3 ns A after 5 ns;
2) C <= transport A after 5 ns;

Q.3 Attempt any TWO of the following. **12**

a) Write VHDL code for Serial in Serial out 6 bit shift register with synchronous reset.
b) Consider the FSM with state diagram shown below. Write the state table & VHDL code for the FSM.



c) Compare following:
i) Signal and variable
ii) Process with sensitivity list & Process without sensitivity list.

Section – II

Q.4 Attempt any FOUR of the following. **16**

a) Explain in brief how to derive test set using path sensitizing method with suitable example.

b) Derive a CMOS complex gate for following logic functions.

$$f = \overline{x_1} + (\overline{x_2} + \overline{x_3})\,\overline{x_4}$$

c) Explain built in self-test method to test the circuits.

d) Explain in brief functional gate level verification.

e) What is a transmission gate? Explain the nMOS and pMOS transistor operation in transmission gate.

Q.5 Attempt any TWO of the following. **12**

a) Draw and Explain Xilinx 9500 series CPLD architecture.

b) What do you mean by synthesis? Explain synthesis process in brief.

c) Give the relation voltages for p and n devices in:

i) cutoff

ii) Saturation and

iii) Linear regions of operation of a CMOS inverter

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (197047604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The functional blocks that perform combinatorial or sequential logic, and also have the added flexibility for true or complement, along with varied feedback paths in a CPLD are known as _____.
a) Product term allocator b) Macrocell
c) Programmable switch matrix d) None of these

2) RTL simulation does _____.
a) Preparation of Net lists b) Verifying correctness
c) Preparing Timing analysis d) None of above

3) _____ is almost a perfect switch when '1' is to be passed from input to output.
a) Buffer b) N-switch
c) p-switch d) None of these

4) The pattern generated by signal input compressor circuit is called _____ of tested circuit.
a) pseudo random sequence
b) signature
c) random sequence
d) None of above

5) The element in product term allocator that connect their input to one of their two or three outputs is _____.
a) product term OE
b) multiplexer
c) programmable signal steering element
d) None of these

6) Input of synthesis process are _____.
a) RTL VHDL description
b) Circuit constraints and attributes design
c) Technology library
d) All of above

7) The Ability to Tolerate noise without affecting the correct operation of circuit is known as _____.

a) Dynamic power Dissipation b) Noise Margin
c) Static Power Dissipation d) None of above

8) When the signal assignment statement appears within a process, it is considered as _____.

a) sequential b) concurrent
c) conditional d) none of these

9) Which is default delay in VHDL _____.

a) Delta delay b) Inertial delay
c) Transport delay d) None of the above

10) Process in VHDL becomes active, when _____.

a) There is change in the value of signal in sensitivity list
b) Change in clock statement
c) Change in reset signal
d) None of the signal

11) Which of the following is sequential statement _____.

a) Signal assignment b) Variable assignment
c) Wait statement d) All of these

12) VHDL statement _____.

Op <= input when e = '1' else 'z'; infers

a) 2 : 1 multiplexer b) Tristate buffer
c) Buffer d) None of these

13) The delay model models the delays introduced by wiring which simply delays the signal by specified delay is _____.

a) Transport b) Inertial
c) Delta d) None of these

14) With S, a signal object, the attribute that returns the time elapsed since the last event on S is _____.

a) S'LAST_EVENT b) S' TIME_ELAPSED
c) S'LAST_TIME d) S' LAST_ACTIVE

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (197047604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

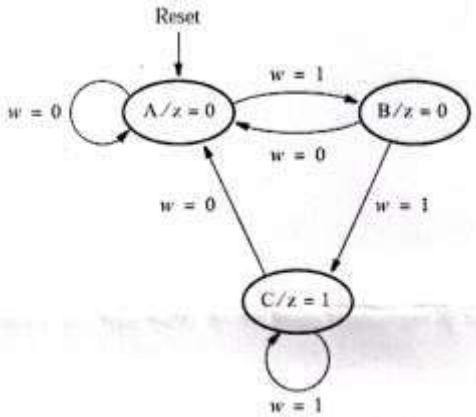
Section – I

Q.2 Attempt any FOUR of the following. **16**

a) Explain in brief different shift operators in VHDL with suitable example.
b) Write VHDL code for 2:4 decoder with behavioral Architecture.
c) Write VHDL code for 3 bit up counter.
d) Explain following attributes of VHDL with suitable example of using these attributes.
i) T'HIGH
ii) S' Delayed (T)
iii) S' Active
iv) A' range (N)
e) Draw the waveform generated on A with following statement is executed at 0 ns. A<= '0', 1 after 6 ns, '0' after 9 ns, '1' after 16 ns, '0' after 22 ns, '1' after 28ns, 0 after 30ns;
Draw the waveforms on B & C considering following statements.
1) B <= reject 3 ns A after 5 ns;
2) C <= transport A after 5 ns;

Q.3 Attempt any TWO of the following. **12**

a) Write VHDL code for Serial in Serial out 6 bit shift register with synchronous reset.
b) Consider the FSM with state diagram shown below. Write the state table & VHDL code for the FSM.



c) Compare following:
i) Signal and variable
ii) Process with sensitivity list & Process without sensitivity list.

Section – II

Q.4 Attempt any FOUR of the following. **16**

a) Explain in brief how to derive test set using path sensitizing method with suitable example.

b) Derive a CMOS complex gate for following logic functions.

$$f = \overline{x_1} + (\overline{x_2} + \overline{x_3})\,\overline{x_4}$$

c) Explain built in self-test method to test the circuits.

d) Explain in brief functional gate level verification.

e) What is a transmission gate? Explain the nMOS and pMOS transistor operation in transmission gate.

Q.5 Attempt any TWO of the following. **12**

a) Draw and Explain Xilinx 9500 series CPLD architecture.

b) What do you mean by synthesis? Explain synthesis process in brief.

c) Give the relation voltages for p and n devices in:

i) cutoff

ii) Saturation and

iii) Linear regions of operation of a CMOS inverter

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (197047604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The pattern generated by signal input compressor circuit is called _____ of tested circuit.
a) pseudo random sequence
b) signature
c) random sequence
d) None of above

2) The element in product term allocator that connect their input to one of their two or three outputs is _____.
a) product term OE
b) multiplexer
c) programmable signal steering element
d) None of these

3) Input of synthesis process are _____.
a) RTL VHDL description
b) Circuit constraints and attributes design
c) Technology library
d) All of above

4) The Ability to Tolerate noise without affecting the correct operation of circuit is known as _____.
a) Dynamic power Dissipation b) Noise Margin
c) Static Power Dissipation d) None of above

5) When the signal assignment statement appears within a process, it is considered as _____.
a) sequential b) concurrent
c) conditional d) none of these

6) Which is default delay in VHDL _____.
a) Delta delay b) Inertial delay
c) Transport delay d) None of the above

7) Process in VHDL becomes active, when _____.
a) There is change in the value of signal in sensitivity list
b) Change in clock statement
c) Change in reset signal
d) None of the signal

8) Which of the following is sequential statement _____.
a) Signal assignment
b) Variable assignment
c) Wait statement
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9) VHDL statement _____.
Op <= input when e = '1' else 'z'; infers
a) 2 : 1 multiplexer
b) Tristate buffer
c) Buffer
d) None of these

10) The delay model models the delays introduced by wiring which simply delays the signal by specified delay is _____.
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c) S'LAST_TIME
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b) Macrocell
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d) None of these

13) RTL simulation does _____.
a) Preparation of Net lists
b) Verifying correctness
c) Preparing Timing analysis
d) None of above

14) _____ is almost a perfect switch when '1' is to be passed from input to output.
a) Buffer
b) N-switch
c) p-switch
d) None of these

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (197047604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR of the following. **16**

a) Explain in brief different shift operators in VHDL with suitable example.
b) Write VHDL code for 2:4 decoder with behavioral Architecture.
c) Write VHDL code for 3 bit up counter.
d) Explain following attributes of VHDL with suitable example of using these attributes.
i) T'HIGH
ii) S' Delayed (T)
iii) S' Active
iv) A' range (N)
e) Draw the waveform generated on A with following statement is executed at 0 ns. A<= '0', 1 after 6 ns, '0' after 9 ns, '1' after 16 ns, '0' after 22 ns, '1' after 28ns, 0 after 30ns;
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Q.3 Attempt any TWO of the following. **12**

a) Write VHDL code for Serial in Serial out 6 bit shift register with synchronous reset.
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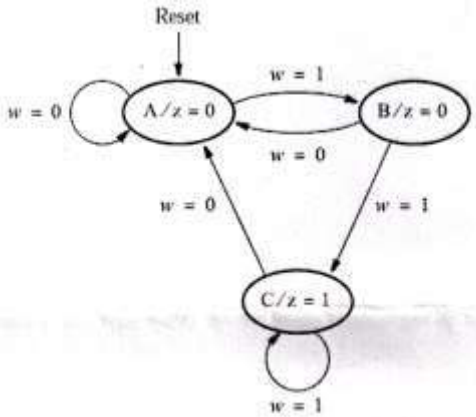

c) Compare following:
i) Signal and variable
ii) Process with sensitivity list & Process without sensitivity list.

Section – II

Q.4 Attempt any FOUR of the following. **16**

a) Explain in brief how to derive test set using path sensitizing method with suitable example.

b) Derive a CMOS complex gate for following logic functions.

$$f = \overline{x_1} + (\overline{x_2} + \overline{x_3})\,\overline{x_4}$$

c) Explain built in self-test method to test the circuits.

d) Explain in brief functional gate level verification.

e) What is a transmission gate? Explain the nMOS and pMOS transistor operation in transmission gate.

Q.5 Attempt any TWO of the following. **12**

a) Draw and Explain Xilinx 9500 series CPLD architecture.

b) What do you mean by synthesis? Explain synthesis process in brief.

c) Give the relation voltages for p and n devices in:

i) cutoff

ii) Saturation and

iii) Linear regions of operation of a CMOS inverter

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (197047604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The delay model models the delays introduced by wiring which simply delays the signal by specified delay is _____.
a) Transport b) Inertial
c) Delta d) None of these

2) With S, a signal object, the attribute that returns the time elapsed since the last event on S is _____.
a) S'LAST_EVENT b) S' TIME_ELAPSED
c) S'LAST_TIME d) S' LAST_ACTIVE

3) The functional blocks that perform combinatorial or sequential logic, and also have the added flexibility for true or complement, along with varied feedback paths in a CPLD are known as _____.
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8) Input of synthesis process are _____.
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c) Wait statement d) All of these

14) VHDL statement _____.
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c) Buffer d) None of these

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
VLSI Design (197047604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

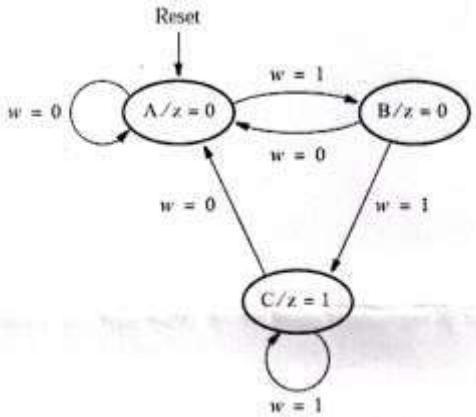
Section – I

Q.2 Attempt any FOUR of the following. **16**

a) Explain in brief different shift operators in VHDL with suitable example.
b) Write VHDL code for 2:4 decoder with behavioral Architecture.
c) Write VHDL code for 3 bit up counter.
d) Explain following attributes of VHDL with suitable example of using these attributes.
i) T'HIGH
ii) S' Delayed (T)
iii) S' Active
iv) A' range (N)
e) Draw the waveform generated on A with following statement is executed at 0 ns. A<= '0', 1 after 6 ns, '0' after 9 ns, '1' after 16 ns, '0' after 22 ns, '1' after 28ns, 0 after 30ns;
Draw the waveforms on B & C considering following statements.
1) B <= reject 3 ns A after 5 ns;
2) C <= transport A after 5 ns;

Q.3 Attempt any TWO of the following. **12**

a) Write VHDL code for Serial in Serial out 6 bit shift register with synchronous reset.
b) Consider the FSM with state diagram shown below. Write the state table & VHDL code for the FSM.



c) Compare following:
i) Signal and variable
ii) Process with sensitivity list & Process without sensitivity list.

Section – II

Q.4 Attempt any FOUR of the following. **16**

a) Explain in brief how to derive test set using path sensitizing method with suitable example.

b) Derive a CMOS complex gate for following logic functions.

$$f = \overline{x_1} + (\overline{x_2} + \overline{x_3})\,\overline{x_4}$$

c) Explain built in self-test method to test the circuits.

d) Explain in brief functional gate level verification.

e) What is a transmission gate? Explain the nMOS and pMOS transistor operation in transmission gate.

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a) Draw and Explain Xilinx 9500 series CPLD architecture.

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c) Give the relation voltages for p and n devices in:

i) cutoff

ii) Saturation and

iii) Linear regions of operation of a CMOS inverter

SLR-GF-220

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (197047606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which class of operating system is designed to handle real-time applications?
a) Simple batch system b) Multiprogramming system
c) Time sharing system d) Real-time system

2) Which of the following is not a type of system call?
a) Process control b) File management
c) Network communication d) Compiler execution

3) What is inter process communication (IPC)?
a) The process of creating multiple processes
b) The process of terminating a process
c) The process of sharing data and information between processes
d) The process of scheduling processes for execution

4) Which of the following is a threading model that allows multiple threads to execute concurrently within the same process?
a) Single-threading b) Multi-threading
c) Multi-programming d) Time-sharing

5) Scheduling is done so as to _____.
a) Increase CPU utilization b) Decrease CPU utilization
c) Keep the CPU more idle d) None of the mentioned

6) The number of processes completed per unit time is known as _____.
a) Output b) Throughput
c) Efficiency d) Capacity

7) Dispatch latency is _____.
a) The speed of dispatching a process from running to the ready state
b) The time of dispatching a process from running to ready state and keeping the CPU idle
c) The time to stop one process and start running another one
d) None of the mentioned

8) Because of virtual memory, the memory can be shared among _____.
a) processes b) threads
c) instructions d) none of the mentioned

9) Swap space exists in _____.
a) primary memory b) secondary memory
c) CPU d) none of the mentioned

10) When a program tries to access a page that is mapped in address space but not loaded in physical memory, then _____.
a) Segmentation fault occurs b) Fatal error occurs
c) Page fault occurs d) No error occurs

11) In FIFO page replacement algorithm, when a page must be replaced _____.
a) Oldest page is chosen b) Newest page is chosen
c) Random page is chosen d) None of the mentioned

12) The instruction being executed, must be in _____.
a) Physical memory b) Logical memory
c) Physical and logical memory d) None of the mentioned

13) In indexed allocation _____.
a) Each file must occupy a set of contiguous blocks on the disk
b) Each file is a linked list of disk blocks
c) All the pointers to scattered blocks are placed together in one location
d) None of the mentioned

14) To solve the problem of external fragmentation _____ needs to be done periodically.
a) Compaction b) Check
c) Formatting d) Replacing memory

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (197047606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain in brief different criteria's used for scheduling.
b) Write a short note on threads.
c) Describe the bounded buffer problem as one of the classical problems of synchronization.
d) Write a short note on batch operating systems.
e) What is operating system? Explain the different services provided by operating system.

Q.3 Attempt Any Two. **12**

a) Write a short note on:
i) Threading issues ii) Critical section problem
b) Explain in detail the direct and indirect inter process communication.
c) Consider five processes P1, P2, P3, P4 and P5 with their required CPU burst in milliseconds.

Process	CPU burst time (ms)	Arrival time
P1	10	3
P2	1	1
P3	2	4
P4	1	5
P5	5	2

How will these processes be scheduled according to FCFS scheduling algorithm? Compute the average waiting time and average turnaround time.

Section – II

Q.4 Attempt Any Four **16**

a) Explain the resource allocation graph.
b) What is deadlock? Explain the necessary conditions for its occurrence.
c) What is paging? Explain the paging hardware.
d) Explain the difference between Physical and logical address.
e) Mention the different file attributes and file types.

Q.5 Attempt Any Two. **12**

a) What is demand paging? Explain Address translation mechanism used in segmentation.
b) Explain first fit, best fit and worst fit allocation algorithm.
c) Elaborate different free space management approaches in OS.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (197047606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Because of virtual memory, the memory can be shared among _____.
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8) Which class of operating system is designed to handle real-time applications?
a) Simple batch system b) Multiprogramming system
c) Time sharing system d) Real-time system

9) Which of the following is not a type of system call?
a) Process control
b) File management
c) Network communication
d) Compiler execution

10) What is inter process communication (IPC)?
a) The process of creating multiple processes
b) The process of terminating a process
c) The process of sharing data and information between processes
d) The process of scheduling processes for execution

11) Which of the following is a threading model that allows multiple threads to execute concurrently within the same process?
a) Single-threading
b) Multi-threading
c) Multi-programming
d) Time-sharing

12) Scheduling is done so as to _____.
a) Increase CPU utilization
b) Decrease CPU utilization
c) Keep the CPU more idle
d) None of the mentioned

13) The number of processes completed per unit time is known as _____.
a) Output
b) Throughput
c) Efficiency
d) Capacity

14) Dispatch latency is _____.
a) The speed of dispatching a process from running to the ready state
b) The time of dispatching a process from running to ready state and keeping the CPU idle
c) The time to stop one process and start running another one
d) None of the mentioned

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (197047606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain in brief different criteria's used for scheduling.
b) Write a short note on threads.
c) Describe the bounded buffer problem as one of the classical problems of synchronization.
d) Write a short note on batch operating systems.
e) What is operating system? Explain the different services provided by operating system.

Q.3 Attempt Any Two. **12**

a) Write a short note on:
i) Threading issues ii) Critical section problem
b) Explain in detail the direct and indirect inter process communication.
c) Consider five processes P1, P2, P3, P4 and P5 with their required CPU burst in milliseconds.

Process	CPU burst time (ms)	Arrival time
P1	10	3
P2	1	1
P3	2	4
P4	1	5
P5	5	2

How will these processes be scheduled according to FCFS scheduling algorithm? Compute the average waiting time and average turnaround time.

Section – II

Q.4 Attempt Any Four **16**

a) Explain the resource allocation graph.
b) What is deadlock? Explain the necessary conditions for its occurrence.
c) What is paging? Explain the paging hardware.
d) Explain the difference between Physical and logical address.
e) Mention the different file attributes and file types.

Q.5 Attempt Any Two. **12**

a) What is demand paging? Explain Address translation mechanism used in segmentation.
b) Explain first fit, best fit and worst fit allocation algorithm.
c) Elaborate different free space management approaches in OS.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (197047606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In FIFO page replacement algorithm, when a page must be replaced _____.
a) Oldest page is chosen b) Newest page is chosen
c) Random page is chosen d) None of the mentioned

2) The instruction being executed, must be in _____.
a) Physical memory b) Logical memory
c) Physical and logical memory d) None of the mentioned

3) In indexed allocation _____.
a) Each file must occupy a set of contiguous blocks on the disk
b) Each file is a linked list of disk blocks
c) All the pointers to scattered blocks are placed together in one location
d) None of the mentioned

4) To solve the problem of external fragmentation _____ needs to be done periodically.
a) Compaction b) Check
c) Formatting d) Replacing memory

5) Which class of operating system is designed to handle real-time applications?
a) Simple batch system b) Multiprogramming system
c) Time sharing system d) Real-time system

6) Which of the following is not a type of system call?
a) Process control b) File management
c) Network communication d) Compiler execution

7) What is inter process communication (IPC)?
a) The process of creating multiple processes
b) The process of terminating a process
c) The process of sharing data and information between processes
d) The process of scheduling processes for execution

8) Which of the following is a threading model that allows multiple threads to execute concurrently within the same process?
a) Single-threading b) Multi-threading
c) Multi-programming d) Time-sharing

9) Scheduling is done so as to _____.
a) Increase CPU utilization b) Decrease CPU utilization
c) Keep the CPU more idle d) None of the mentioned

10) The number of processes completed per unit time is known as _____.
a) Output b) Throughput
c) Efficiency d) Capacity

11) Dispatch latency is _____.
a) The speed of dispatching a process from running to the ready state
b) The time of dispatching a process from running to ready state and keeping the CPU idle
c) The time to stop one process and start running another one
d) None of the mentioned

12) Because of virtual memory, the memory can be shared among _____.
a) processes b) threads
c) instructions d) none of the mentioned

13) Swap space exists in _____.
a) primary memory b) secondary memory
c) CPU d) none of the mentioned

14) When a program tries to access a page that is mapped in address space but not loaded in physical memory, then _____.
a) Segmentation fault occurs b) Fatal error occurs
c) Page fault occurs d) No error occurs

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (197047606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain in brief different criteria's used for scheduling.
b) Write a short note on threads.
c) Describe the bounded buffer problem as one of the classical problems of synchronization.
d) Write a short note on batch operating systems.
e) What is operating system? Explain the different services provided by operating system.

Q.3 Attempt Any Two. **12**

a) Write a short note on:
i) Threading issues ii) Critical section problem
b) Explain in detail the direct and indirect inter process communication.
c) Consider five processes P1, P2, P3, P4 and P5 with their required CPU burst in milliseconds.

Process	CPU burst time (ms)	Arrival time
P1	10	3
P2	1	1
P3	2	4
P4	1	5
P5	5	2

How will these processes be scheduled according to FCFS scheduling algorithm? Compute the average waiting time and average turnaround time.

Section – II

Q.4 Attempt Any Four **16**

a) Explain the resource allocation graph.
b) What is deadlock? Explain the necessary conditions for its occurrence.
c) What is paging? Explain the paging hardware.
d) Explain the difference between Physical and logical address.
e) Mention the different file attributes and file types.

Q.5 Attempt Any Two. **12**

a) What is demand paging? Explain Address translation mechanism used in segmentation.
b) Explain first fit, best fit and worst fit allocation algorithm.
c) Elaborate different free space management approaches in OS.

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (197047606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The number of processes completed per unit time is known as _____.
a) Output b) Throughput
c) Efficiency d) Capacity

2) Dispatch latency is _____.
a) The speed of dispatching a process from running to the ready state
b) The time of dispatching a process from running to ready state and keeping the CPU idle
c) The time to stop one process and start running another one
d) None of the mentioned

3) Because of virtual memory, the memory can be shared among _____.
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c) instructions d) none of the mentioned

4) Swap space exists in _____.
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5) When a program tries to access a page that is mapped in address space but not loaded in physical memory, then _____.
a) Segmentation fault occurs b) Fatal error occurs
c) Page fault occurs d) No error occurs

6) In FIFO page replacement algorithm, when a page must be replaced _____.
a) Oldest page is chosen b) Newest page is chosen
c) Random page is chosen d) None of the mentioned

7) The instruction being executed, must be in _____.
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b) Each file is a linked list of disk blocks
c) All the pointers to scattered blocks are placed together in one location
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c) Time sharing system d) Real-time system

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c) Network communication d) Compiler execution

12) What is inter process communication (IPC)?

a) The process of creating multiple processes
b) The process of terminating a process
c) The process of sharing data and information between processes
d) The process of scheduling processes for execution

13) Which of the following is a threading model that allows multiple threads to execute concurrently within the same process?

a) Single-threading b) Multi-threading
c) Multi-programming d) Time-sharing

14) Scheduling is done so as to _____.

a) Increase CPU utilization b) Decrease CPU utilization
c) Keep the CPU more idle d) None of the mentioned

SLR-GF-220

Seat No.	

Set S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING (Open Elective - II)
Operating Systems (197047606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain in brief different criteria's used for scheduling.
b) Write a short note on threads.
c) Describe the bounded buffer problem as one of the classical problems of synchronization.
d) Write a short note on batch operating systems.
e) What is operating system? Explain the different services provided by operating system.

Q.3 Attempt Any Two. **12**

a) Write a short note on:
i) Threading issues ii) Critical section problem
b) Explain in detail the direct and indirect inter process communication.
c) Consider five processes P1, P2, P3, P4 and P5 with their required CPU burst in milliseconds.

Process	CPU burst time (ms)	Arrival time
P1	10	3
P2	1	1
P3	2	4
P4	1	5
P5	5	2

How will these processes be scheduled according to FCFS scheduling algorithm? Compute the average waiting time and average turnaround time.

Section – II

Q.4 Attempt Any Four **16**

a) Explain the resource allocation graph.
b) What is deadlock? Explain the necessary conditions for its occurrence.
c) What is paging? Explain the paging hardware.
d) Explain the difference between Physical and logical address.
e) Mention the different file attributes and file types.

Q.5 Attempt Any Two. **12**

a) What is demand paging? Explain Address translation mechanism used in segmentation.
b) Explain first fit, best fit and worst fit allocation algorithm.
c) Elaborate different free space management approaches in OS.

SLR-GF-221

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Optical Communication (197047608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 1:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Multimode step index fiber has _____.
a) Large core diameter & large numerical aperture
b) Large core diameter and small numerical aperture
c) Small core diameter and large numerical aperture
d) Small core diameter & small numerical aperture

2) Absorption losses due to atomic defects mainly include _____.
a) Radiation
b) Missing molecules, oxygen defects in glass
c) Impurities in fiber material
d) Interaction with other components of core

3) Losses caused by factors such as core-cladding diameter, numerical aperture, relative refractive index differences, different refractive index profiles, fiber faults are known as _____.
a) Intrinsic joint losses b) Extrinsic losses
c) Insertion losses d) Coupling losses

4) Which process gives the laser its special properties as an optical source?
a) Dispersion b) Stimulated absorption
c) Spontaneous emission d) Stimulated emission

5) When a ray of light enters one medium from another medium, which quality will not change?
a) Direction b) Frequency
c) Speed d) Wavelength

6) How many mechanisms are there which causes absorption?
a) One b) Three
c) Two d) Four

7) How many types of misalignments occur when joining compatible fiber?
a) One b) Two
c) Five d) Three

8) The depletion region must be _____ to allow a large fraction of the incident light to be absorbed in the device (photodiode).
a) Thick b) Thin
c) Long d) Inactive

9) The photocurrent of an optical detector should be _____.
a) less b) more
c) linear d) non-linear

10) Each stage of information transfer is required to follow the fundamentals of __.
a) Optical interconnection b) Optical hibernation
c) Optical networking d) Optical regeneration

11) The mapping of IP frames in SDH/SONET is accomplished in ____ stages.
a) Four b) Two
c) Three d) One

12) In this type of multiplexing time slots are preassigned to sources and fixed.
a) TDM b) Synchronous TDM
c) Asynchronous TDM d) FDM

13) WDM stands for ____.
a) Wave division multiplexing
b) Wavelength division multiplexing
c) Wavelength dependent multiplexing
d) Wave dependent multiplexing

14) Which of the following is not an advantage of time division multiplexing?
a) Signal interference is less
b) More flexible
c) Full channel can be used for every signal
d) Fast data transfer

SLR-GF-221

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Optical Communication (197047608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 1:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain advantages and disadvantages of Optical Communication.
b) Explain numerical aperture in Optical fiber.
c) Explain joint losses in optical fiber.
d) Explain Population Inversion in LASER.
e) Explain the characteristics of LED.

Q.3 Solve any two **12**

a) Define Bending losses in optical fiber? What are the types of bending loss and explain it.
b) Explain LED structure? Also explain forward biasing and reverse biasing in LED.
c) What is splicing in optical fibre? Explain fusion splice and mechanical splice in details.

Section – II

Q.4 Solve any four **16**

a) Define the following for parameters of Optical detector Absorption, Quantum efficiency, Responsivity, Cut-off wavelength.
b) Explain DWDM.
c) Draw and explain photo transistor.
d) Explain optical Time division Multiplexing in details.
e) Explain optical network terminologies.

Q.5 Solve any two **12**

a) Explain avalanche photo diode with suitable diagram.
b) What is optical networking modes? Explain it.
c) Explain SONET and SDH networks.

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Optical Communication (197047608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 1:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The depletion region must be _____ to allow a large fraction of the incident light to be absorbed in the device (photodiode).
a) Thick b) Thin
c) Long d) Inactive

2) The photocurrent of an optical detector should be _____.
a) less b) more
c) linear d) non-linear

3) Each stage of information transfer is required to follow the fundamentals of __.
a) Optical interconnection b) Optical hibernation
c) Optical networking d) Optical regeneration

4) The mapping of IP frames in SDH/SONET is accomplished in ____ stages.
a) Four b) Two
c) Three d) One

5) In this type of multiplexing time slots are preassigned to sources and fixed.
a) TDM b) Synchronous TDM
c) Asynchronous TDM d) FDM

6) WDM stands for ____.
a) Wave division multiplexing
b) Wavelength division multiplexing
c) Wavelength dependent multiplexing
d) Wave dependent multiplexing

7) Which of the following is not an advantage of time division multiplexing?
a) Signal interference is less
b) More flexible
c) Full channel can be used for every signal
d) Fast data transfer

8) Multimode step index fiber has _____.
a) Large core diameter & large numerical aperture
b) Large core diameter and small numerical aperture
c) Small core diameter and large numerical aperture
d) Small core diameter & small numerical aperture

9) Absorption losses due to atomic defects mainly include _____.
a) Radiation
b) Missing molecules, oxygen defects in glass
c) Impurities in fiber material
d) Interaction with other components of core

10) Losses caused by factors such as core-cladding diameter, numerical aperture, relative refractive index differences, different refractive index profiles, fiber faults are known as _____.
a) Intrinsic joint losses b) Extrinsic losses
c) Insertion losses d) Coupling losses

11) Which process gives the laser its special properties as an optical source?
a) Dispersion b) Stimulated absorption
c) Spontaneous emission d) Stimulated emission

12) When a ray of light enters one medium from another medium, which quality will not change?
a) Direction b) Frequency
c) Speed d) Wavelength

13) How many mechanisms are there which causes absorption?
a) One b) Three
c) Two d) Four

14) How many types of misalignments occur when joining compatible fiber?
a) One b) Two
c) Five d) Three

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Optical Communication (197047608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 1:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four **16**

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e) Explain the characteristics of LED.

Q.3 Solve any two **12**

a) Define Bending losses in optical fiber? What are the types of bending loss and explain it.
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Section – II

Q.4 Solve any four **16**

a) Define the following for parameters of Optical detector Absorption, Quantum efficiency, Responsivity, Cut-off wavelength.
b) Explain DWDM.
c) Draw and explain photo transistor.
d) Explain optical Time division Multiplexing in details.
e) Explain optical network terminologies.

Q.5 Solve any two **12**

a) Explain avalanche photo diode with suitable diagram.
b) What is optical networking modes? Explain it.
c) Explain SONET and SDH networks.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Optical Communication (197047608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 1:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The mapping of IP frames in SDH/SONET is accomplished in ____ stages.
a) Four b) Two
c) Three d) One

2) In this type of multiplexing time slots are preassigned to sources and fixed.
a) TDM b) Synchronous TDM
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3) WDM stands for ____.
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4) Which of the following is not an advantage of time division multiplexing?
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5) Multimode step index fiber has _____.
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10) How many mechanisms are there which causes absorption?
a) One b) Three
c) Two d) Four

11) How many types of misalignments occur when joining compatible fiber?
a) One b) Two
c) Five d) Three

12) The depletion region must be _____ to allow a large fraction of the incident light to be absorbed in the device (photodiode).
a) Thick b) Thin
c) Long d) Inactive

13) The photocurrent of an optical detector should be _____.
a) less b) more
c) linear d) non-linear

14) Each stage of information transfer is required to follow the fundamentals of __.
a) Optical interconnection b) Optical hibernation
c) Optical networking d) Optical regeneration

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Optical Communication (197047608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 1:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four **16**

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Optical Communication (197047608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 1:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) How many mechanisms are there which causes absorption?
a) One b) Three
c) Two d) Four

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b) More flexible
c) Full channel can be used for every signal
d) Fast data transfer

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c) Impurities in fiber material
d) Interaction with other components of core

12) Losses caused by factors such as core-cladding diameter, numerical aperture, relative refractive index differences, different refractive index profiles, fiber faults are known as _____.
a) Intrinsic joint losses b) Extrinsic losses
c) Insertion losses d) Coupling losses

13) Which process gives the laser its special properties as an optical source?
a) Dispersion b) Stimulated absorption
c) Spontaneous emission d) Stimulated emission

14) When a ray of light enters one medium from another medium, which quality will not change?
a) Direction b) Frequency
c) Speed d) Wavelength

SLR-GF-221

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Optical Communication (197047608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 1:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain advantages and disadvantages of Optical Communication.
b) Explain numerical aperture in Optical fiber.
c) Explain joint losses in optical fiber.
d) Explain Population Inversion in LASER.
e) Explain the characteristics of LED.

Q.3 Solve any two **12**

a) Define Bending losses in optical fiber? What are the types of bending loss and explain it.
b) Explain LED structure? Also explain forward biasing and reverse biasing in LED.
c) What is splicing in optical fibre? Explain fusion splice and mechanical splice in details.

Section – II

Q.4 Solve any four **16**

a) Define the following for parameters of Optical detector Absorption, Quantum efficiency, Responsivity, Cut-off wavelength.
b) Explain DWDM.
c) Draw and explain photo transistor.
d) Explain optical Time division Multiplexing in details.
e) Explain optical network terminologies.

Q.5 Solve any two **12**

a) Explain avalanche photo diode with suitable diagram.
b) What is optical networking modes? Explain it.
c) Explain SONET and SDH networks.

Seat No.		Set	P

Fourth. Year. (B.Tech.) (Sem - I) (New) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Principle of microwave tube involves transfer of power from _____.
a) source of dc to source of dc
b) source of ac to source of ac
c) source of dc to source of ac
d) source of ac to source of dc

2) Application of klystron is in _____.
a) UHF TV transmitter
b) Satellite communication ground stations
c) Radar transmitter
d) All of the above

3) TWT is _____.
a) Oscillator b) Tuned Amplifier
c) Wide band Amplifier d) Both amplifier and Oscillator

4) TRAPATT diode is preferred over IMPATT diode because of _____.
a) High η
b) Less sensitivity to harmonics
c) Lower noise
d) Ability to operate at higher frequencies

5) Two entities that are combined to form a Magic Tee are _____.
a) One H and two E plane tees b) One H and one E plane tee
c) Two H and two plane tees d) Two H and one E plane tee

6) Which radar system is used for measuring the distance between the radar and a target accurately?
a) Continuous wave radar
b) Pulse Doppler radar
c) Frequency modulated continuous wave (FMCW) radar
d) Synthetic aperture radar (SAR)

7) Which radar parameter is used to determine the velocity of a target?
a) Carrier frequency b) Pulse width
c) Pulse repetition frequency d) Doppler frequency shift

8) In satellite communication, highly directional antennas are used to _____.
a) direct the spot beam to a particular region of space on Earth
b) strengthen the beam to overcome the cosmic noise
c) make corrections in change of polarisation of the beam
d) select a particular channel in transmission and reception

9) Low-orbit satellites are not used for communications because they _____.
a) produce sonic booms
b) do not provide 24 hour/ day contact to the users on Earth
c) heat up and melt
d) none

10) Which of the following is the primary purpose of satellite communication?
a) Weather monitoring
b) Global positioning
c) Wireless internet connectivity
d) Long-distance communication

11) What is the main advantage of satellite communication over terrestrial communication?
a) Lower latency
b) Higher data rates
c) Lower cost
d) Shorter range

12) Which satellite communication application is primarily used for maritime navigation and communication?
a) Direct-to-home (DTH) broadcasting
b) Global Positioning System (GPS)
c) Satellite radio
d) Earth observation

13) _____ is one of the most important elements in an optical fiber link.
a) Cabled fiber
b) Optical Amplifiers
c) Light sources
d) Photo-detectors

14) In first generation, wavelength of multimode fiber is _____.
a) 850 nm
b) 1310 nm
c) 1420 nm
d) 1550 nm

Seat No.	

Set **P**

Fourth. Year. (B.Tech.) (Sem - I) (New) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt the following (Any Two) **12**

a) Show how velocity modulation occurs in two cavity klystron amplifier with proper diagram and mathematically analysis.
b) With the help of proper diagram explain working of Tunnel diode & its characteristics, application, performance parameter.
c) Explain construction and working of π-Mode Magnetron. State its performance parameters.

Q.3 Attempt the following (Any Four) **16**

a) Derive the equations for reflection coefficient and transmission coefficient.
b) Sketch the schematic diagram for Isolator and discuss its working.
c) Write a note on FM-CW Radar.
d) Explain construction and working of PIN diode.
e) Write a note on Phased array Radar.

Section – II

Q.4 Attempt the following (Any Two) **12**

a) With suitable block diagrams explain telemetry, tracking and command (TT&C) subsystem of satellite.
b) Derive the expression for up-link and down link design.
c) Explain construction and working of LED.

Q.5 Attempt the following (Any Four) **16**

a) Draw and explain different types of optical fiber.
b) What is meant by geostationary satellite?
c) Compare Demand assigned multiple access and pre assigned multiple access.
d) Explain bending losses in optical fiber.
e) Write a note on station Keeping.

Seat No.		Set	Q

Fourth. Year. (B.Tech.) (Sem - I) (New) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

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d) select a particular channel in transmission and reception

2) Low-orbit satellites are not used for communications because they _____.
a) produce sonic booms
b) do not provide 24 hour/ day contact to the users on Earth
c) heat up and melt
d) none

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a) Carrier frequency b) Pulse width
c) Pulse repetition frequency d) Doppler frequency shift

Seat No.	

Set **Q**

Fourth. Year. (B.Tech.) (Sem - I) (New) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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b) With the help of proper diagram explain working of Tunnel diode & its characteristics, application, performance parameter.
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c) Write a note on FM-CW Radar.
d) Explain construction and working of PIN diode.
e) Write a note on Phased array Radar.

Section – II

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a) Draw and explain different types of optical fiber.
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c) Compare Demand assigned multiple access and pre assigned multiple access.
d) Explain bending losses in optical fiber.
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Seat No.	

Set **R**

Fourth. Year. (B.Tech.) (Sem - I) (New) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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1) What is the main advantage of satellite communication over terrestrial communication?
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d) none

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c) Wireless internet connectivity d) Long-distance communication

SLR-GF-228

Seat No.	

Set R

Fourth. Year. (B.Tech.) (Sem - I) (New) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

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Section – II

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Seat No.		Set	S

Fourth. Year. (B.Tech.) (Sem - I) (New) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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SLR-GF-228

Seat No.		Set	S

Fourth. Year. (B.Tech.) (Sem - I) (New) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (BTN04701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

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Section – II

Q.4 Attempt the following (Any Two) **12**

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c) Explain construction and working of LED.

Q.5 Attempt the following (Any Four) **16**

a) Draw and explain different types of optical fiber.
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d) Explain bending losses in optical fiber.
e) Write a note on station Keeping.

SLR-GF-229

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Class C commutation is _____ technique.
a) complementary commutation b) load commutation
c) current commutation d) resonant pulse commutation

2) Thyristor is protected from over voltage by using _____.
a) RC Snubber circuits
b) Non linear surge suppressor - Thyrector
c) Electronic crowbar circuit
d) All above

3) Choose the correct statement _____.
a) Thyristor is a voltage controlled device
b) Thyristor current controlled device
c) Thyristor is a Unipolar device
d) Thyristor is a latch proof device

4) Ripple frequency for single phase full bridge controlled rectifier is _____.
a) Same as supply frequency b) Two times supply frequency
c) Three times supply frequency d) Four times supply frequency

5) A single phase semi converter with highly inductive load provides _____ direction of load voltage and _____ load current.
a) negative b) positive & positive
c) positive & negative d) none

6) Three phase fully controlled rectifier converts _____.
a) Single phase AC to DC b) DC to three phase AC
c) Three phase AC to DC d) DC to DC

7) The average value of the output voltage in a step - down dc chopper is given by _____.
a) $V_0 = V_s$ b) $V_0 = K\,V_s$
c) $V_0 = V_s/K$ d) $V_0 = V_s/(1-K)$

8) In _____ chopper load current is always positive and load voltage is positive or negative.

a) Class C
b) Class D
c) Class F
d) Both a & b

9) In _____ inverter output frequency is independent of commutating component but depends upon triggering frequency of thyristors.

a) Parallel
b) Series
c) Series Inverter with coupled inductors
d) all above

10) A single phase bridge inverter has dc input voltage Vs = 50V.Then amplitude of square wave is_____.

a) 50V
b) 25V
c) 100V
d) $50/\sqrt{2}$

11) For step up chopper V_s is source voltage, R_L is load resistance and K is duty cycle average output voltage of this chopper is _____.

a) $\mathrm{K} \times \mathrm{V_s}$
b) $(1-\mathrm{K})/\mathrm{V_s}$
c) $\mathrm{V_s}/\mathrm{K}$
d) $\mathrm{V_s}(1-\mathrm{K})$

12) A three phase to three phase cycloconverter using 6-pulse converter uses ____.

a) 6 SCR's
b) 12 SCR's
c) 36 SCR's
d) 18 SCR's

13) Speed control of three phase AC motor can be obtained from _____.

a) Multiphase chopper
b) Three phase controlled rectifier
c) 3 phase bridge Inverter
d) Three phase dual converter

14) Variable voltage and variable frequency supply for speed control of Induction motor is made available using _____.

a) Cycloconverter
b) Inverter
c) Rectifier
d) Both a & b

SLR-GF-229

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Answer the following (Any four). **16**

a) Prove that thyristor is latching device with help of two transistor analogy.
b) Illustrate the different mechanisms by which thyristor may be turn on.
c) A single phase semi converter is operated from 230V, 50Hz AC supply. The R_L is 10Ω. If the average output voltage is 25% of the maximum possible output voltage. Determine
1) Firing angle
2) Average DC voltage
d) Derive an expression for average dc output voltage for three phase full wave controlled rectifier with resistive load for continuous conduction mode. Sketch voltage waveform for $\alpha = 30°$
e) Explain operation of single phase dual converter with circulating current mode. Draw its associated waveforms.

Q.3 Answer the Following (Any two). **12**

a) Design microcontroller based firing scheme for single phase fully controlled bridge rectifiers.
b) What do you meant by voltage commutation? Elaborate the process of commutation in class B resonant pulse commutation. Sketch associated waveforms.
c) Derive an exp for Average voltage and RMS Voltage for three phase half wave controlled bridge rectifier with highly inductive load. Sketch voltage waveform for $\alpha = 30°$

Section – II

Q.4 Answer the following (Any four). **16**

a) How AC to AC conversion takes place in single phase bridge type cycloconverter with resistive load. The frequency is f_0/f_s= 1/4. Sketch associated waveforms.
b) Explain working of step down chopper and derive an expression for output voltage, duty cycle and effective input resistance.
c) How process of commutation takes place in load commutated chopper with associated voltage and current waveform as a function of time.
d) Explain operation of single phase full bridge voltage source inverter with inductive load. Draw associate waveforms.
e) Why voltage control is essential in inverter circuit? Explain voltage control methods by controlling dc input voltage.

Q.5 Answer the Following (Any two) **12**

a) With suitable block diagram analyze speed control of DC drive using fuzzy logic controller.

b) For 3 phase IGBT based inverter using 180^0 conduction mode plot line voltage and phase voltage using mathematical analysis. Derive an expression for RMS value of line voltage and phase voltage.

c) In multiphase chopper circuit why, phase shifted operating mode is preferred. Compare In phase and Phase shifted operating mode of multiphase chopper circuit.

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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c) Series Inverter with coupled inductors
d) all above

3) A single phase bridge inverter has dc input voltage Vs = 50V.Then amplitude of square wave is_____.
a) 50V b) 25V
c) 100V d) $50/\sqrt{2}$

4) For step up chopper V_s is source voltage, R_L is load resistance and K is duty cycle average output voltage of this chopper is _____.
a) $K \times V_s$ b) $(1-K)/V_s$
c) V_s/K d) $V_s(1-K)$

5) A three phase to three phase cycloconverter using 6-pulse converter uses ____.
a) 6 SCR's b) 12 SCR's
c) 36 SCR's d) 18 SCR's

6) Speed control of three phase AC motor can be obtained from _____.
a) Multiphase chopper b) Three phase controlled rectifier
c) 3 phase bridge Inverter d) Three phase dual converter

7) Variable voltage and variable frequency supply for speed control of Induction motor is made available using _____.
a) Cycloconverter b) Inverter
c) Rectifier d) Both a & b

8) Class C commutation is _____ technique.
a) complementary commutation b) load commutation
c) current commutation d) resonant pulse commutation

9) Thyristor is protected from over voltage by using _____.
a) RC Snubber circuits
b) Non linear surge suppressor - Thyrector
c) Electronic crowbar circuit
d) All above

10) Choose the correct statement _____.
a) Thyristor is a voltage controlled device
b) Thyristor current controlled device
c) Thyristor is a Unipolar device
d) Thyristor is a latch proof device

11) Ripple frequency for single phase full bridge controlled rectifier is _____.
a) Same as supply frequency b) Two times supply frequency
c) Three times supply frequency d) Four times supply frequency

12) A single phase semi converter with highly inductive load provides _____ direction of load voltage and _____ load current.
a) negative b) positive & positive
c) positive & negative d) none

13) Three phase fully controlled rectifier converts _____.
a) Single phase AC to DC b) DC to three phase AC
c) Three phase AC to DC d) DC to DC

14) The average value of the output voltage in a step - down dc chopper is given by _____.
a) $V_0 = V_s$ b) $V_0 = K\,V_s$
c) $V_0 = V_s/K$ d) $V_0 = V_s/(1-K)$

SLR-GF-229

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Answer the following (Any four). **16**

a) Prove that thyristor is latching device with help of two transistor analogy.
b) Illustrate the different mechanisms by which thyristor may be turn on.
c) A single phase semi converter is operated from 230V, 50Hz AC supply. The R_L is 10Ω. If the average output voltage is 25% of the maximum possible output voltage. Determine
1) Firing angle
2) Average DC voltage
d) Derive an expression for average dc output voltage for three phase full wave controlled rectifier with resistive load for continuous conduction mode. Sketch voltage waveform for $\alpha = 30°$
e) Explain operation of single phase dual converter with circulating current mode. Draw its associated waveforms.

Q.3 Answer the Following (Any two). **12**

a) Design microcontroller based firing scheme for single phase fully controlled bridge rectifiers.
b) What do you meant by voltage commutation? Elaborate the process of commutation in class B resonant pulse commutation. Sketch associated waveforms.
c) Derive an exp for Average voltage and RMS Voltage for three phase half wave controlled bridge rectifier with highly inductive load. Sketch voltage waveform for $\alpha = 30°$

Section – II

Q.4 Answer the following (Any four). **16**

a) How AC to AC conversion takes place in single phase bridge type cycloconverter with resistive load. The frequency is f_0/f_s= 1/4. Sketch associated waveforms.
b) Explain working of step down chopper and derive an expression for output voltage, duty cycle and effective input resistance.
c) How process of commutation takes place in load commutated chopper with associated voltage and current waveform as a function of time.
d) Explain operation of single phase full bridge voltage source inverter with inductive load. Draw associate waveforms.
e) Why voltage control is essential in inverter circuit? Explain voltage control methods by controlling dc input voltage.

Q.5 Answer the Following (Any two) **12**

a) With suitable block diagram analyze speed control of DC drive using fuzzy logic controller.

b) For 3 phase IGBT based inverter using 180^0 conduction mode plot line voltage and phase voltage using mathematical analysis. Derive an expression for RMS value of line voltage and phase voltage.

c) In multiphase chopper circuit why, phase shifted operating mode is preferred. Compare In phase and Phase shifted operating mode of multiphase chopper circuit.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) For step up chopper V_s is source voltage, R_L is load resistance and K is duty cycle average output voltage of this chopper is _____.
a) $K \times V_s$ b) $(1 - K)/V_s$
c) V_s/K d) $V_s(1 - K)$

2) A three phase to three phase cycloconverter using 6-pulse converter uses ____.
a) 6 SCR's b) 12 SCR's
c) 36 SCR's d) 18 SCR's

3) Speed control of three phase AC motor can be obtained from _____.
a) Multiphase chopper b) Three phase controlled rectifier
c) 3 phase bridge Inverter d) Three phase dual converter

4) Variable voltage and variable frequency supply for speed control of Induction motor is made available using _____.
a) Cycloconverter b) Inverter
c) Rectifier d) Both a & b

5) Class C commutation is _____ technique.
a) complementary commutation b) load commutation
c) current commutation d) resonant pulse commutation

6) Thyristor is protected from over voltage by using _____.
a) RC Snubber circuits
b) Non linear surge suppressor - Thyrector
c) Electronic crowbar circuit
d) All above

7) Choose the correct statement _____.
a) Thyristor is a voltage controlled device
b) Thyristor current controlled device
c) Thyristor is a Unipolar device
d) Thyristor is a latch proof device

8) Ripple frequency for single phase full bridge controlled rectifier is _____.
a) Same as supply frequency b) Two times supply frequency
c) Three times supply frequency d) Four times supply frequency

9) A single phase semi converter with highly inductive load provides _____ direction of load voltage and _____ load current.
a) negative b) positive & positive
c) positive & negative d) none

10) Three phase fully controlled rectifier converts _____.
a) Single phase AC to DC b) DC to three phase AC
c) Three phase AC to DC d) DC to DC

11) The average value of the output voltage in a step - down dc chopper is given by _____.
a) $V_0 = V_s$ b) $V_0 = K\,V_s$
c) $V_0 = V_s/K$ d) $V_0 = V_s/(1-K)$

12) In _____ chopper load current is always positive and load voltage is positive or negative.
a) Class C b) Class D
c) Class F d) Both a & b

13) In _____ inverter output frequency is independent of commutating component but depends upon triggering frequency of thyristors.
a) Parallel
b) Series
c) Series Inverter with coupled inductors
d) all above

14) A single phase bridge inverter has dc input voltage Vs = 50V.Then amplitude of square wave is_____.
a) 50V b) 25V
c) 100V d) $50/\sqrt{2}$

SLR-GF-229

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Answer the following (Any four). **16**

a) Prove that thyristor is latching device with help of two transistor analogy.
b) Illustrate the different mechanisms by which thyristor may be turn on.
c) A single phase semi converter is operated from 230V, 50Hz AC supply. The R_L is 10Ω. If the average output voltage is 25% of the maximum possible output voltage. Determine
1) Firing angle
2) Average DC voltage
d) Derive an expression for average dc output voltage for three phase full wave controlled rectifier with resistive load for continuous conduction mode. Sketch voltage waveform for $\alpha = 30°$
e) Explain operation of single phase dual converter with circulating current mode. Draw its associated waveforms.

Q.3 Answer the Following (Any two). **12**

a) Design microcontroller based firing scheme for single phase fully controlled bridge rectifiers.
b) What do you meant by voltage commutation? Elaborate the process of commutation in class B resonant pulse commutation. Sketch associated waveforms.
c) Derive an exp for Average voltage and RMS Voltage for three phase half wave controlled bridge rectifier with highly inductive load. Sketch voltage waveform for $\alpha = 30°$

Section – II

Q.4 Answer the following (Any four). **16**

a) How AC to AC conversion takes place in single phase bridge type cycloconverter with resistive load. The frequency is f_0/f_s= 1/4. Sketch associated waveforms.
b) Explain working of step down chopper and derive an expression for output voltage, duty cycle and effective input resistance.
c) How process of commutation takes place in load commutated chopper with associated voltage and current waveform as a function of time.
d) Explain operation of single phase full bridge voltage source inverter with inductive load. Draw associate waveforms.
e) Why voltage control is essential in inverter circuit? Explain voltage control methods by controlling dc input voltage.

Q.5 Answer the Following (Any two) **12**

a) With suitable block diagram analyze speed control of DC drive using fuzzy logic controller.

b) For 3 phase IGBT based inverter using 180^0 conduction mode plot line voltage and phase voltage using mathematical analysis. Derive an expression for RMS value of line voltage and phase voltage.

c) In multiphase chopper circuit why, phase shifted operating mode is preferred. Compare In phase and Phase shifted operating mode of multiphase chopper circuit.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Three phase fully controlled rectifier converts _____.
a) Single phase AC to DC b) DC to three phase AC
c) Three phase AC to DC d) DC to DC

2) The average value of the output voltage in a step - down dc chopper is given by _____.
a) $V_0 = V_s$ b) $V_0 = K\,V_s$
c) $V_0 = V_s/K$ d) $V_0 = V_s/(1-K)$

3) In _____ chopper load current is always positive and load voltage is positive or negative.
a) Class C b) Class D
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4) In _____ inverter output frequency is independent of commutating component but depends upon triggering frequency of thyristors.
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b) Series
c) Series Inverter with coupled inductors
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5) A single phase bridge inverter has dc input voltage Vs = 50V.Then amplitude of square wave is_____.
a) 50V b) 25V
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6) For step up chopper V_s is source voltage, R_L is load resistance and K is duty cycle average output voltage of this chopper is _____.
a) $K \times V_s$ b) $(1-K)/V_s$
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c) 3 phase bridge Inverter d) Three phase dual converter

9) Variable voltage and variable frequency supply for speed control of Induction motor is made available using _____.
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c) Rectifier d) Both a & b

10) Class C commutation is _____ technique.
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c) current commutation d) resonant pulse commutation

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b) Non linear surge suppressor - Thyrector
c) Electronic crowbar circuit
d) All above

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b) Thyristor current controlled device
c) Thyristor is a Unipolar device
d) Thyristor is a latch proof device

13) Ripple frequency for single phase full bridge controlled rectifier is _____.
a) Same as supply frequency b) Two times supply frequency
c) Three times supply frequency d) Four times supply frequency

14) A single phase semi converter with highly inductive load provides _____ direction of load voltage and _____ load current.
a) negative b) positive & positive
c) positive & negative d) none

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Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (BTN04702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Answer the following (Any four). **16**

a) Prove that thyristor is latching device with help of two transistor analogy.
b) Illustrate the different mechanisms by which thyristor may be turn on.
c) A single phase semi converter is operated from 230V, 50Hz AC supply. The R_L is 10Ω. If the average output voltage is 25% of the maximum possible output voltage. Determine
1) Firing angle
2) Average DC voltage
d) Derive an expression for average dc output voltage for three phase full wave controlled rectifier with resistive load for continuous conduction mode. Sketch voltage waveform for $\alpha = 30°$
e) Explain operation of single phase dual converter with circulating current mode. Draw its associated waveforms.

Q.3 Answer the Following (Any two). **12**

a) Design microcontroller based firing scheme for single phase fully controlled bridge rectifiers.
b) What do you meant by voltage commutation? Elaborate the process of commutation in class B resonant pulse commutation. Sketch associated waveforms.
c) Derive an exp for Average voltage and RMS Voltage for three phase half wave controlled bridge rectifier with highly inductive load. Sketch voltage waveform for $\alpha = 30°$

Section – II

Q.4 Answer the following (Any four). **16**

a) How AC to AC conversion takes place in single phase bridge type cycloconverter with resistive load. The frequency is f_0/f_s= 1/4. Sketch associated waveforms.
b) Explain working of step down chopper and derive an expression for output voltage, duty cycle and effective input resistance.
c) How process of commutation takes place in load commutated chopper with associated voltage and current waveform as a function of time.
d) Explain operation of single phase full bridge voltage source inverter with inductive load. Draw associate waveforms.
e) Why voltage control is essential in inverter circuit? Explain voltage control methods by controlling dc input voltage.

Q.5 Answer the Following (Any two) **12**

a) With suitable block diagram analyze speed control of DC drive using fuzzy logic controller.

b) For 3 phase IGBT based inverter using 180^0 conduction mode plot line voltage and phase voltage using mathematical analysis. Derive an expression for RMS value of line voltage and phase voltage.

c) In multiphase chopper circuit why, phase shifted operating mode is preferred. Compare In phase and Phase shifted operating mode of multiphase chopper circuit.

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Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Wireless communication is the transfer of _____ between two or more points that are not connected by an electrical conductor.
a) Information b) Power
c) Both information and power d) None of mentioned

2) Chips are the _____.
a) Repeated symbols b) Non repeated symbols
c) Smallest length symbols d) None of the mentioned

3) What is a cell in cellular system?
a) A group of cells
b) A group of subscribers
c) A small geographical area
d) A large group of mobile systems

4) For a cellular system, if there are N cells and each cell is allocated k channel. What is the total number of available radio channels, S?
a) S=k*N b) S=k/N
c) S=N/k d) S=kN

5) Interference on voice channels causes _____.
a) Blocked calls b) Cross talk
c) Queuing d) Missed calls

6) A GPRS Network is a part of _____ in GSM network.
a) BTS b) BSS
c) NSS d) VLR

7) The frequency band of Bluetooth radio is around _____.
a) 2.1GHz b) 2.2GHz
c) 2.4GHz d) 3.3GHz

8) The smallest building block of a wireless LAN is _____.
a) Unit server set b) Unit service set
c) Basic server set d) Basic service set

9) The _____ layer in IEEE 802.11 protocol provides flow and error control.
a) Physical b) logical link control
c) Medium access control d) none of mentioned

10) Bluetooth is the wireless technology for _____.
a) local area network b) personal area network
c) metropolitan area network d) wide area network

11) A scatternet can have maximum _____.
a) 10 piconets b) 20 piconets
c) 30 piconets d) 40 piconets

12) IEEE 802.11 a uses _____.
a) FHSS b) DSSS
c) OFDM d) either FHSS or DSSS

13) Bluetooth uses _____ in physical layer to avoid interference from other devices or other networks.
a) DSSS b) FHSS
c) FDMA d) none of mentioned.

14) Foreign agents and home agents advertise their presence periodically using special message is called as _____.
a) tunneling message b) registration request
c) Agent advertisement message d) binding request

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Describe concept of multipath propagation. What are the effects of multipath propagation?
b) Elaborate frequency planning in cellular networks. Describe the terms cluster size, frequency reuse factor and total capacity of mobile networks.
c) What is spread spectrum in mobile computing? Discuss functioning of FHSS in detail.
d) Compare CDMA and GSM mobile technologies.
e) Explain call origination and call termination operation in GSM system.

Q.3 Solve any two **12**

a) List the objectives of GSM system. Draw GSM architecture and describe its functionality.
b) Discuss GPRS architecture to enable packet data access in GSM.
c) Explain different GSM traffic channels and control channels.

Section – II

Q.4 Solve any four **16**

a) Differentiate between Bluetooth and wireless PAN standard.
b) Discuss CSMA/ CA protocol related to wireless communication.
c) Describe following terms related to mobile IP
i) home agent
ii) Foreign agent
iii) agent discovery
iv) registration
d) What is tunneling? What is its requirement.
e) Describe concept of piconet and scatternet in Bluetooth.

Q.5 Solve any two **12**

a) Describe IEEE 802.11 architecture and explain its operation.
b) Draw protocol stack of Bluetooth and describe its operation.
c) Draw IEEE 802.11 MAC frame format and describe it in detail.

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The smallest building block of a wireless LAN is _____.
a) Unit server set b) Unit service set
c) Basic server set d) Basic service set

2) The _____ layer in IEEE 802.11 protocol provides flow and error control.
a) Physical b) logical link control
c) Medium access control d) none of mentioned

3) Bluetooth is the wireless technology for _____.
a) local area network b) personal area network
c) metropolitan area network d) wide area network

4) A scatternet can have maximum _____.
a) 10 piconets b) 20 piconets
c) 30 piconets d) 40 piconets

5) IEEE 802.11 a uses _____.
a) FHSS b) DSSS
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6) Bluetooth uses _____ in physical layer to avoid interference from other devices or other networks.
a) DSSS b) FHSS
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7) Foreign agents and home agents advertise their presence periodically using special message is called as _____.
a) tunneling message b) registration request
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8) Wireless communication is the transfer of _____ between two or more points that are not connected by an electrical conductor.
a) Information b) Power
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9) Chips are the _____.
a) Repeated symbols b) Non repeated symbols
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10) What is a cell in cellular system?
a) A group of cells
b) A group of subscribers
c) A small geographical area
d) A large group of mobile systems

11) For a cellular system, if there are N cells and each cell is allocated k channel. What is the total number of available radio channels, S?
a) S=k*N b) S=k/N
c) S=N/k d) S=kN

12) Interference on voice channels causes _____.
a) Blocked calls b) Cross talk
c) Queuing d) Missed calls

13) A GPRS Network is a part of _____ in GSM network.
a) BTS b) BSS
c) NSS d) VLR

14) The frequency band of Bluetooth radio is around _____.
a) 2.1GHz b) 2.2GHz
c) 2.4GHz d) 3.3GHz

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
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Section – I

Q.2 Solve any four **16**

a) Describe concept of multipath propagation. What are the effects of multipath propagation?
b) Elaborate frequency planning in cellular networks. Describe the terms cluster size, frequency reuse factor and total capacity of mobile networks.
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a) List the objectives of GSM system. Draw GSM architecture and describe its functionality.
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Section – II

Q.4 Solve any four **16**

a) Differentiate between Bluetooth and wireless PAN standard.
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c) Describe following terms related to mobile IP
i) home agent
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iii) agent discovery
iv) registration
d) What is tunneling? What is its requirement.
e) Describe concept of piconet and scatternet in Bluetooth.

Q.5 Solve any two **12**

a) Describe IEEE 802.11 architecture and explain its operation.
b) Draw protocol stack of Bluetooth and describe its operation.
c) Draw IEEE 802.11 MAC frame format and describe it in detail.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) A scatternet can have maximum _____.
a) 10 piconets b) 20 piconets
c) 30 piconets d) 40 piconets

2) IEEE 802.11 a uses _____.
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3) Bluetooth uses _____ in physical layer to avoid interference from other devices or other networks.
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SLR-GF-230

Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Describe concept of multipath propagation. What are the effects of multipath propagation?
b) Elaborate frequency planning in cellular networks. Describe the terms cluster size, frequency reuse factor and total capacity of mobile networks.
c) What is spread spectrum in mobile computing? Discuss functioning of FHSS in detail.
d) Compare CDMA and GSM mobile technologies.
e) Explain call origination and call termination operation in GSM system.

Q.3 Solve any two **12**

a) List the objectives of GSM system. Draw GSM architecture and describe its functionality.
b) Discuss GPRS architecture to enable packet data access in GSM.
c) Explain different GSM traffic channels and control channels.

Section – II

Q.4 Solve any four **16**

a) Differentiate between Bluetooth and wireless PAN standard.
b) Discuss CSMA/ CA protocol related to wireless communication.
c) Describe following terms related to mobile IP
i) home agent
ii) Foreign agent
iii) agent discovery
iv) registration
d) What is tunneling? What is its requirement.
e) Describe concept of piconet and scatternet in Bluetooth.

Q.5 Solve any two **12**

a) Describe IEEE 802.11 architecture and explain its operation.
b) Draw protocol stack of Bluetooth and describe its operation.
c) Draw IEEE 802.11 MAC frame format and describe it in detail.

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) A GPRS Network is a part of _____ in GSM network.
a) BTS b) BSS
c) NSS d) VLR

2) The frequency band of Bluetooth radio is around _____.
a) 2.1GHz b) 2.2GHz
c) 2.4GHz d) 3.3GHz

3) The smallest building block of a wireless LAN is _____.
a) Unit server set b) Unit service set
c) Basic server set d) Basic service set

4) The _____ layer in IEEE 802.11 protocol provides flow and error control.
a) Physical b) logical link control
c) Medium access control d) none of mentioned

5) Bluetooth is the wireless technology for _____.
a) local area network b) personal area network
c) metropolitan area network d) wide area network

6) A scatternet can have maximum _____.
a) 10 piconets b) 20 piconets
c) 30 piconets d) 40 piconets

7) IEEE 802.11 a uses _____.
a) FHSS b) DSSS
c) OFDM d) either FHSS or DSSS

8) Bluetooth uses _____ in physical layer to avoid interference from other devices or other networks.
a) DSSS b) FHSS
c) FDMA d) none of mentioned.

9) Foreign agents and home agents advertise their presence periodically using special message is called as _____.
a) tunneling message b) registration request
c) Agent advertisement message d) binding request

10) Wireless communication is the transfer of _____ between two or more points that are not connected by an electrical conductor.
a) Information b) Power
c) Both information and power d) None of mentioned

11) Chips are the _____.
a) Repeated symbols b) Non repeated symbols
c) Smallest length symbols d) None of the mentioned

12) What is a cell in cellular system?
a) A group of cells
b) A group of subscribers
c) A small geographical area
d) A large group of mobile systems

13) For a cellular system, if there are N cells and each cell is allocated k channel. What is the total number of available radio channels, S?
a) S=k*N b) S=k/N
c) S=N/k d) S=kN

14) Interference on voice channels causes _____.
a) Blocked calls b) Cross talk
c) Queuing d) Missed calls

SLR-GF-230

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (BTN04703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Describe concept of multipath propagation. What are the effects of multipath propagation?
b) Elaborate frequency planning in cellular networks. Describe the terms cluster size, frequency reuse factor and total capacity of mobile networks.
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a) List the objectives of GSM system. Draw GSM architecture and describe its functionality.
b) Discuss GPRS architecture to enable packet data access in GSM.
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Section – II

Q.4 Solve any four **16**

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b) Discuss CSMA/ CA protocol related to wireless communication.
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d) What is tunneling? What is its requirement.
e) Describe concept of piconet and scatternet in Bluetooth.

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b) Draw protocol stack of Bluetooth and describe its operation.
c) Draw IEEE 802.11 MAC frame format and describe it in detail.

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Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The conductivity of the pure silicon is raised by:
a) Introducing Dopants (impurities)
b) Increasing Pressure
c) Decreasing Temperature
d) Deformation of Lattice

2) The n-type semiconductor have ____ as majority carriers.
a) Holes b) Negative ions
c) Electrons d) Positive ions

3) The n-MOS transistor is made up of:
a) N-type source, n-type drain and p-type bulk
b) N-type source, p-type drain and p-type bulk
c) P-type source, n-type drain and n-type bulk
d) P- type source, p-type drain and n-type bulk

4) The oxide layer formed in the MOSFET is:
a) Metal oxide b) Silicon dioxide
c) Poly Silicon oxide d) Oxides of Non metals

5) The drain current is varied by:
a) Gate to source voltage b) Gate current
c) Source Voltage d) None of the mentioned

6) CMOS inverter has _____ regions of operation.
a) Three b) Four
c) Two d) five

7) If n-transistor conducts and has large voltage between source and drain, then it is said to be in _____ region.
a) Linear b) Saturation
c) non saturation d) cut-off

8) In the region where inverter exhibits gain, the two transistors are in _____ region.

a) Linear b) cut-off
c) non saturation d) saturation

9) Increasing fan-out _____ the propagation delay.

a) Increases b) Decreases
c) does not affect d) exponentially decreases

10) Which of the following approaches may be used to reduce a delays in large fan-in circuits?

a) Transistor Sizing b) Progressive Transistor Sizing
c) Input Re-Ordering d) All of the above

11) In input Re-Ordering mechanism putting the critical-path transistors closer to the output of the gate can result in a _____

a) Speedup b) Voltage
c) Current d) Output impedance

12) When the pass transistor pulls a node high, the output only charges up to

a) VDD-VTn. b) VDD + VTn.
c) VDD-VTp. d) VDD + VTp.

13) Static memories use _____to create *a bistable circuit — a circuit having two* stable states that represent 0 and 1.

a) Negative feedback b) No feedback
c) positive feedback d) All of these

14) Clocked sequential circuits are

a) two phase overlapping clock
b) two phase non overlapping clock
c) four phase overlapping clock
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SLR-GF-231

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.
3) Assume suitable data whenever necessary.

Section – I

Q.2 Solve any four **16**

a) What is MOS Transitor? Elaborate n-MOS and p-MOS Transistor construction and working.
b) Briefly explain accumlation, depletion and inversion modes in MOS transistors
c) Explain CMOS inverter in detail including circuit and transfer characteristics
d) Explain concept of noise margin.
e) How Ratioed Logic is used in CMOS Design explain using example?

Q.3 Solve any two **12**

a) Design Static CMOS 2 input Nand Gate and comment on number of transistors and power dissipation of following
b) Explain Static and dynamic power Dissipation. Derive an expression for total power dissipation
c) What is pass transistor? How it is used in designing CMOS Logic Gate using Example explain?

Section – II

Q.4 Solve any four **16**

a) What is bistability Principle? How it is used to design Logic Devices explain using example?
b) What is multiplexer based latch? Explain the use of multiplexer based latch to implement D Latch?
c) Explain timing classification in interconnect design.
d) Explain briefly Synchronous and Mesochronous interconnect
e) List different fast adder circuits and explain any one in detail.

Q.5 Solve any two **12**

a) With help of diagram explain SR Latch implementation using CMOS Logic devices and justify the implementation.
b) Explain Synchronizers and Arbiters
c) How master slave edge triggered register operates explain with the help of diagram

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) In the region where inverter exhibits gain, the two transistors are in _____ region.
a) Linear b) cut-off
c) non saturation d) saturation

2) Increasing fan-out _____ the propagation delay.
a) Increases b) Decreases
c) does not affect d) exponentially decreases

3) Which of the following approaches may be used to reduce a delays in large fan-in circuits?
a) Transistor Sizing b) Progressive Transistor Sizing
c) Input Re-Ordering d) All of the above

4) In input Re-Ordering mechanism putting the critical-path transistors closer to the output of the gate can result in a _____
a) Speedup b) Voltage
c) Current d) Output impedance

5) When the pass transistor pulls a node high, the output only charges up to
a) VDD-VTn. b) VDD + VTn.
c) VDD-VTp. d) VDD + VTp.

6) Static memories use _____to create *a bistable circuit — a circuit having two* stable states that represent 0 and 1.
a) Negative feedback b) No feedback
c) positive feedback d) All of these

7) Clocked sequential circuits are
a) two phase overlapping clock
b) two phase non overlapping clock
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8) The conductivity of the pure silicon is raised by:
a) Introducing Dopants (impurities)
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c) Decreasing Temperature
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11) The oxide layer formed in the MOSFET is:
a) Metal oxide b) Silicon dioxide
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12) The drain current is varied by:
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13) CMOS inverter has _____ regions of operation.
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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.
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Section – I

Q.2 Solve any four **16**

a) What is MOS Transitor? Elaborate n-MOS and p-MOS Transistor construction and working.
b) Briefly explain accumlation, depletion and inversion modes in MOS transistors
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d) Explain concept of noise margin.
e) How Ratioed Logic is used in CMOS Design explain using example?

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a) Design Static CMOS 2 input Nand Gate and comment on number of transistors and power dissipation of following
b) Explain Static and dynamic power Dissipation. Derive an expression for total power dissipation
c) What is pass transistor? How it is used in designing CMOS Logic Gate using Example explain?

Section – II

Q.4 Solve any four **16**

a) What is bistability Principle? How it is used to design Logic Devices explain using example?
b) What is multiplexer based latch? Explain the use of multiplexer based latch to implement D Latch?
c) Explain timing classification in interconnect design.
d) Explain briefly Synchronous and Mesochronous interconnect
e) List different fast adder circuits and explain any one in detail.

Q.5 Solve any two **12**

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b) Explain Synchronizers and Arbiters
c) How master slave edge triggered register operates explain with the help of diagram

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) In input Re-Ordering mechanism putting the critical-path transistors closer to the output of the gate can result in a _____
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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
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Section – I

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Section – II

Q.4 Solve any four **16**

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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SLR-GF-231

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
CMOS VLSI Design (BTN04706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.
3) Assume suitable data whenever necessary.

Section – I

Q.2 Solve any four **16**

a) What is MOS Transitor? Elaborate n-MOS and p-MOS Transistor construction and working.
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Section – II

Q.4 Solve any four **16**

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b) Explain Synchronizers and Arbiters
c) How master slave edge triggered register operates explain with the help of diagram

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Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which development model is characterized by a linear progression of stages with no revisiting of earlier stages?
a) Spiral model b) Incremental model
c) Waterfall model d) Agile model

2) Which software development model involves risk assessment and management throughout the development process?
a) Waterfall model b) Incremental model
c) Prototype model d) Spiral model

3) Why is creating a Software Requirements Specification (SRS) important in software development?
a) To start coding immediately
b) To clearly define what the software should do
c) To save development time
d) To create user interfaces

4) What are characteristics of a good SRS?
a) Ambiguity, inconsistency, and incompleteness
b) Understandability, consistency, and traceability
c) Vagueness, lack of details, and redundancy
d) Inaccuracy, simplicity, and redundancy

5) Why is it important to consider non-functional requirements in software development?
a) They ensure the software is bug-free
b) They determine the software's design
c) They define how the system performs its functions
d) They help in coding the software

6) What does software architecture primarily focus on?
a) Writing code
b) Designing the overall structure of the software
c) Running software programs
d) Testing software functionality

7) What does a component and connector view in software architecture represent?
a) How the software behaves in different scenarios
b) The individual parts of the software and how they are connected
c) The flow of data within the software
d) The step-by-step execution of the software

8) Which type of testing evaluates the software based on its intended functionalities?
a) Black-box testing
b) White-box testing
c) Unit testing
d) System testing

9) Which testing phase ensures that the different parts (units) of the software work correctly when combined?
a) Unit testing
b) Functional testing
c) System testing
d) User satisfaction testing

10) What is the primary goal of project management in software engineering?
a) Building complex software architectures
b) Writing flawless code
c) Meeting all technical specifications
d) Delivering quality software within budget and on time

11) What does Software Configuration Management (SCM) primarily deal with?
a) Identifying software bugs
b) Managing changes to software documents, code, and configurations
c) Software design and architecture
d) Hardware configuration

12) What does "CMM" stand for in project management?
a) Comprehensive Management Model
b) Capability Maturity Model
c) Complex Management Methodology
d) Critical Milestone Model

13) Which project management life cycle emphasizes flexibility and adapting to changes throughout the project?
a) Adaptive
b) Iterative
c) Traditional
d) Waterfall

14) Which project management approach emphasizes collaboration, feedback, and iterative development?
a) Waterfall
b) Agile
c) Six Sigma
d) Lean

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Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) How Waterfall model can be used in Software Development explain with the help of Example.
b) What are the different challenges involved in Software Development
c) With the help of Use case diagram explain Online commerce business model.
d) With the help of real-world example draw Data Flow Diagram state the process step by step.
e) Compare Low-Level Design and High-Level Design in software development.
f) How Coupling and Cohesions are useful in Design Concepts of Software Engineering determine with the help of Example.

Q.3 Solve any two. **12**

a) List the characteristics of Good Software requirement documents. Explain Requirement Process steps with the help of diagram in developing software
b) Why Different Architecture styles are present in Software Development? With the help of example represent different architecture styles used in Software Engineering
c) With the help of example and neat diagram explain how spiral mode is used in software development.

Section – II

Q.4 Solve any four. **16**

a) Explain in detail Testing Process steps used in the Software Testing.
b) What are the levels of Testing and why testing is important at every level?
c) Explain the importance of "quality planning" in project management and how it contributes to the success of a project?
d) Explain the significance of "risk management planning" in project management and how it helps in mitigating potential risks?
e) Describe how an "iterative approach" in project management allows for adapting to changing requirements.
f) Explain the concept of “Agile Project Management” and its benefits in software project execution.

Q.5 Solve any two. **12**

a) Explain the concept of "CMM project management process" and its significance in ensuring the quality and efficiency of project management.

b) You are working as Software Development Team member illustrate with help of example following Terminologies used in the Agile Project Management

1	Sprint	4	Backlog
2	Sprint review	5	Sprint retrospective
3	Scrum Master	6	Product Owner

c) Explain how "system testing" differs from "unit testing" in software engineering. Provide a simple example to illustrate each.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which type of testing evaluates the software based on its intended functionalities?
a) Black-box testing b) White-box testing
c) Unit testing d) System testing

2) Which testing phase ensures that the different parts (units) of the software work correctly when combined?
a) Unit testing b) Functional testing
c) System testing d) User satisfaction testing

3) What is the primary goal of project management in software engineering?
a) Building complex software architectures
b) Writing flawless code
c) Meeting all technical specifications
d) Delivering quality software within budget and on time

4) What does Software Configuration Management (SCM) primarily deal with?
a) Identifying software bugs
b) Managing changes to software documents, code, and configurations
c) Software design and architecture
d) Hardware configuration

5) What does "CMM" stand for in project management?
a) Comprehensive Management Model
b) Capability Maturity Model
c) Complex Management Methodology
d) Critical Milestone Model

6) Which project management life cycle emphasizes flexibility and adapting to changes throughout the project?
a) Adaptive b) Iterative
c) Traditional d) Waterfall

7) Which project management approach emphasizes collaboration, feedback, and iterative development?

a) Waterfall
b) Agile
c) Six Sigma
d) Lean

8) Which development model is characterized by a linear progression of stages with no revisiting of earlier stages?

a) Spiral model
b) Incremental model
c) Waterfall model
d) Agile model

9) Which software development model involves risk assessment and management throughout the development process?

a) Waterfall model
b) Incremental model
c) Prototype model
d) Spiral model

10) Why is creating a Software Requirements Specification (SRS) important in software development?

a) To start coding immediately
b) To clearly define what the software should do
c) To save development time
d) To create user interfaces

11) What are characteristics of a good SRS?

a) Ambiguity, inconsistency, and incompleteness
b) Understandability, consistency, and traceability
c) Vagueness, lack of details, and redundancy
d) Inaccuracy, simplicity, and redundancy

12) Why is it important to consider non-functional requirements in software development?

a) They ensure the software is bug-free
b) They determine the software's design
c) They define how the system performs its functions
d) They help in coding the software

13) What does software architecture primarily focus on?

a) Writing code
b) Designing the overall structure of the software
c) Running software programs
d) Testing software functionality

14) What does a component and connector view in software architecture represent?

a) How the software behaves in different scenarios
b) The individual parts of the software and how they are connected
c) The flow of data within the software
d) The step-by-step execution of the software

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four. **16**

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d) With the help of real-world example draw Data Flow Diagram state the process step by step.
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Q.3 Solve any two. **12**

a) List the characteristics of Good Software requirement documents. Explain Requirement Process steps with the help of diagram in developing software
b) Why Different Architecture styles are present in Software Development? With the help of example represent different architecture styles used in Software Engineering
c) With the help of example and neat diagram explain how spiral mode is used in software development.

Section – II

Q.4 Solve any four. **16**

a) Explain in detail Testing Process steps used in the Software Testing.
b) What are the levels of Testing and why testing is important at every level?
c) Explain the importance of "quality planning" in project management and how it contributes to the success of a project?
d) Explain the significance of "risk management planning" in project management and how it helps in mitigating potential risks?
e) Describe how an "iterative approach" in project management allows for adapting to changing requirements.
f) Explain the concept of “Agile Project Management” and its benefits in software project execution.

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a) Explain the concept of "CMM project management process" and its significance in ensuring the quality and efficiency of project management.

b) You are working as Software Development Team member illustrate with help of example following Terminologies used in the Agile Project Management

1	Sprint	4	Backlog
2	Sprint review	5	Sprint retrospective
3	Scrum Master	6	Product Owner

c) Explain how "system testing" differs from "unit testing" in software engineering. Provide a simple example to illustrate each.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) What does Software Configuration Management (SCM) primarily deal with?
a) Identifying software bugs
b) Managing changes to software documents, code, and configurations
c) Software design and architecture
d) Hardware configuration

2) What does "CMM" stand for in project management?
a) Comprehensive Management Model
b) Capability Maturity Model
c) Complex Management Methodology
d) Critical Milestone Model

3) Which project management life cycle emphasizes flexibility and adapting to changes throughout the project?
a) Adaptive b) Iterative
c) Traditional d) Waterfall

4) Which project management approach emphasizes collaboration, feedback, and iterative development?
a) Waterfall b) Agile
c) Six Sigma d) Lean

5) Which development model is characterized by a linear progression of stages with no revisiting of earlier stages?
a) Spiral model b) Incremental model
c) Waterfall model d) Agile model

6) Which software development model involves risk assessment and management throughout the development process?
a) Waterfall model b) Incremental model
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7) Why is creating a Software Requirements Specification (SRS) important in software development?
a) To start coding immediately
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c) To save development time
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8) What are characteristics of a good SRS?
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9) Why is it important to consider non-functional requirements in software development?
a) They ensure the software is bug-free
b) They determine the software's design
c) They define how the system performs its functions
d) They help in coding the software

10) What does software architecture primarily focus on?
a) Writing code
b) Designing the overall structure of the software
c) Running software programs
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11) What does a component and connector view in software architecture represent?
a) How the software behaves in different scenarios
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12) Which type of testing evaluates the software based on its intended functionalities?
a) Black-box testing
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c) Unit testing
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13) Which testing phase ensures that the different parts (units) of the software work correctly when combined?
a) Unit testing
b) Functional testing
c) System testing
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14) What is the primary goal of project management in software engineering?
a) Building complex software architectures
b) Writing flawless code
c) Meeting all technical specifications
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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four. **16**

a) How Waterfall model can be used in Software Development explain with the help of Example.
b) What are the different challenges involved in Software Development
c) With the help of Use case diagram explain Online commerce business model.
d) With the help of real-world example draw Data Flow Diagram state the process step by step.
e) Compare Low-Level Design and High-Level Design in software development.
f) How Coupling and Cohesions are useful in Design Concepts of Software Engineering determine with the help of Example.

Q.3 Solve any two. **12**

a) List the characteristics of Good Software requirement documents. Explain Requirement Process steps with the help of diagram in developing software
b) Why Different Architecture styles are present in Software Development? With the help of example represent different architecture styles used in Software Engineering
c) With the help of example and neat diagram explain how spiral mode is used in software development.

Section – II

Q.4 Solve any four. **16**

a) Explain in detail Testing Process steps used in the Software Testing.
b) What are the levels of Testing and why testing is important at every level?
c) Explain the importance of "quality planning" in project management and how it contributes to the success of a project?
d) Explain the significance of "risk management planning" in project management and how it helps in mitigating potential risks?
e) Describe how an "iterative approach" in project management allows for adapting to changing requirements.
f) Explain the concept of “Agile Project Management” and its benefits in software project execution.

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a) Explain the concept of "CMM project management process" and its significance in ensuring the quality and efficiency of project management.

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1	Sprint	4	Backlog
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c) Explain how "system testing" differs from "unit testing" in software engineering. Provide a simple example to illustrate each.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) What does software architecture primarily focus on?
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2) What does a component and connector view in software architecture represent?
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3) Which type of testing evaluates the software based on its intended functionalities?
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d) They help in coding the software

SLR-GF-233

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Software Engineering (BTN04708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) How Waterfall model can be used in Software Development explain with the help of Example.
b) What are the different challenges involved in Software Development
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e) Compare Low-Level Design and High-Level Design in software development.
f) How Coupling and Cohesions are useful in Design Concepts of Software Engineering determine with the help of Example.

Q.3 Solve any two. **12**

a) List the characteristics of Good Software requirement documents. Explain Requirement Process steps with the help of diagram in developing software
b) Why Different Architecture styles are present in Software Development? With the help of example represent different architecture styles used in Software Engineering
c) With the help of example and neat diagram explain how spiral mode is used in software development.

Section – II

Q.4 Solve any four. **16**

a) Explain in detail Testing Process steps used in the Software Testing.
b) What are the levels of Testing and why testing is important at every level?
c) Explain the importance of "quality planning" in project management and how it contributes to the success of a project?
d) Explain the significance of "risk management planning" in project management and how it helps in mitigating potential risks?
e) Describe how an "iterative approach" in project management allows for adapting to changing requirements.
f) Explain the concept of “Agile Project Management” and its benefits in software project execution.

Q.5 Solve any two. **12**

a) Explain the concept of "CMM project management process" and its significance in ensuring the quality and efficiency of project management.

b) You are working as Software Development Team member illustrate with help of example following Terminologies used in the Agile Project Management

1	Sprint	4	Backlog
2	Sprint review	5	Sprint retrospective
3	Scrum Master	6	Product Owner

c) Explain how "system testing" differs from "unit testing" in software engineering. Provide a simple example to illustrate each.

SLR-GF-234

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (197047701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Assume suitable data if required
4) Figures to right indicate maximum marks

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Choose the correct statement _____.
a) Thyristor is a voltage controlled device
b) Thyristor current controlled device
c) Thyristor is a Unipolar device
d) Thyristor is a latch proof device

2) Inductor is connected in series with thyristor to _____.
a) reduce dv/dt across it b) protect against di/dt
c) protect over voltage d) trigger thyristor

3) Class C commutation is _____ technique
a) complementary commutation b) load commutation
c) current commutation d) resonant pulse commutation

4) The average ON state current of SCR is 10A for firing angle of 60^0, The average ON state current for firing angle of 0^0 will be _____.
a) Less than 10A b) 5A
c) More than 10A d) 0

5) Three phase full wave bridge converter with inductive load acts as _____.
a) Single quadrant converter
b) Two quadrant converter
c) Three quadrant converter
d) Four quadrant converter

6) Three phase fully controlled rectifier converts _____.
a) Single phase AC to DC b) DC to three phase AC
c) Three phase AC to DC d) DC to DC

7) A three phase semi converter will require _____ number of SCRs and _____ number of diodes.
a) 6, 6 b) 3, 3
c) 12, 12 d) 4, 4

8) The average value of the output voltage in a step - down dc chopper is given by _____.

a) $V_o = V_s$ b) $V_o = K V_s$

c) $V_o = V_s / K$ d) $V_0 = V_s / (1 - K)$

9) In _____ chopper load current is always positive and load voltage is positive or negative.

a) Class C b) Class D

c) Class F d) Both a & b

10) The number of thyristors required for single phase midpoint cycloconverters _____.

a) 8 b) 6

c) 4 d) 2

11) In single phase 3:1 bridge type cycloconverter, output frequency is _____.

a) fo=3×fs b) fo=fs/3

c) fo=fs d) fo=6×fs

12) Speed control of three phase AC motor can be obtained from _____.

a) Multiphase chopper b) Three phase controlled rectifier

c) 3 phase bridge inverter d) Three phase dual converter

13) In _____ inverter output frequency is dependents of commutating component and load parameters.

a) Parallel b) Series

c) voltage source inverter d) None

14) A single-phase bridge inverter has dc input voltage Vs = 50V. Then amplitude of square wave is _____.

a) 50V b) 25V

c) 100V d) $50/\sqrt{2}$

SLR-GF-234

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (197047701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt the Following (Any Four) **16**

a) Why thyristor is called as latching device? Prove that thyristor is latching device by using two transistor analogy.

b) With suitable circuit diagram illustrate how to protect SCR from high di/dt and high dv/dt.

c) Explain working of single-phase semi converter with resistive load and derive an expression for average output dc voltage.

d) Derive an exp for Avg voltage for single phase half wave-controlled rectifier with resistive load. Sketch associated waveforms for $\alpha = 30^0$.

e) A three-phase semi converter is operated from 3phase 400V 50Hz mains supply and delivers power to sufficiently large inductive load having resistance of 10Ω. If it is required that average output voltage should be 50% of maximum possible voltage. Calculate
i) Firing angle
ii) Average dc load voltage

Q.3 Attempt the Following (Any Two) **12**

a) Derive an expression for V_{dc}, I_{dc} for three phase fully controlled bridge rectifier with inductive load. Draw neat waveform for $\alpha = 60^0$

b) What do you meant by forced commutation? How commutation takes place in class B resonant pulse commutation technique. Sketch associated waveforms.

c) Design microcontroller-based firing scheme for single fully controlled rectifiers.

Section – II

Q.4 Attempt the Following. (Any Four) **16**

a) Explain working of step-down chopper and derive an expression for output voltage, duty cycle and effective input resistance.

b) What is cycloconverter? Explain operation of single-phase midpoint cycloconverter. The frequency is $f_o/f_s = 1/4$. Sketch associated waveforms.

c) Explain operation of single-phase full bridge voltage source inverter with resistive load. Draw associated waveforms and derive an expression of RMS output voltage.

d) With neat circuit diagram and appropriate waveforms, explain working of basic series inverter with resistive load.

e) How to vary output voltage of inverter using single pulse modulation technique. How it eliminates n^{th} harmonic component from output voltage.

Q.5 Attempt the Following. (Any Two) **12**

a) Describe the process of commutation of main thyristor in Jones chopper with associated voltage and current waveform.

b) Explain working of 180^0 conduction mode, three phase bridge inverter feeding star connected purely resistive load. Draw associated line and phase voltage.

c) Draw a block diagram of microcontroller-based speed control of four quadrant AC drive and explain its working.

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (197047701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

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2) In _____ chopper load current is always positive and load voltage is positive or negative.
a) Class C b) Class D
c) Class F d) Both a & b

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c) 4 d) 2

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a) Parallel b) Series
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a) 50V b) 25V
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Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (197047701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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b) With suitable circuit diagram illustrate how to protect SCR from high di/dt and high dv/dt.

c) Explain working of single-phase semi converter with resistive load and derive an expression for average output dc voltage.

d) Derive an exp for Avg voltage for single phase half wave-controlled rectifier with resistive load. Sketch associated waveforms for $\alpha = 30^0$.

e) A three-phase semi converter is operated from 3phase 400V 50Hz mains supply and delivers power to sufficiently large inductive load having resistance of 10Ω. If it is required that average output voltage should be 50% of maximum possible voltage. Calculate
i) Firing angle
ii) Average dc load voltage

Q.3 Attempt the Following (Any Two) **12**

a) Derive an expression for V_{dc}, I_{dc} for three phase fully controlled bridge rectifier with inductive load. Draw neat waveform for $\alpha = 60^0$

b) What do you meant by forced commutation? How commutation takes place in class B resonant pulse commutation technique. Sketch associated waveforms.

c) Design microcontroller-based firing scheme for single fully controlled rectifiers.

Section – II

Q.4 Attempt the Following. (Any Four) **16**

a) Explain working of step-down chopper and derive an expression for output voltage, duty cycle and effective input resistance.

b) What is cycloconverter? Explain operation of single-phase midpoint cycloconverter. The frequency is $f_o/f_s = 1/4$. Sketch associated waveforms.

c) Explain operation of single-phase full bridge voltage source inverter with resistive load. Draw associated waveforms and derive an expression of RMS output voltage.

d) With neat circuit diagram and appropriate waveforms, explain working of basic series inverter with resistive load.

e) How to vary output voltage of inverter using single pulse modulation technique. How it eliminates n^{th} harmonic component from output voltage.

Q.5 Attempt the Following. (Any Two) **12**

a) Describe the process of commutation of main thyristor in Jones chopper with associated voltage and current waveform.

b) Explain working of 180^0 conduction mode, three phase bridge inverter feeding star connected purely resistive load. Draw associated line and phase voltage.

c) Draw a block diagram of microcontroller-based speed control of four quadrant AC drive and explain its working.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (197047701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Assume suitable data if required
4) Figures to right indicate maximum marks

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) In single phase 3:1 bridge type cycloconverter, output frequency is _____.
a) fo=3×fs b) fo=fs/3
c) fo=fs d) fo=6×fs

2) Speed control of three phase AC motor can be obtained from _____.
a) Multiphase chopper b) Three phase controlled rectifier
c) 3 phase bridge inverter d) Three phase dual converter

3) In _____ inverter output frequency is dependents of commutating component and load parameters.
a) Parallel b) Series
c) voltage source inverter d) None

4) A single-phase bridge inverter has dc input voltage Vs = 50V. Then amplitude of square wave is _____.
a) 50V b) 25V
c) 100V d) $50/\sqrt{2}$

5) Choose the correct statement _____.
a) Thyristor is a voltage controlled device
b) Thyristor current controlled device
c) Thyristor is a Unipolar device
d) Thyristor is a latch proof device

6) Inductor is connected in series with thyristor to _____.
a) reduce dv/dt across it b) protect against di/dt
c) protect over voltage d) trigger thyristor

7) Class C commutation is _____ technique
a) complementary commutation b) load commutation
c) current commutation d) resonant pulse commutation

8) The average ON state current of SCR is 10A for firing angle of 60^0, The average ON state current for firing angle of 0^0 will be _____.
a) Less than 10A b) 5A
c) More than 10A d) 0

9) Three phase full wave bridge converter with inductive load acts as _____.
a) Single quadrant converter
b) Two quadrant converter
c) Three quadrant converter
d) Four quadrant converter

10) Three phase fully controlled rectifier converts _____.
a) Single phase AC to DC
b) DC to three phase AC
c) Three phase AC to DC
d) DC to DC

11) A three phase semi converter will require _____ number of SCRs and _____ number of diodes.
a) 6, 6
b) 3, 3
c) 12, 12
d) 4, 4

12) The average value of the output voltage in a step - down dc chopper is given by _____.
a) $V_o = V_s$
b) $V_o = K V_s$
c) $V_o = V_s / K$
d) $V_0 = V_s / (1 - K)$

13) In _____ chopper load current is always positive and load voltage is positive or negative.
a) Class C
b) Class D
c) Class F
d) Both a & b

14) The number of thyristors required for single phase midpoint cycloconverters _____.
a) 8
b) 6
c) 4
d) 2

SLR-GF-234

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (197047701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume suitable data if required

Section – I

Q.2 Attempt the Following (Any Four) **16**

a) Why thyristor is called as latching device? Prove that thyristor is latching device by using two transistor analogy.

b) With suitable circuit diagram illustrate how to protect SCR from high di/dt and high dv/dt.

c) Explain working of single-phase semi converter with resistive load and derive an expression for average output dc voltage.

d) Derive an exp for Avg voltage for single phase half wave-controlled rectifier with resistive load. Sketch associated waveforms for $\alpha = 30^0$.

e) A three-phase semi converter is operated from 3phase 400V 50Hz mains supply and delivers power to sufficiently large inductive load having resistance of 10Ω. If it is required that average output voltage should be 50% of maximum possible voltage. Calculate
i) Firing angle
ii) Average dc load voltage

Q.3 Attempt the Following (Any Two) **12**

a) Derive an expression for V_{dc}, I_{dc} for three phase fully controlled bridge rectifier with inductive load. Draw neat waveform for $\alpha = 60^0$

b) What do you meant by forced commutation? How commutation takes place in class B resonant pulse commutation technique. Sketch associated waveforms.

c) Design microcontroller-based firing scheme for single fully controlled rectifiers.

Section – II

Q.4 Attempt the Following. (Any Four) **16**

a) Explain working of step-down chopper and derive an expression for output voltage, duty cycle and effective input resistance.

b) What is cycloconverter? Explain operation of single-phase midpoint cycloconverter. The frequency is $f_o/f_s = 1/4$. Sketch associated waveforms.

c) Explain operation of single-phase full bridge voltage source inverter with resistive load. Draw associated waveforms and derive an expression of RMS output voltage.

d) With neat circuit diagram and appropriate waveforms, explain working of basic series inverter with resistive load.

e) How to vary output voltage of inverter using single pulse modulation technique. How it eliminates n^{th} harmonic component from output voltage.

Q.5 Attempt the Following. (Any Two) **12**

a) Describe the process of commutation of main thyristor in Jones chopper with associated voltage and current waveform.

b) Explain working of 180^0 conduction mode, three phase bridge inverter feeding star connected purely resistive load. Draw associated line and phase voltage.

c) Draw a block diagram of microcontroller-based speed control of four quadrant AC drive and explain its working.

Seat No.	

Set **S**

Fourth. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (197047701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Assume suitable data if required
4) Figures to right indicate maximum marks

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Three phase fully controlled rectifier converts _____.
a) Single phase AC to DC b) DC to three phase AC
c) Three phase AC to DC d) DC to DC

2) A three phase semi converter will require _____ number of SCRs and _____ number of diodes.
a) 6, 6 b) 3, 3
c) 12, 12 d) 4, 4

3) The average value of the output voltage in a step - down dc chopper is given by _____.
a) $V_o = V_s$ b) $V_o = K V_s$
c) $V_o = V_s / K$ d) $V_0 = V_s / (1 - K)$

4) In _____ chopper load current is always positive and load voltage is positive or negative.
a) Class C b) Class D
c) Class F d) Both a & b

5) The number of thyristors required for single phase midpoint cycloconverters _____.
a) 8 b) 6
c) 4 d) 2

6) In single phase 3:1 bridge type cycloconverter, output frequency is _____.
a) fo=3×fs b) fo=fs/3
c) fo=fs d) fo=6×fs

7) Speed control of three phase AC motor can be obtained from _____.
a) Multiphase chopper b) Three phase controlled rectifier
c) 3 phase bridge inverter d) Three phase dual converter

8) In _____ inverter output frequency is dependents of commutating component and load parameters.
a) Parallel b) Series
c) voltage source inverter d) None

9) A single-phase bridge inverter has dc input voltage Vs = 50V. Then amplitude of square wave is _____.

a) 50V b) 25V
c) 100V d) $50/\sqrt{2}$

10) Choose the correct statement _____.

a) Thyristor is a voltage controlled device
b) Thyristor current controlled device
c) Thyristor is a Unipolar device
d) Thyristor is a latch proof device

11) Inductor is connected in series with thyristor to _____.

a) reduce dv/dt across it b) protect against di/dt
c) protect over voltage d) trigger thyristor

12) Class C commutation is _____ technique

a) complementary commutation b) load commutation
c) current commutation d) resonant pulse commutation

13) The average ON state current of SCR is 10A for firing angle of 60^0, The average ON state current for firing angle of 0^0 will be _____.

a) Less than 10A b) 5A
c) More than 10A d) 0

14) Three phase full wave bridge converter with inductive load acts as _____.

a) Single quadrant converter
b) Two quadrant converter
c) Three quadrant converter
d) Four quadrant converter

SLR-GF-234

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Power Electronics (197047701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume suitable data if required

Section – I

Q.2 Attempt the Following (Any Four) **16**

a) Why thyristor is called as latching device? Prove that thyristor is latching device by using two transistor analogy.
b) With suitable circuit diagram illustrate how to protect SCR from high di/dt and high dv/dt.
c) Explain working of single-phase semi converter with resistive load and derive an expression for average output dc voltage.
d) Derive an exp for Avg voltage for single phase half wave-controlled rectifier with resistive load. Sketch associated waveforms for $\alpha = 30^0$.
e) A three-phase semi converter is operated from 3phase 400V 50Hz mains supply and delivers power to sufficiently large inductive load having resistance of 10Ω. If it is required that average output voltage should be 50% of maximum possible voltage. Calculate
i) Firing angle
ii) Average dc load voltage

Q.3 Attempt the Following (Any Two) **12**

a) Derive an expression for V_{dc}, I_{dc} for three phase fully controlled bridge rectifier with inductive load. Draw neat waveform for $\alpha = 60^0$
b) What do you meant by forced commutation? How commutation takes place in class B resonant pulse commutation technique. Sketch associated waveforms.
c) Design microcontroller-based firing scheme for single fully controlled rectifiers.

Section – II

Q.4 Attempt the Following. (Any Four) **16**

a) Explain working of step-down chopper and derive an expression for output voltage, duty cycle and effective input resistance.
b) What is cycloconverter? Explain operation of single-phase midpoint cycloconverter. The frequency is $f_o/f_s = 1/4$. Sketch associated waveforms.
c) Explain operation of single-phase full bridge voltage source inverter with resistive load. Draw associated waveforms and derive an expression of RMS output voltage.
d) With neat circuit diagram and appropriate waveforms, explain working of basic series inverter with resistive load.
e) How to vary output voltage of inverter using single pulse modulation technique. How it eliminates n^{th} harmonic component from output voltage.

Q.5 Attempt the Following. (Any Two) **12**

a) Describe the process of commutation of main thyristor in Jones chopper with associated voltage and current waveform.

b) Explain working of 180^0 conduction mode, three phase bridge inverter feeding star connected purely resistive load. Draw associated line and phase voltage.

c) Draw a block diagram of microcontroller-based speed control of four quadrant AC drive and explain its working.

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov–2023
ELECTRONICS ENGINEERING
CMOSVLSI Design (197047702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) MOS transistor structure is _____.
a) symmetrical b) pseudo symmetrical
c) non symmetrical d) semi symmetrical

2) Inversion layer in enhancement mode consists of excess of _____.
a) positive carriers b) negative carriers
c) both in equal quantity d) neutral carriers

3) CMOS inverter has _____ regions of operation in transfer curve.
a) one b) four
c) two d) five

4) In CMOS inverter, transistor is a switch having _____.
a) infinite on resistance b) finite off resistance
c) buffer d) infinite off resistance

5) What is the input resistance of CMOS inverter?
a) high b) low
c) very low d) none of the mentioned

6) To design 3 input NAND Gate using CMOS Logic _____ number of Transistors are required if inputs are available in double rail format.
a) 4 b) 6
c) 8 d) 10

7) To design 3 input NOR Gate using Ratioed Logic _____ number of Transistors are required if inputs are available in double rail format.
a) 4 b) 5
c) 6 d) 8

8) Bistable circuit are those in which _____ states are stable.
a) 1 b) 2
c) 3 d) 4

9) Bistable circuits are also known as _____.
a) adders b) multipliers
c) flip-flops d) dividers

10) The amount of time the input signal should be stable in particular state during the clock edge occurs is called as _____.

a) dynamic time b) static time
c) hold time d) setup time

11) A _____ signal is one that has nominally the same, but slightly different frequency as the local clock.

a) synchronous b) mesochronous
c) plesiochronous d) asynchronous

12) _____ refers to the temporal variation of the clock period at a given point that is, the clock period can reduce or expand on a cycle-by-cycle basis.

a) Clock Skew b) Clock Jitter
c) Handshaking d) Normalization

13) PLL is used to _____.

a) Synchronize the Clock b) Reduce the power
c) Increase speed of operation d) None of these

14) _____ is/are the techniques to achieve fast addition.

a) Switch logic carry chain b) Carry Bypass
c) Carry Select d) All of these

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov–2023
ELECTRONICS ENGINEERING
CMOSVLSI Design (197047702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams.
4) Assume suitable data if necessary.

Section –I

Q.2 Solve any four: **16**

a) With the help of diagram discuss construction and working of n-MOS also calculate value of β for given parameters of n-MOS transistor designed using Si as W / L ratio is 2.5, oxide layer thickness is 1.05 nm, the electron mobility is 80 sq. cm/V sec. The threshold voltage is 0.3V. The Si specific permittivity is 3.9 and permittivity of free space is 8.85×10^{-14} F/cm.s

b) Explain Switching Characteristics of CMOS Inverter in detail.

c) Draw and Explain CMOS inverter in detail and discuss transfer characteristics.

d) How Ratioed Logic is used in CMOS Design explain using example?

e) What is pass transistor? How it is used in designing CMOS Logic Gate using Example explain?

Q.3 Solve any two: **12**

a) Briefly explain accumulation, depletion and inversion modes in MOS transistors.

b) Explain power dissipation in CMOS. Calculate total power dissipation in CMOS inverter for frequency 12 MHz with Static power dissipation of 10 μW, VDD = 3 V and C = 150 fF

c) Design and comment on number of transistors and power dissipation of following.
i) Static CMOS 2 input Nand Gate
ii) Ratioed Logic 2 input Nand Gate
iii) Dynamic CMOS 2 input Nand Gate

Section – II

Q.4 Solve any four: **16**

a) What is bi-stability Principle? How it is used to design Logic Devices explain using example?

b) What is transmission gate? How it is used to implement Latch?

c) What is clock distribution and what are its types? How clock distribution is used?

d) What is synchronous design? What are the challenges in synchronous design?

e) List different fast adder circuits and explain any one in detail.

Q.5 Solve any two: **12**

a) What is clock skew insensitive approach design clocked CMOS (C2MOS)? How it is useful?

b) Explain briefly following

1) Synchronous interconnect
2) Mesochronous interconnect
3) Plesiochronous interconnect
4) Asynchronous interconnect

c) With the help of Diagram explain dynamic RAM implementation.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov–2023
ELECTRONICS ENGINEERING
CMOSVLSI Design (197047702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Bistable circuit are those in which _____ states are stable.
a) 1 b) 2
c) 3 d) 4

2) Bistable circuits are also known as _____.
a) adders b) multipliers
c) flip-flops d) dividers

3) The amount of time the input signal should be stable in particular state during the clock edge occurs is called as _____.
a) dynamic time b) static time
c) hold time d) setup time

4) A _____ signal is one that has nominally the same, but slightly different frequency as the local clock.
a) synchronous b) mesochronous
c) plesiochronous d) asynchronous

5) _____ refers to the temporal variation of the clock period at a given point that is, the clock period can reduce or expand on a cycle-by-cycle basis.
a) Clock Skew b) Clock Jitter
c) Handshaking d) Normalization

6) PLL is used to _____.
a) Synchronize the Clock b) Reduce the power
c) Increase speed of operation d) None of these

7) _____ is/are the techniques to achieve fast addition.
a) Switch logic carry chain b) Carry Bypass
c) Carry Select d) All of these

8) MOS transistor structure is _____.
a) symmetrical b) pseudo symmetrical
c) non symmetrical d) semi symmetrical

9) Inversion layer in enhancement mode consists of excess of _____.
a) positive carriers b) negative carriers
c) both in equal quantity d) neutral carriers

10) CMOS inverter has _____ regions of operation in transfer curve.
a) one b) four
c) two d) five

11) In CMOS inverter, transistor is a switch having _____.
a) infinite on resistance b) finite off resistance
c) buffer d) infinite off resistance

12) What is the input resistance of CMOS inverter?
a) high b) low
c) very low d) none of the mentioned

13) To design 3 input NAND Gate using CMOS Logic _____ number of Transistors are required if inputs are available in double rail format.
a) 4 b) 6
c) 8 d) 10

14) To design 3 input NOR Gate using Ratioed Logic _____ number of Transistors are required if inputs are available in double rail format.
a) 4 b) 5
c) 6 d) 8

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov–2023
ELECTRONICS ENGINEERING
CMOSVLSI Design (197047702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams.
4) Assume suitable data if necessary.

Section –I

Q.2 Solve any four: **16**

a) With the help of diagram discuss construction and working of n-MOS also calculate value of β for given parameters of n-MOS transistor designed using Si as W / L ratio is 2.5, oxide layer thickness is 1.05 nm, the electron mobility is 80 sq. cm/V sec. The threshold voltage is 0.3V. The Si specific permittivity is 3.9 and permittivity of free space is 8.85×10^{-14} F/cm.s

b) Explain Switching Characteristics of CMOS Inverter in detail.

c) Draw and Explain CMOS inverter in detail and discuss transfer characteristics.

d) How Ratioed Logic is used in CMOS Design explain using example?

e) What is pass transistor? How it is used in designing CMOS Logic Gate using Example explain?

Q.3 Solve any two: **12**

a) Briefly explain accumulation, depletion and inversion modes in MOS transistors.

b) Explain power dissipation in CMOS. Calculate total power dissipation in CMOS inverter for frequency 12 MHz with Static power dissipation of 10 μW, VDD = 3 V and C = 150 fF

c) Design and comment on number of transistors and power dissipation of following.
i) Static CMOS 2 input Nand Gate
ii) Ratioed Logic 2 input Nand Gate
iii) Dynamic CMOS 2 input Nand Gate

Section – II

Q.4 Solve any four: **16**

a) What is bi-stability Principle? How it is used to design Logic Devices explain using example?

b) What is transmission gate? How it is used to implement Latch?

c) What is clock distribution and what are its types? How clock distribution is used?

d) What is synchronous design? What are the challenges in synchronous design?

e) List different fast adder circuits and explain any one in detail.

Q.5 Solve any two: **12**

a) What is clock skew insensitive approach design clocked CMOS (C2MOS)? How it is useful?

b) Explain briefly following

1) Synchronous interconnect
2) Mesochronous interconnect
3) Plesiochronous interconnect
4) Asynchronous interconnect

c) With the help of Diagram explain dynamic RAM implementation.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov–2023
ELECTRONICS ENGINEERING
CMOSVLSI Design (197047702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A _____ signal is one that has nominally the same, but slightly different frequency as the local clock.
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c) plesiochronous d) asynchronous

2) _____ refers to the temporal variation of the clock period at a given point that is, the clock period can reduce or expand on a cycle-by-cycle basis.
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13) Bistable circuits are also known as _____.

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c) flip-flops d) dividers

14) The amount of time the input signal should be stable in particular state during the clock edge occurs is called as _____.

a) dynamic time b) static time
c) hold time d) setup time

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov–2023
ELECTRONICS ENGINEERING
CMOSVLSI Design (197047702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams.
4) Assume suitable data if necessary.

Section –I

Q.2 Solve any four: **16**

a) With the help of diagram discuss construction and working of n-MOS also calculate value of β for given parameters of n-MOS transistor designed using Si as W / L ratio is 2.5, oxide layer thickness is 1.05 nm, the electron mobility is 80 sq. cm/V sec. The threshold voltage is 0.3V. The Si specific permittivity is 3.9 and permittivity of free space is 8.85×10^{-14} F/cm.s

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c) Draw and Explain CMOS inverter in detail and discuss transfer characteristics.

d) How Ratioed Logic is used in CMOS Design explain using example?

e) What is pass transistor? How it is used in designing CMOS Logic Gate using Example explain?

Q.3 Solve any two: **12**

a) Briefly explain accumulation, depletion and inversion modes in MOS transistors.

b) Explain power dissipation in CMOS. Calculate total power dissipation in CMOS inverter for frequency 12 MHz with Static power dissipation of 10 μW, VDD = 3 V and C = 150 fF

c) Design and comment on number of transistors and power dissipation of following.
i) Static CMOS 2 input Nand Gate
ii) Ratioed Logic 2 input Nand Gate
iii) Dynamic CMOS 2 input Nand Gate

Section – II

Q.4 Solve any four: **16**

a) What is bi-stability Principle? How it is used to design Logic Devices explain using example?

b) What is transmission gate? How it is used to implement Latch?

c) What is clock distribution and what are its types? How clock distribution is used?

d) What is synchronous design? What are the challenges in synchronous design?

e) List different fast adder circuits and explain any one in detail.

Q.5 Solve any two: **12**

a) What is clock skew insensitive approach design clocked CMOS (C2MOS)? How it is useful?

b) Explain briefly following

1) Synchronous interconnect
2) Mesochronous interconnect
3) Plesiochronous interconnect
4) Asynchronous interconnect

c) With the help of Diagram explain dynamic RAM implementation.

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov–2023
ELECTRONICS ENGINEERING
CMOSVLSI Design (197047702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) To design 3 input NAND Gate using CMOS Logic _____ number of Transistors are required if inputs are available in double rail format.
a) 4 b) 6
c) 8 d) 10

2) To design 3 input NOR Gate using Ratioed Logic _____ number of Transistors are required if inputs are available in double rail format.
a) 4 b) 5
c) 6 d) 8

3) Bistable circuit are those in which _____ states are stable.
a) 1 b) 2
c) 3 d) 4

4) Bistable circuits are also known as _____.
a) adders b) multipliers
c) flip-flops d) dividers

5) The amount of time the input signal should be stable in particular state during the clock edge occurs is called as _____.
a) dynamic time b) static time
c) hold time d) setup time

6) A _____ signal is one that has nominally the same, but slightly different frequency as the local clock.
a) synchronous b) mesochronous
c) plesiochronous d) asynchronous

7) _____ refers to the temporal variation of the clock period at a given point that is, the clock period can reduce or expand on a cycle-by-cycle basis.
a) Clock Skew b) Clock Jitter
c) Handshaking d) Normalization

8) PLL is used to _____.
a) Synchronize the Clock b) Reduce the power
c) Increase speed of operation d) None of these

9) _____ is/are the techniques to achieve fast addition.
a) Switch logic carry chain
b) Carry Bypass
c) Carry Select
d) All of these

10) MOS transistor structure is _____.
a) symmetrical
b) pseudo symmetrical
c) non symmetrical
d) semi symmetrical

11) Inversion layer in enhancement mode consists of excess of _____.
a) positive carriers
b) negative carriers
c) both in equal quantity
d) neutral carriers

12) CMOS inverter has _____ regions of operation in transfer curve.
a) one
b) four
c) two
d) five

13) In CMOS inverter, transistor is a switch having _____.
a) infinite on resistance
b) finite off resistance
c) buffer
d) infinite off resistance

14) What is the input resistance of CMOS inverter?
a) high
b) low
c) very low
d) none of the mentioned

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov–2023
ELECTRONICS ENGINEERING
CMOSVLSI Design (197047702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams.
4) Assume suitable data if necessary.

Section –I

Q.2 Solve any four: **16**

a) With the help of diagram discuss construction and working of n-MOS also calculate value of β for given parameters of n-MOS transistor designed using Si as W / L ratio is 2.5, oxide layer thickness is 1.05 nm, the electron mobility is 80 sq. cm/V sec. The threshold voltage is 0.3V. The Si specific permittivity is 3.9 and permittivity of free space is 8.85×10^{-14} F/cm.s

b) Explain Switching Characteristics of CMOS Inverter in detail.

c) Draw and Explain CMOS inverter in detail and discuss transfer characteristics.

d) How Ratioed Logic is used in CMOS Design explain using example?

e) What is pass transistor? How it is used in designing CMOS Logic Gate using Example explain?

Q.3 Solve any two: **12**

a) Briefly explain accumulation, depletion and inversion modes in MOS transistors.

b) Explain power dissipation in CMOS. Calculate total power dissipation in CMOS inverter for frequency 12 MHz with Static power dissipation of 10 μW, VDD = 3 V and C = 150 fF

c) Design and comment on number of transistors and power dissipation of following.
i) Static CMOS 2 input Nand Gate
ii) Ratioed Logic 2 input Nand Gate
iii) Dynamic CMOS 2 input Nand Gate

Section – II

Q.4 Solve any four: **16**

a) What is bi-stability Principle? How it is used to design Logic Devices explain using example?

b) What is transmission gate? How it is used to implement Latch?

c) What is clock distribution and what are its types? How clock distribution is used?

d) What is synchronous design? What are the challenges in synchronous design?

e) List different fast adder circuits and explain any one in detail.

Q.5 Solve any two: **12**

a) What is clock skew insensitive approach design clocked CMOS (C2MOS)? How it is useful?

b) Explain briefly following

1) Synchronous interconnect
2) Mesochronous interconnect
3) Plesiochronous interconnect
4) Asynchronous interconnect

c) With the help of Diagram explain dynamic RAM implementation.

SLR-GF-236

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (197047703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. 14

1) Which of the following is not an objective for channel assignment strategies?
a) Efficient utilization of spectrum b) Increase of capacity
c) Minimize the interference d) Maximize the interference

2) What is a borrowing strategy in fixed channel assignments?
a) Borrowing channels from neighbouring cell
b) Borrowing channels from neighbouring cluster
c) Borrowing channels from same cell
d) Borrowing channels from other base station in same cell

3) Which of the following relates the incident and reflected & transmitted wave?
a) Fresnel transmission coefficient
b) Scattering coefficient
c) Diffraction coefficients
d) Fresnel reflection coefficient

4) Which of the following priority handoff method decrease the probability of forced termination of a call due to lack of available channels?
a) Queuing b) Guard channel
c) Cell dragging d) Near far effect

5) Which of the following is not a property of spread spectrum techniques?
a) Interference rejection capability
b) Multipath fading
c) Frequency planning elimination
d) Multiple user, multiple access interface

6) IS-95 is specified for reverse link operation in _____ band.
a) 869-894 MHz b) 849-894 MHz
c) 849-869 MHz d) 824-849 MHz

7) The process of channel coding, Encryption, Multiplexing and modulation for Trans direction and reverse for reception are to be carried out by _____.
a) BTS b) BSC
c) MSC d) MS

8) Which of the following scheme is used by Bluetooth?
a) Frequency hopping TDD scheme
b) Frequency hopping FDD scheme
c) DSSS TDD scheme
d) DSSS FDD scheme

9) What is the nominal range of Bluetooth?
a) 1 Km b) 10 m
c) 1 m d) 10 Km

10) The approach used to connect setup /release and data transmission is _____.
a) Indirect-TCP b) Transaction TCP
c) Snooping TCP d) Mobile TCP

11) What is the access point (AP) in wireless LAN?
a) device that allows wireless devices to connect to a wired network
b) wireless devices itself
c) both device that allows wireless devices to connect to a wired network and wireless devices itself
d) none of the mentioned

12) In wireless distribution system _____.
a) multiple access point are inter-connected with each other
b) there is no access point
c) only one access point exists
d) none of the mentioned

13) In a piconet, there can be up to _____ parked nodes in the net.
a) 63 b) 127
c) 255 d) 511

14) In a mobile IP, a tunnel usually ends at _____.
a) HA b) FA
c) CN d) router

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (197047703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Four. **16**

a) With suitable examples wireless & mobile devices.
b) How signal spreading is achieved using DHSS?
c) What are the different interferences in a cellular communication system?
d) With suitable diagram and example show a generation of PN sequence using linear shift registers.
e) How the mobile originated call in GSM.

Q.3 Attempt any Two. **12**

a) What are the benefits of wireless MAC - Slotted ALOHA. How it is implemented?
b) What is microcell zone concept? With suitable example show how it improves capacity in a cellular system.
c) With suitable diagram describe GSM system architecture.

Section – II

Q.4 Attempt any Four. **16**

a) Describe ad-hoc architecture for IEEE 802.11.
b) What is the difference between middleware and gateways?
c) What are different dialogue controls in mobile computing? Explain with example.
d) What is agent solicitation? Why it is required?
e) With suitable example explain concept of Piconet & Scatternet.

Q.5 Attempt any Two. **12**

a) Draw protocol stack and explain each component in brief of Bluetooth.
b) Describe DFWMAC_DCF using CSMA/CA with Back Off Timer'. What are its merits & demerits?
c) With suitable diagram and packet explain a registration of a MN with FA.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (197047703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) Which of the following scheme is used by Bluetooth?
a) Frequency hopping TDD scheme
b) Frequency hopping FDD scheme
c) DSSS TDD scheme
d) DSSS FDD scheme

2) What is the nominal range of Bluetooth?
a) 1 Km b) 10 m
c) 1 m d) 10 Km

3) The approach used to connect setup /release and data transmission is _____.
a) Indirect-TCP b) Transaction TCP
c) Snooping TCP d) Mobile TCP

4) What is the access point (AP) in wireless LAN?
a) device that allows wireless devices to connect to a wired network
b) wireless devices itself
c) both device that allows wireless devices to connect to a wired network and wireless devices itself
d) none of the mentioned

5) In wireless distribution system _____.
a) multiple access point are inter-connected with each other
b) there is no access point
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8) Which of the following is not an objective for channel assignment strategies?
a) Efficient utilization of spectrum b) Increase of capacity
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9) What is a borrowing strategy in fixed channel assignments?
a) Borrowing channels from neighbouring cell
b) Borrowing channels from neighbouring cluster
c) Borrowing channels from same cell
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10) Which of the following relates the incident and reflected & transmitted wave?
a) Fresnel transmission coefficient
b) Scattering coefficient
c) Diffraction coefficients
d) Fresnel reflection coefficient

11) Which of the following priority handoff method decrease the probability of forced termination of a call due to lack of available channels?
a) Queuing b) Guard channel
c) Cell dragging d) Near far effect

12) Which of the following is not a property of spread spectrum techniques?
a) Interference rejection capability
b) Multipath fading
c) Frequency planning elimination
d) Multiple user, multiple access interface

13) IS-95 is specified for reverse link operation in _____ band.
a) 869-894 MHz b) 849-894 MHz
c) 849-869 MHz d) 824-849 MHz

14) The process of channel coding, Encryption, Multiplexing and modulation for Trans direction and reverse for reception are to be carried out by _____.
a) BTS b) BSC
c) MSC d) MS

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (197047703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Four. **16**

a) With suitable examples wireless & mobile devices.
b) How signal spreading is achieved using DHSS?
c) What are the different interferences in a cellular communication system?
d) With suitable diagram and example show a generation of PN sequence using linear shift registers.
e) How the mobile originated call in GSM.

Q.3 Attempt any Two. **12**

a) What are the benefits of wireless MAC - Slotted ALOHA. How it is implemented?
b) What is microcell zone concept? With suitable example show how it improves capacity in a cellular system.
c) With suitable diagram describe GSM system architecture.

Section – II

Q.4 Attempt any Four. **16**

a) Describe ad-hoc architecture for IEEE 802.11.
b) What is the difference between middleware and gateways?
c) What are different dialogue controls in mobile computing? Explain with example.
d) What is agent solicitation? Why it is required?
e) With suitable example explain concept of Piconet & Scatternet.

Q.5 Attempt any Two. **12**

a) Draw protocol stack and explain each component in brief of Bluetooth.
b) Describe DFWMAC_DCF using CSMA/CA with Back Off Timer'. What are its merits & demerits?
c) With suitable diagram and packet explain a registration of a MN with FA.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (197047703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) What is the access point (AP) in wireless LAN?
a) device that allows wireless devices to connect to a wired network
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2) In wireless distribution system _____.
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14) The approach used to connect setup /release and data transmission is _____.
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Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (197047703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Four. **16**

a) With suitable examples wireless & mobile devices.
b) How signal spreading is achieved using DHSS?
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Q.3 Attempt any Two. **12**

a) What are the benefits of wireless MAC - Slotted ALOHA. How it is implemented?
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Section – II

Q.4 Attempt any Four. **16**

a) Describe ad-hoc architecture for IEEE 802.11.
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Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (197047703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option. **14**

1) IS-95 is specified for reverse link operation in _____ band.
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14) Which of the following is not a property of spread spectrum techniques?
a) Interference rejection capability
b) Multipath fading
c) Frequency planning elimination
d) Multiple user, multiple access interface

SLR-GF-236

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mobile Technology (197047703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Four. **16**

a) With suitable examples wireless & mobile devices.
b) How signal spreading is achieved using DHSS?
c) What are the different interferences in a cellular communication system?
d) With suitable diagram and example show a generation of PN sequence using linear shift registers.
e) How the mobile originated call in GSM.

Q.3 Attempt any Two. **12**

a) What are the benefits of wireless MAC - Slotted ALOHA. How it is implemented?
b) What is microcell zone concept? With suitable example show how it improves capacity in a cellular system.
c) With suitable diagram describe GSM system architecture.

Section – II

Q.4 Attempt any Four. **16**

a) Describe ad-hoc architecture for IEEE 802.11.
b) What is the difference between middleware and gateways?
c) What are different dialogue controls in mobile computing? Explain with example.
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e) With suitable example explain concept of Piconet & Scatternet.

Q.5 Attempt any Two. **12**

a) Draw protocol stack and explain each component in brief of Bluetooth.
b) Describe DFWMAC_DCF using CSMA/CA with Back Off Timer'. What are its merits & demerits?
c) With suitable diagram and packet explain a registration of a MN with FA.

SLR-GF-237

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Internet of Things (197047704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Things in IoT support _____.
a) Actuation b) Sensing
c) Data collection d) All of above

2) CoAP is an implementation of _____ model.
a) Message Oriented Middleware b) RESTful
c) Both a and b d) None of the above

3) _____ can be considered as the skeleton for smart cities?
a) Banks b) Transportation
c) Buildings d) Sensors

4) Sensor-Cloud deals with _____.
a) Sensor-as-a-Service b) Sensor-in-Cloud
c) Sensor-for-Service d) None of these

5) In ARM Cortex M3processor _____ registers is a link register.
a) R13 b) R15
c) R14 d) None of the above

6) After the execution of following ARM instruction the content of R2 register will be _____. RSB R2, R3, R3, LSL #5
a) R3 * 32 b) R2 * 32
c) R3 * 31 d) R2 * 31

7) In ARM Cortex M3processor _____ register provide status of arithmetic and logic processing flags.
a) xPSR b) Control
c) BASEPRI d) PRIMASK

8) The _____ determine whether the processor is running a normal program or running an exception handler.
a) Operating modes b) Privilege levels
c) Both (a) and (b) d) None of the above

9) In ARM Cortex M3 processor Nested Vectored Interrupt Controller (NVIC) supports _____.

a) Nested interrupt
b) Dynamic Priority Changes
c) Interrupt Masking
d) All of above

10) The _____ flag is set when a comparison of two data returns an equal result.

a) Zero
b) Overflow
c) Negative
d) Carry

11) LPC1768's maximum operation frequency is _____ MHz.

a) 100
b) 110
c) 12
d) 60

12) _____ supports a long-range communication.

a) ZigBee
b) GPRS
c) Bluetooth
d) All of the above

13) _____ controls the publish-subscribe messaging pattern in MQTT.

a) MQTT broker
b) MQTT client
c) MQTT server
d) None of these

14) The MQTT publish-subscribe protocol is _____ driven.

a) Event
b) Broker
c) Client
d) All of these

Seat No.	

Set | P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Internet of Things (197047704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Draw the IoT reference model suggested by CISCO. Elaborate each layer briefly.
b) With a neat diagram illustrate the IoT reference architecture suggested by Oracle.
c) List the focus areas of OWASP and importance of each in IoT security.
d) List the top tent vulnerabilities for attack.
e) Write short notes Cortex-M3 processor registers.

Q.3 Solve any two **12**

a) Draw and explain the architectural view of a cloud-based IoT platform for a smart home.
b) Discuss security function group components in functional view in IoT reference architecture.
c) Discuss the exception model implemented in Cortex-M3 processor.

Section – II

Q.4 Solve any four **16**

a) Discuss the differences in MOM and RESTful service with neat diagram.
b) What is MQTT protocol? List down the requirements provided by MQTT protocol.
c) With a neat state diagram discuss Classic Bluetooth connection process.
d) Write a short note on BLE security.
e) What is a Cloud? Discuss different services supported in Cloud.

Q.5 Solve any two **12**

a) Discuss with neat diagram basic topologies supported in IEEE 802.11 systems.
b) Discuss the architecture of CoAP protocol stack.
c) Define cloud. List down and discuss five essential characteristics of cloud.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Internet of Things (197047704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The _____ determine whether the processor is running a normal program or running an exception handler.
a) Operating modes b) Privilege levels
c) Both (a) and (b) d) None of the above

2) In ARM Cortex M3 processor Nested Vectored Interrupt Controller (NVIC) supports _____.
a) Nested interrupt b) Dynamic Priority Changes
c) Interrupt Masking d) All of above

3) The _____ flag is set when a comparison of two data returns an equal result.
a) Zero b) Overflow
c) Negative d) Carry

4) LPC1768's maximum operation frequency is _____ MHz.
a) 100 b) 110
c) 12 d) 60

5) _____ supports a long-range communication.
a) ZigBee b) GPRS
c) Bluetooth d) All of the above

6) _____ controls the publish-subscribe messaging pattern in MQTT.
a) MQTT broker b) MQTT client
c) MQTT server d) None of these

7) The MQTT publish-subscribe protocol is _____ driven.
a) Event b) Broker
c) Client d) All of these

8) Things in IoT support _____.
a) Actuation b) Sensing
c) Data collection d) All of above

9) CoAP is an implementation of _____ model.
a) Message Oriented Middleware b) RESTful
c) Both a and b d) None of the above

10) _____ can be considered as the skeleton for smart cities?
a) Banks b) Transportation
c) Buildings d) Sensors

11) Sensor-Cloud deals with _____.
a) Sensor-as-a-Service b) Sensor-in-Cloud
c) Sensor-for-Service d) None of these

12) In ARM Cortex M3processor _____ registers is a link register.
a) R13 b) R15
c) R14 d) None of the above

13) After the execution of following ARM instruction the content of R2 register will be _____. RSB R2, R3, R3, LSL #5
a) R3 * 32 b) R2 * 32
c) R3 * 31 d) R2 * 31

14) In ARM Cortex M3processor _____ register provide status of arithmetic and logic processing flags.
a) xPSR b) Control
c) BASEPRI d) PRIMASK

Seat No.	

Set | Q

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Internet of Things (197047704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Draw the IoT reference model suggested by CISCO. Elaborate each layer briefly.
b) With a neat diagram illustrate the IoT reference architecture suggested by Oracle.
c) List the focus areas of OWASP and importance of each in IoT security.
d) List the top tent vulnerabilities for attack.
e) Write short notes Cortex-M3 processor registers.

Q.3 Solve any two **12**

a) Draw and explain the architectural view of a cloud-based IoT platform for a smart home.
b) Discuss security function group components in functional view in IoT reference architecture.
c) Discuss the exception model implemented in Cortex-M3 processor.

Section – II

Q.4 Solve any four **16**

a) Discuss the differences in MOM and RESTful service with neat diagram.
b) What is MQTT protocol? List down the requirements provided by MQTT protocol.
c) With a neat state diagram discuss Classic Bluetooth connection process.
d) Write a short note on BLE security.
e) What is a Cloud? Discuss different services supported in Cloud.

Q.5 Solve any two **12**

a) Discuss with neat diagram basic topologies supported in IEEE 802.11 systems.
b) Discuss the architecture of CoAP protocol stack.
c) Define cloud. List down and discuss five essential characteristics of cloud.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Internet of Things (197047704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) LPC1768's maximum operation frequency is _____ MHz.
a) 100 b) 110
c) 12 d) 60

2) _____ supports a long-range communication.
a) ZigBee b) GPRS
c) Bluetooth d) All of the above

3) _____ controls the publish-subscribe messaging pattern in MQTT.
a) MQTT broker b) MQTT client
c) MQTT server d) None of these

4) The MQTT publish-subscribe protocol is _____ driven.
a) Event b) Broker
c) Client d) All of these

5) Things in IoT support _____.
a) Actuation b) Sensing
c) Data collection d) All of above

6) CoAP is an implementation of _____ model.
a) Message Oriented Middleware b) RESTful
c) Both a and b d) None of the above

7) _____ can be considered as the skeleton for smart cities?
a) Banks b) Transportation
c) Buildings d) Sensors

8) Sensor-Cloud deals with _____.
a) Sensor-as-a-Service b) Sensor-in-Cloud
c) Sensor-for-Service d) None of these

9) In ARM Cortex M3processor _____ registers is a link register.
a) R13 b) R15
c) R14 d) None of the above

10) After the execution of following ARM instruction the content of R2 register will be _____. RSB R2, R3, R3, LSL #5

a) R3 * 32 b) R2 * 32
c) R3 * 31 d) R2 * 31

11) In ARM Cortex M3processor _____ register provide status of arithmetic and logic processing flags.

a) xPSR b) Control
c) BASEPRI d) PRIMASK

12) The _____ determine whether the processor is running a normal program or running an exception handler.

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13) In ARM Cortex M3 processor Nested Vectored Interrupt Controller (NVIC) supports _____.

a) Nested interrupt b) Dynamic Priority Changes
c) Interrupt Masking d) All of above

14) The _____ flag is set when a comparison of two data returns an equal result.

a) Zero b) Overflow
c) Negative d) Carry

Seat No.	

Set | R

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Internet of Things (197047704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Draw the IoT reference model suggested by CISCO. Elaborate each layer briefly.
b) With a neat diagram illustrate the IoT reference architecture suggested by Oracle.
c) List the focus areas of OWASP and importance of each in IoT security.
d) List the top tent vulnerabilities for attack.
e) Write short notes Cortex-M3 processor registers.

Q.3 Solve any two **12**

a) Draw and explain the architectural view of a cloud-based IoT platform for a smart home.
b) Discuss security function group components in functional view in IoT reference architecture.
c) Discuss the exception model implemented in Cortex-M3 processor.

Section – II

Q.4 Solve any four **16**

a) Discuss the differences in MOM and RESTful service with neat diagram.
b) What is MQTT protocol? List down the requirements provided by MQTT protocol.
c) With a neat state diagram discuss Classic Bluetooth connection process.
d) Write a short note on BLE security.
e) What is a Cloud? Discuss different services supported in Cloud.

Q.5 Solve any two **12**

a) Discuss with neat diagram basic topologies supported in IEEE 802.11 systems.
b) Discuss the architecture of CoAP protocol stack.
c) Define cloud. List down and discuss five essential characteristics of cloud.

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Internet of Things (197047704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) After the execution of following ARM instruction the content of R2 register will be _____. RSB R2, R3, R3, LSL #5
a) R3 * 32 b) R2 * 32
c) R3 * 31 d) R2 * 31

2) In ARM Cortex M3processor _____ register provide status of arithmetic and logic processing flags.
a) xPSR b) Control
c) BASEPRI d) PRIMASK

3) The _____ determine whether the processor is running a normal program or running an exception handler.
a) Operating modes b) Privilege levels
c) Both (a) and (b) d) None of the above

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a) Nested interrupt b) Dynamic Priority Changes
c) Interrupt Masking d) All of above

5) The _____ flag is set when a comparison of two data returns an equal result.
a) Zero b) Overflow
c) Negative d) Carry

6) LPC1768's maximum operation frequency is _____ MHz.
a) 100 b) 110
c) 12 d) 60

7) _____ supports a long-range communication.
a) ZigBee b) GPRS
c) Bluetooth d) All of the above

8) _____ controls the publish-subscribe messaging pattern in MQTT.
a) MQTT broker b) MQTT client
c) MQTT server d) None of these

9) The MQTT publish-subscribe protocol is _____ driven.
a) Event b) Broker
c) Client d) All of these

10) Things in IoT support _____.
a) Actuation b) Sensing
c) Data collection d) All of above

11) CoAP is an implementation of _____ model.
a) Message Oriented Middleware b) RESTful
c) Both a and b d) None of the above

12) _____ can be considered as the skeleton for smart cities?
a) Banks b) Transportation
c) Buildings d) Sensors

13) Sensor-Cloud deals with _____.
a) Sensor-as-a-Service b) Sensor-in-Cloud
c) Sensor-for-Service d) None of these

14) In ARM Cortex M3processor _____ registers is a link register.
a) R13 b) R15
c) R14 d) None of the above

SLR-GF-237

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Internet of Things (197047704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Draw the IoT reference model suggested by CISCO. Elaborate each layer briefly.
b) With a neat diagram illustrate the IoT reference architecture suggested by Oracle.
c) List the focus areas of OWASP and importance of each in IoT security.
d) List the top tent vulnerabilities for attack.
e) Write short notes Cortex-M3 processor registers.

Q.3 Solve any two **12**

a) Draw and explain the architectural view of a cloud-based IoT platform for a smart home.
b) Discuss security function group components in functional view in IoT reference architecture.
c) Discuss the exception model implemented in Cortex-M3 processor.

Section – II

Q.4 Solve any four **16**

a) Discuss the differences in MOM and RESTful service with neat diagram.
b) What is MQTT protocol? List down the requirements provided by MQTT protocol.
c) With a neat state diagram discuss Classic Bluetooth connection process.
d) Write a short note on BLE security.
e) What is a Cloud? Discuss different services supported in Cloud.

Q.5 Solve any two **12**

a) Discuss with neat diagram basic topologies supported in IEEE 802.11 systems.
b) Discuss the architecture of CoAP protocol stack.
c) Define cloud. List down and discuss five essential characteristics of cloud.

SLR-GF-239

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mechatronics (197047708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) When ____ contacts are actuated, they interrupt the power supply through them.
a) normally open type b) normally closed type
c) both a) and b) d) None of the above

2) _____ is doping process whereby dopant ions are introduced into the material of interest to change its property.
a) Etching b) Ion Implantation
c) Diffusion d) Evaporation

3) A _____ is a solid cylinder or disk that fits snugly into a larger cylinder and moves under fluid pressure.
a) Screw b) Compressor
c) Piston d) Rod

4) MEMS stand for ____.
a) Micro Electromechanical system
b) Mini Electromechanical system
c) Micro Electrical Mechanical system
d) Mini Electrical Mechanical system

5) _____ is process, in which impure material is added to a material of interest.
a) Etching b) Implantation
c) Doping d) Evaporation

6) Actuators are interfaced with _____ card of the PLC.
a) Memory b) Input
c) Output d) Power

7) In a temperature control system, what represents the output of the system.
a) The required temperature
b) The actual temperature achieved
c) The heat produced by the system
d) The heating element

8) With integral control, the controller output is,
i) Zero when the error changes at a constant rate.
ii) Increases at a constant rate when the error is constant.
a) Both i and ii are true
b) i is true and ii is false
c) i is false and ii is true
d) Both i and ii are false

9) The resolution of an analogue to digital converter with a word length of 10 bits and an analogue signal input range of 10V is.
a) 9.76 mV.
b) 256 mV.
c) 1.25 mV.
d) 5V.

10) The basic element of ON/OFF controller is _____.
a) Amplifier
b) Comparator
c) Oscillator
d) Differential amplifier

11) _____ is process, which makes it possible to selectively remove the deposited films or parts of the substrate in order to obtain desired patterns.
a) Etching
b) Implantation
c) Doping
d) Evaporation

12) In _____ strain gages, change resistance in response to a mechanical strain.
a) Piezo-electric
b) RTD
c) Piezo-resistive
d) None of the above

13) For precise measurement, strain gauge must have the following properties
a) High gauge factor
b) Low temperature coefficient
c) High resistance
d) All of the above

14) A ____ actuator uses a pressurized air to drive a piston.
a) Hydraulic
b) Pneumatic
c) None of the above
d) Electric

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mechatronics (197047708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four. **16**

a) What is the process stages involved in mechatronics system design?
b) What are the key elements of Mechatronics system?
c) How displacement can be measured using LVDT?
d) Explain the principle of operation of optical encoders.
e) Draw and explain pneumatic power supply.

Q.3 Solve Any Two. **12**

a) With suitable example explain Microprocessor based controllers in mechatronics.
b) Write a short note on: Light sensor, proximity switches.
c) How linear cylinder can be used to produce rotation?

Section – II

Q.4 Solve Any Four. **16**

a) How Gear trains are used to transfer and transform rotational motion.
b) Draw and explain the mechanisms of Ratchet and Pawl.
c) List down the differences between traditional design approach and mechatronics approach.
d) Write a short note on relays and solenoids.
e) How to control the speed of stepper motor.

Q.5 Solve Any Two. **12**

a) Illustrate the working of CAMs of different shapes.
b) Design a mechatronics system for an automatic Car Park Systems?
c) Define the factors to be considered for selection of motor drive systems.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mechatronics (197047708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) With integral control, the controller output is,
i) Zero when the error changes at a constant rate.
ii) Increases at a constant rate when the error is constant.
a) Both i and ii are true b) i is true and ii is false
c) i is false and ii is true d) Both i and ii are false

2) The resolution of an analogue to digital converter with a word length of 10 bits and an analogue signal input range of 10V is.
a) 9.76 mV. b) 256 mV.
c) 1.25 mV. d) 5V.

3) The basic element of ON/OFF controller is _____.
a) Amplifier b) Comparator
c) Oscillator d) Differential amplifier

4) _____ is process, which makes it possible to selectively remove the deposited films or parts of the substrate in order to obtain desired patterns.
a) Etching b) Implantation
c) Doping d) Evaporation

5) In _____ strain gages, change resistance in response to a mechanical strain.
a) Piezo-electric b) RTD
c) Piezo-resistive d) None of the above

6) For precise measurement, strain gauge must have the following properties
a) High gauge factor b) Low temperature coefficient
c) High resistance d) All of the above

7) A ____ actuator uses a pressurized air to drive a piston.
a) Hydraulic b) Pneumatic
c) None of the above d) Electric

8) When ____ contacts are actuated, they interrupt the power supply through them.
a) normally open type b) normally closed type
c) both a) and b) d) None of the above

9) _____ is doping process whereby dopant ions are introduced into the material of interest to change its property.

a) Etching
b) Ion Implantation
c) Diffusion
d) Evaporation

10) A _____ is a solid cylinder or disk that fits snugly into a larger cylinder and moves under fluid pressure.

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b) Compressor
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11) MEMS stand for ____.

a) Micro Electromechanical system
b) Mini Electromechanical system
c) Micro Electrical Mechanical system
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12) _____ is process, in which impure material is added to a material of interest.

a) Etching
b) Implantation
c) Doping
d) Evaporation

13) Actuators are interfaced with _____ card of the PLC.

a) Memory
b) Input
c) Output
d) Power

14) In a temperature control system, what represents the output of the system.

a) The required temperature
b) The actual temperature achieved
c) The heat produced by the system
d) The heating element

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mechatronics (197047708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four. **16**

a) What is the process stages involved in mechatronics system design?
b) What are the key elements of Mechatronics system?
c) How displacement can be measured using LVDT?
d) Explain the principle of operation of optical encoders.
e) Draw and explain pneumatic power supply.

Q.3 Solve Any Two. **12**

a) With suitable example explain Microprocessor based controllers in mechatronics.
b) Write a short note on: Light sensor, proximity switches.
c) How linear cylinder can be used to produce rotation?

Section – II

Q.4 Solve Any Four. **16**

a) How Gear trains are used to transfer and transform rotational motion.
b) Draw and explain the mechanisms of Ratchet and Pawl.
c) List down the differences between traditional design approach and mechatronics approach.
d) Write a short note on relays and solenoids.
e) How to control the speed of stepper motor.

Q.5 Solve Any Two. **12**

a) Illustrate the working of CAMs of different shapes.
b) Design a mechatronics system for an automatic Car Park Systems?
c) Define the factors to be considered for selection of motor drive systems.

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mechatronics (197047708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ is process, which makes it possible to selectively remove the deposited films or parts of the substrate in order to obtain desired patterns.
a) Etching b) Implantation
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2) In _____ strain gages, change resistance in response to a mechanical strain.
a) Piezo-electric b) RTD
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10) Actuators are interfaced with _____ card of the PLC.
a) Memory b) Input
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11) In a temperature control system, what represents the output of the system.
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12) With integral control, the controller output is,
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13) The resolution of an analogue to digital converter with a word length of 10 bits and an analogue signal input range of 10V is.
a) 9.76 mV. b) 256 mV.
c) 1.25 mV. d) 5V.

14) The basic element of ON/OFF controller is _____.
a) Amplifier b) Comparator
c) Oscillator d) Differential amplifier

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mechatronics (197047708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four. **16**

a) What is the process stages involved in mechatronics system design?
b) What are the key elements of Mechatronics system?
c) How displacement can be measured using LVDT?
d) Explain the principle of operation of optical encoders.
e) Draw and explain pneumatic power supply.

Q.3 Solve Any Two. **12**

a) With suitable example explain Microprocessor based controllers in mechatronics.
b) Write a short note on: Light sensor, proximity switches.
c) How linear cylinder can be used to produce rotation?

Section – II

Q.4 Solve Any Four. **16**

a) How Gear trains are used to transfer and transform rotational motion.
b) Draw and explain the mechanisms of Ratchet and Pawl.
c) List down the differences between traditional design approach and mechatronics approach.
d) Write a short note on relays and solenoids.
e) How to control the speed of stepper motor.

Q.5 Solve Any Two. **12**

a) Illustrate the working of CAMs of different shapes.
b) Design a mechatronics system for an automatic Car Park Systems?
c) Define the factors to be considered for selection of motor drive systems.

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mechatronics (197047708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Actuators are interfaced with _____ card of the PLC.
a) Memory b) Input
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2) In a temperature control system, what represents the output of the system.
a) The required temperature
b) The actual temperature achieved
c) The heat produced by the system
d) The heating element

3) With integral control, the controller output is,
i) Zero when the error changes at a constant rate.
ii) Increases at a constant rate when the error is constant.
a) Both i and ii are true b) i is true and ii is false
c) i is false and ii is true d) Both i and ii are false

4) The resolution of an analogue to digital converter with a word length of 10 bits and an analogue signal input range of 10V is.
a) 9.76 mV. b) 256 mV.
c) 1.25 mV. d) 5V.

5) The basic element of ON/OFF controller is _____.
a) Amplifier b) Comparator
c) Oscillator d) Differential amplifier

6) _____ is process, which makes it possible to selectively remove the deposited films or parts of the substrate in order to obtain desired patterns.
a) Etching b) Implantation
c) Doping d) Evaporation

7) In _____ strain gages, change resistance in response to a mechanical strain.
a) Piezo-electric b) RTD
c) Piezo-resistive d) None of the above

8) For precise measurement, strain gauge must have the following properties
a) High gauge factor b) Low temperature coefficient
c) High resistance d) All of the above

9) A ____ actuator uses a pressurized air to drive a piston.
a) Hydraulic b) Pneumatic
c) None of the above d) Electric

10) When ____ contacts are actuated, they interrupt the power supply through them.
a) normally open type b) normally closed type
c) both a) and b) d) None of the above

11) _____ is doping process whereby dopant ions are introduced into the material of interest to change its property.
a) Etching b) Ion Implantation
c) Diffusion d) Evaporation

12) A _____ is a solid cylinder or disk that fits snugly into a larger cylinder and moves under fluid pressure.
a) Screw b) Compressor
c) Piston d) Rod

13) MEMS stand for ____.
a) Micro Electromechanical system
b) Mini Electromechanical system
c) Micro Electrical Mechanical system
d) Mini Electrical Mechanical system

14) _____ is process, in which impure material is added to a material of interest.
a) Etching b) Implantation
c) Doping d) Evaporation

SLR-GF-239

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Mechatronics (197047708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four. **16**

a) What is the process stages involved in mechatronics system design?
b) What are the key elements of Mechatronics system?
c) How displacement can be measured using LVDT?
d) Explain the principle of operation of optical encoders.
e) Draw and explain pneumatic power supply.

Q.3 Solve Any Two. **12**

a) With suitable example explain Microprocessor based controllers in mechatronics.
b) Write a short note on: Light sensor, proximity switches.
c) How linear cylinder can be used to produce rotation?

Section – II

Q.4 Solve Any Four. **16**

a) How Gear trains are used to transfer and transform rotational motion.
b) Draw and explain the mechanisms of Ratchet and Pawl.
c) List down the differences between traditional design approach and mechatronics approach.
d) Write a short note on relays and solenoids.
e) How to control the speed of stepper motor.

Q.5 Solve Any Two. **12**

a) Illustrate the working of CAMs of different shapes.
b) Design a mechatronics system for an automatic Car Park Systems?
c) Define the factors to be considered for selection of motor drive systems.

SLR-GF-240

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (197047709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is generally used for performing tasks like creating the structure of the relations, deleting relation?
a) DML(Data Manipulation Language)
b) Query
c) Relational Schema
d) DDL(Data Definition Language)

2) Which one of the following given statements possibly contains the error?
a) select * from emp where empid = 10003;
b) select empid from emp where empid = 10006;
c) select empid from emp;
d) select empid where empid = 1009 and Lastname = 'GELLER';

3) In the following Query, which of the following can be placed in the Query's blank portion to display the salary from highest to lowest amount, and sorting the employs name alphabetically?
SELECT *
FROM instructor
ORDER BY salary _____, name _____;
a) Ascending, Descending b) Asc, Desc
c) Desc, Asc d) All of the above

4) Which of the following refers to the level of data abstraction that describes exactly how the data actually stored?
a) Conceptual Level b) Physical Level
c) File Level d) Logical Level

5) For a binary relationship set R between sets A and B, the mapping cardinality is Many to Many if.

a) An Entity A is associated with any number (zero or more) of entities in B, An entity in B however can be associated with at most one entity in A

b) An Entity A is associated with at most one entity in B, An entity in B however can be associated with at most one entity in A

c) An Entity A is associated with at most one entity in B, An entity in B however can be associated with any number (zero or more) of entity in A

d) An Entity A is associated with any number (zero or more) of entities in B, An entity in B however can be associated with any number (zero or more) of entity in A

6) Drop Table cannot be used to drop a table referenced by a _____ constraint.

a) Local Key b) Primary Key

c) Composite Key d) Foreign Key

7) What does an RDBMS consist of _____.

a) Collection of Records b) Collection of Keys

c) Collection of Tables d) Collection of Fields

8) In order to undo the work of *a* transaction after the last commit, which one should be used?

a) View b) Commit

c) Rollback d) Flashback

9) What is the Dirty Read Problem also known as?

a) W-W Conflict b) W-R Conflict

c) R-R Conflict d) None

10) A transaction that is inserting a new tuple into the database is given an.

a) Shared lock b) Mutual lock

c) Exclusive lock d) NO lock

11) A table on the many side of a one to many or many to many relationship must:

a) Be in Second Normal Form (2NF)

b) Be in Third Normal Form (3NF)

c) Have a single attribute key

d) Have a composite key

12) Consider a relation R(A, B, C, D) with the following functional dependencies: A -> (B, C, D), (A, D) -> (B, C) and (C, D) -> (A, B). Identify the candidate key(s).

a) {A} b) {A}, {C, D}

c) {A}, {C, D}, {A, D} d) {C, D}

13) The database design prevents some data from being stored due to _____.

a) Deletion anomalies b) Insertion anomalies

c) Update anomalies d) Selection anomalies

14) To generate the address of a data block, the hash function most often uses the _____ key.

a) Primary b) Foreign

c) Composite d) Alternate

SLR-GF-240

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (197047709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) List four significant differences between a file-processing system and a DBMS.
b) What are four main functions of a database administrator?
c) Explain concept of cardinality with example
d) What are some common clauses used with SELECT query in SQL? Explain any 3 with syntax and examples.
e) What are the different types of statements supported by SQL?

Q.3 Attempt the following (Any One) **08**

a) Draw an ER model of the Banking database application considering the following constraints
- A bank has many entities.
- Each customer has multiple accounts.
- Multiple customers belong to a single branch.
- Single account can borrow multiple loans.
- A branch has multiple employees.
- Customer - the relevant attributes are customerName, CustomerID, address.
- Account - The relevant attributes are AccountNo, balance.
- Branch - The relevant attributes are branchID, branchName, address.
- Loan - The relevant attributes are loanNo, paymentMode, dateOfLoan, and amount.
- Employee - The relevant attributes are empID, empName, dateOfJoin, experience, qualification.

b) Consider following tables and write the given query in SQL.

EmployeeInfo Table:

EmpID	*EmpFname*	*EmpLname*	*Department*	*Project*	*Address*	*DOB*	*Gender*
1	Sanjay	Mehra	HR	P1	Hyderabad(HYD)	01/12/1976	M
2	Ananya	Mishra	Admin	P2	Delhi(DEL)	02/05/1968	F
3	Rohan	Diwan	Account	P3	Mumbai(BOM)	01/01/1980	M
4	Sonia	Kulkarni	HR	P1	Hyderabad(HYD)	02/05/1992	F
5	Ankit	Kapoor	Admin	P2	Delhi(DEL)	03/07/1994	M

Employee Position Table:

EmpID	***EmpPosition***	***DateOfJoining***	***Salary***
1	Manager	01/05/2022	500000
2	Executive	02/05/2022	75000
3	Manager	01/05/2022	90000
2	Lead	02/05/2022	85000
1	Executive	01/05/2022	300000

i) Write a query to find all the employees whose salary is between 50000 to 100000.
ii) Write a query to fetch details of employees whose EmpLname ends with an alphabet 'A' and contains five alphabets.
iii) Write a query to fetchdetails of employees with the address as "DELHI(DEL)".
iv) Write a query to fetch all employees who also hold the managerial position.

Q.4 Explain the following joins with examples in SQL along with syntaxes. **08**

a) Inner Join
b) Right Join
c) Left Join
d) Full Outer Join

Section – II

Q.5 Attempt the following (Any Three) **12**

a) What is view serializable schedule. Check whether the following schedule is view serializable? If yes, Find the Correct Serial Schedule

T1	T2	T3
		read(Y)
		read(Z)
read(X)		
write(X)		
		write(Y)
		write(Z)
	write(Z)	
read(Y)		
write(Y)		
	read(Y)	
	write(Y)	
	read(X)	
	write(X)	

b) Explain about 3NF and BCNF with relevant table structure.
c) Explain States of Transactions.
d) Differentiate among primary, secondary, and clustering indexes
e) Illustrate the use of multilevel indexing to improve the efficiency of searching an index file.

Q.6 Attempt any One. **08**

a) Check whether the given Schedules S1 & S2 are conflict serializable and convert into correct serial schedule.

T1	T2	T3
read(X)		
		read(Y)
		read(X)
	read(Y)	
	read(Z)	
		write(Y)
	write(Z)	
read(Z)		
read(X)		
write(Z)		

S1

T1	T2	T3
read(X)		
		read(Y)
	read(Y)	
		read(X)
read(Z)		
	read(Z)	
		write(Y)
write(X)		
	write(Z)	
write(Z)		

S2

b) Describe the structure of B-tree and B+tree nodes.

Q.7 Describe Two Phase Locking Protocol with suitable example. **08**

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (197047709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) In order to undo the work of *a* transaction after the last commit, which one should be used?
a) View b) Commit
c) Rollback d) Flashback

2) What is the Dirty Read Problem also known as?
a) W-W Conflict b) W-R Conflict
c) R-R Conflict d) None

3) A transaction that is inserting a new tuple into the database is given an.
a) Shared lock b) Mutual lock
c) Exclusive lock d) NO lock

4) A table on the many side of a one to many or many to many relationship must:
a) Be in Second Normal Form (2NF)
b) Be in Third Normal Form (3NF)
c) Have a single attribute key
d) Have a composite key

5) Consider a relation R(A, B, C, D) with the following functional dependencies: A -> (B, C, D), (A, D) -> (B, C) and (C, D) -> (A, B). Identify the candidate key(s).
a) {A} b) {A}, {C, D}
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6) The database design prevents some data from being stored due to _____.
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7) To generate the address of a data block, the hash function most often uses the _____ key.
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13) Drop Table cannot be used to drop a table referenced by a _____ constraint.
a) Local Key
b) Primary Key
c) Composite Key
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14) What does an RDBMS consist of _____.
a) Collection of Records
b) Collection of Keys
c) Collection of Tables
d) Collection of Fields

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (197047709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) List four significant differences between a file-processing system and a DBMS.
b) What are four main functions of a database administrator?
c) Explain concept of cardinality with example
d) What are some common clauses used with SELECT query in SQL? Explain any 3 with syntax and examples.
e) What are the different types of statements supported by SQL?

Q.3 Attempt the following (Any One) **08**

a) Draw an ER model of the Banking database application considering the following constraints
- A bank has many entities.
- Each customer has multiple accounts.
- Multiple customers belong to a single branch.
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EmpID	***EmpPosition***	***DateOfJoining***	***Salary***
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i) Write a query to find all the employees whose salary is between 50000 to 100000.
ii) Write a query to fetch details of employees whose EmpLname ends with an alphabet 'A' and contains five alphabets.
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iv) Write a query to fetch all employees who also hold the managerial position.

Q.4 Explain the following joins with examples in SQL along with syntaxes. **08**

a) Inner Join
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d) Full Outer Join

Section – II

Q.5 Attempt the following (Any Three) **12**

a) What is view serializable schedule. Check whether the following schedule is view serializable? If yes, Find the Correct Serial Schedule

T1	T2	T3
		read(Y)
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read(X)		
write(X)		
		write(Y)
		write(Z)
	write(Z)	
read(Y)		
write(Y)		
	read(Y)	
	write(Y)	
	read(X)	
	write(X)	

b) Explain about 3NF and BCNF with relevant table structure.
c) Explain States of Transactions.
d) Differentiate among primary, secondary, and clustering indexes
e) Illustrate the use of multilevel indexing to improve the efficiency of searching an index file.

Q.6 Attempt any One. **08**

a) Check whether the given Schedules S1 & S2 are conflict serializable and convert into correct serial schedule.

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read(X)		
		read(Y)
		read(X)
	read(Y)	
	read(Z)	
		write(Y)
	write(Z)	
read(Z)		
read(X)		
write(Z)		

S1

T1	T2	T3
read(X)		
		read(Y)
	read(Y)	
		read(X)
read(Z)		
	read(Z)	
		write(Y)
write(X)		
	write(Z)	
write(Z)		

S2

b) Describe the structure of B-tree and B+tree nodes.

Q.7 Describe Two Phase Locking Protocol with suitable example. **08**

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (197047709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) A table on the many side of a one to many or many to many relationship must:
a) Be in Second Normal Form (2NF)
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c) Have a single attribute key
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2) Consider a relation R(A, B, C, D) with the following functional dependencies: A -> (B, C, D), (A, D) -> (B, C) and (C, D) -> (A, B). Identify the candidate key(s).
a) {A} b) {A}, {C, D}
c) {A}, {C, D}, {A, D} d) {C, D}

3) The database design prevents some data from being stored due to _____.
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```
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```

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (197047709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Attempt the following (Any Three) 12

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Q.3 Attempt the following (Any One) 08

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3	Rohan	Diwan	Account	P3	Mumbai(BOM)	01/01/1980	M
4	Sonia	Kulkarni	HR	P1	Hyderabad(HYD)	02/05/1992	F
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Q.4 Explain the following joins with examples in SQL along with syntaxes. **08**

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Section – II

Q.5 Attempt the following (Any Three) **12**

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		read(Z)
read(X)		
write(X)		
		write(Y)
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c) Explain States of Transactions.
d) Differentiate among primary, secondary, and clustering indexes
e) Illustrate the use of multilevel indexing to improve the efficiency of searching an index file.

Q.6 Attempt any One. **08**

a) Check whether the given Schedules S1 & S2 are conflict serializable and convert into correct serial schedule.

T1	T2	T3
read(X)		
		read(Y)
		read(X)
	read(Y)	
	read(Z)	
		write(Y)
	write(Z)	
read(Z)		
read(X)		
write(Z)		

S1

T1	T2	T3
read(X)		
		read(Y)
	read(Y)	
		read(X)
read(Z)		
	read(Z)	
		write(Y)
write(X)		
	write(Z)	
write(Z)		

S2

b) Describe the structure of B-tree and B+tree nodes.

Q.7 Describe Two Phase Locking Protocol with suitable example. **08**

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (197047709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Drop Table cannot be used to drop a table referenced by a _____ constraint.
a) Local Key b) Primary Key
c) Composite Key d) Foreign Key

2) What does an RDBMS consist of _____.
a) Collection of Records b) Collection of Keys
c) Collection of Tables d) Collection of Fields

3) In order to undo the work of *a* transaction after the last commit, which one should be used?
a) View b) Commit
c) Rollback d) Flashback

4) What is the Dirty Read Problem also known as?
a) W-W Conflict b) W-R Conflict
c) R-R Conflict d) None

5) A transaction that is inserting a new tuple into the database is given an.
a) Shared lock b) Mutual lock
c) Exclusive lock d) NO lock

6) A table on the many side of a one to many or many to many relationship must:
a) Be in Second Normal Form (2NF)
b) Be in Third Normal Form (3NF)
c) Have a single attribute key
d) Have a composite key

7) Consider a relation R(A, B, C, D) with the following functional dependencies: A -> (B, C, D), (A, D) -> (B, C) and (C, D) -> (A, B). Identify the candidate key(s).
a) {A} b) {A}, {C, D}
c) {A}, {C, D}, {A, D} d) {C, D}

8) The database design prevents some data from being stored due to _____.
a) Deletion anomalies b) Insertion anomalies
c) Update anomalies d) Selection anomalies

9) To generate the address of a data block, the hash function most often uses the _____ key.

a) Primary
b) Foreign
c) Composite
d) Alternate

10) Which of the following is generally used for performing tasks like creating the structure of the relations, deleting relation?

a) DML(Data Manipulation Language)
b) Query
c) Relational Schema
d) DDL(Data Definition Language)

11) Which one of the following given statements possibly contains the error?

a) select * from emp where empid = 10003;
b) select empid from emp where empid = 10006;
c) select empid from emp;
d) select empid where empid = 1009 and Lastname = 'GELLER';

12) In the following Query, which of the following can be placed in the Query's blank portion to display the salary from highest to lowest amount, and sorting the employs name alphabetically?

SELECT *
FROM instructor
ORDER BY salary _____, name _____;

a) Ascending, Descending
b) Asc, Desc
c) Desc, Asc
d) All of the above

13) Which of the following refers to the level of data abstraction that describes exactly how the data actually stored?

a) Conceptual Level
b) Physical Level
c) File Level
d) Logical Level

14) For a binary relationship set R between sets A and B, the mapping cardinality is Many to Many if.

a) An Entity A is associated with any number (zero or more) of entities in B, An entity in B however can be associated with at most one entity in A
b) An Entity A is associated with at most one entity in B, An entity in B however can be associated with at most one entity in A
c) An Entity A is associated with at most one entity in B, An entity in B however can be associated with any number (zero or more) of entity in A
d) An Entity A is associated with any number (zero or more) of entities in B, An entity in B however can be associated with any number (zero or more) of entity in A

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (197047709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) List four significant differences between a file-processing system and a DBMS.
b) What are four main functions of a database administrator?
c) Explain concept of cardinality with example
d) What are some common clauses used with SELECT query in SQL? Explain any 3 with syntax and examples.
e) What are the different types of statements supported by SQL?

Q.3 Attempt the following (Any One) **08**

a) Draw an ER model of the Banking database application considering the following constraints
- A bank has many entities.
- Each customer has multiple accounts.
- Multiple customers belong to a single branch.
- Single account can borrow multiple loans.
- A branch has multiple employees.
- Customer - the relevant attributes are customerName, CustomerID, address.
- Account - The relevant attributes are AccountNo, balance.
- Branch - The relevant attributes are branchID, branchName, address.
- Loan - The relevant attributes are loanNo, paymentMode, dateOfLoan, and amount.
- Employee - The relevant attributes are empID, empName, dateOfJoin, experience, qualification.

b) Consider following tables and write the given query in SQL.

EmployeeInfo Table:

EmpID	*EmpFname*	*EmpLname*	*Department*	*Project*	*Address*	*DOB*	*Gender*
1	Sanjay	Mehra	HR	P1	Hyderabad(HYD)	01/12/1976	M
2	Ananya	Mishra	Admin	P2	Delhi(DEL)	02/05/1968	F
3	Rohan	Diwan	Account	P3	Mumbai(BOM)	01/01/1980	M
4	Sonia	Kulkarni	HR	P1	Hyderabad(HYD)	02/05/1992	F
5	Ankit	Kapoor	Admin	P2	Delhi(DEL)	03/07/1994	M

Employee Position Table:

EmpID	***EmpPosition***	***DateOfJoining***	***Salary***
1	Manager	01/05/2022	500000
2	Executive	02/05/2022	75000
3	Manager	01/05/2022	90000
2	Lead	02/05/2022	85000
1	Executive	01/05/2022	300000

i) Write a query to find all the employees whose salary is between 50000 to 100000.
ii) Write a query to fetch details of employees whose EmpLname ends with an alphabet 'A' and contains five alphabets.
iii) Write a query to fetchdetails of employees with the address as "DELHI(DEL)".
iv) Write a query to fetch all employees who also hold the managerial position.

Q.4 Explain the following joins with examples in SQL along with syntaxes. **08**

a) Inner Join
b) Right Join
c) Left Join
d) Full Outer Join

Section – II

Q.5 Attempt the following (Any Three) **12**

a) What is view serializable schedule. Check whether the following schedule is view serializable? If yes, Find the Correct Serial Schedule

T1	T2	T3
		read(Y)
		read(Z)
read(X)		
write(X)		
		write(Y)
		write(Z)
	write(Z)	
read(Y)		
write(Y)		
	read(Y)	
	write(Y)	
	read(X)	
	write(X)	

b) Explain about 3NF and BCNF with relevant table structure.
c) Explain States of Transactions.
d) Differentiate among primary, secondary, and clustering indexes
e) Illustrate the use of multilevel indexing to improve the efficiency of searching an index file.

Q.6 Attempt any One. **08**

a) Check whether the given Schedules S1 & S2 are conflict serializable and convert into correct serial schedule.

T1	T2	T3
read(X)		
		read(Y)
		read(X)
	read(Y)	
	read(Z)	
		write(Y)
	write(Z)	
read(Z)		
read(X)		
write(Z)		

S1

T1	T2	T3
read(X)		
		read(Y)
	read(Y)	
		read(X)
read(Z)		
	read(Z)	
		write(Y)
write(X)		
	write(Z)	
write(Z)		

S2

b) Describe the structure of B-tree and B+tree nodes.

Q.7 Describe Two Phase Locking Protocol with suitable example. **08**

SLR-GF-241

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (197047801)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The Wavelength correspond to Microwave frequency range is _____.
a) 30 to 300 GHz b) 3 to 30 GHz
c) 0.3 to 3 Ghz d) 300 to 3000 GHz

2) The main advantage of microwave is that _____.
a) Highly Directive b) Moves at the speed of light
c) S/N ratio grater d) High penetration power

3) Reflex Klystron is a _____.
a) Amplifier b) Oscillator
c) Attenuator d) Filter

4) Klystron operates on the principle of _____.
a) Amplitude Modulation b) Frequency Modulation
c) Pulse Modulation d) Velocity modulation

5) In multicavity Klystron additional cavities are inserted between buncher and catcher cavities to achieve _____.
a) Higher Gain b) Higher Efficiency
c) Higher Frequency d) Higher Bandwidth

6) In a TWT the amplitude of resultant wave travelling down the helix _____.
a) Increase Exponentially b) Increase linearly
c) Decrease exponentially d) Is almost constant

7) **Assertion (A):** PIN diode can be used as attenuator and limiter.
Reason (R): PIN diode has a thin intrinsic layer.
a) Both A and R are correct and R is correct explanation of A
b) Both A and R are correct and R is not correct explanation of A
c) A is correct but R is wrong
d) A is wrong but R is correct

8) The various performance parameter of GaAs MESFETS are _____.
a) Cut-Off frequency
b) Maximum frequency of oscillation
c) Noise figure
d) All of these

9) Track RADAR system is based on _____.
a) Installation environment b) Functional characteristics
c) Transmission characteristics d) Operating frequency band

10) _____ is most widely used for generating microwave frequencies for RADAR.
a) Magnetron b) Reflex klystron
c) TWT d) Klystron

11) The first geostationary satellite launched in 1965 was called _____.
a) ANIK b) EARLY BIRD(INTELSAT-I)
c) WESTAR d) MOLNIYA

12) Rotation of a geosynchronous satellite means its _____.
a) drift from stationary position b) wobbling
c) three-axis stabilization d) three-dimensional stabilization

13) A transponder is a satellite equipment which _____.
a) receives a signal from Earth station and amplifies
b) changes the frequency of the received signal
c) retransmits the received signal
d) does all of the above-mentioned functions

14) The quality of a space-link is measured in terms of the _____ ratio.
a) C/N b) S/N
c) EIRP d) G/T

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (197047801)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section –I

Q.2 Attempt any Two **12**

a) Explain bunching process in klystron and derive the expression for velocity modulation.
b) Explain principle of operation Tunnel diode and list its applications.
c) Draw block diagram of MTI radar system and explain its working Principal.

Q.3 Attempt any Four **16**

a) What is Microwave? What is the frequency range of microwave?
b) With suitable diagram, explain working of Isolator.
c) Draws block diagram of pulse radar system and state application of RADAR.
d) Explain different slow wave structures.
e) Explain working of directional Coupler.

Section – II

Q.4 Attempt any Two **12**

a) With suitable block diagrams explain telemetry, tracking and command (TT&C) subsystem of satellite.
b) What is system noise temperature? How does it affect the C/N and G/T ratio?
c) Explain construction and working of edge emitting double heterojunction LED.

Q.5 Attempt any Four **16**

a) Write a note on satellite solar power system.
b) Explain the terms angle of inclination and angle of elevation with neat diagram.
c) Define the term station keeping.
d) Derive numerical aperture for step index fiber.
e) Compare between TDMA, FDMA and DAMA.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (197047801)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The various performance parameter of GaAs MESFETS are _____.
a) Cut-Off frequency
b) Maximum frequency of oscillation
c) Noise figure
d) All of these

2) Track RADAR system is based on _____.
a) Installation environment b) Functional characteristics
c) Transmission characteristics d) Operating frequency band

3) _____ is most widely used for generating microwave frequencies for RADAR.
a) Magnetron b) Reflex klystron
c) TWT d) Klystron

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b) changes the frequency of the received signal
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Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (197047801)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section –I

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a) What is Microwave? What is the frequency range of microwave?
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e) Explain working of directional Coupler.

Section – II

Q.4 Attempt any Two **12**

a) With suitable block diagrams explain telemetry, tracking and command (TT&C) subsystem of satellite.
b) What is system noise temperature? How does it affect the C/N and G/T ratio?
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Q.5 Attempt any Four **16**

a) Write a note on satellite solar power system.
b) Explain the terms angle of inclination and angle of elevation with neat diagram.
c) Define the term station keeping.
d) Derive numerical aperture for step index fiber.
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Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (197047801)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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3) A transponder is a satellite equipment which _____.
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SLR-GF-241

Seat No.	

Set R

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ELECTRONICS ENGINEERING
Advanced Communication Engineering (197047801)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
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Section –I

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b) What is system noise temperature? How does it affect the C/N and G/T ratio?
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b) Explain the terms angle of inclination and angle of elevation with neat diagram.
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d) Derive numerical aperture for step index fiber.
e) Compare between TDMA, FDMA and DAMA.

Seat No.		Set	S

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-GF-241

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Advanced Communication Engineering (197047801)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
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Section –I

Q.2 Attempt any Two **12**

a) Explain bunching process in klystron and derive the expression for velocity modulation.
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c) Draw block diagram of MTI radar system and explain its working Principal.

Q.3 Attempt any Four **16**

a) What is Microwave? What is the frequency range of microwave?
b) With suitable diagram, explain working of Isolator.
c) Draws block diagram of pulse radar system and state application of RADAR.
d) Explain different slow wave structures.
e) Explain working of directional Coupler.

Section – II

Q.4 Attempt any Two **12**

a) With suitable block diagrams explain telemetry, tracking and command (TT&C) subsystem of satellite.
b) What is system noise temperature? How does it affect the C/N and G/T ratio?
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Q.5 Attempt any Four **16**

a) Write a note on satellite solar power system.
b) Explain the terms angle of inclination and angle of elevation with neat diagram.
c) Define the term station keeping.
d) Derive numerical aperture for step index fiber.
e) Compare between TDMA, FDMA and DAMA.

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Audio Video Systems (197047802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Total absorption of sound is given by, _____.
a) $a = \sum \alpha s$ b) $a = \sum \beta s$
c) $a = \sum c s$ d) $a = \sum \alpha$

2) Absorption causes _____.
a) reduced sound energy b) reverberation/echo
c) bending around obstacles d) none of the above

3) Spectral Sensitivity of an eye for different colours can be given by, _____.
a) Spectral Graph b) Eye Response Graph
c) Sensitivity Graph d) None of above

4) By mixing Red + Blue we get, _____.
a) Yellow b) Magenta
c) Cyan d) White

5) The hue and saturation of a colour put together is known as, _____.
a) Colour mixing b) Chrominance
c) Monochrome signals d) None of above

6) Scanning lines used by PAL per frame is, _____.
a) 625 lines/frame b) 652 lines/frame
c) 216.5 lines/frame d) None of above

7) The signals U and V are, _____.
a) Same as I and Q
b) Modified I and Q
c) Same as colour difference components R-Y and B-Y
d) None of the above

8) Ability of the image reproducing system to represent the fine structure of an object is _____.
a) resolution b) aspect ratio
c) clarity d) none of the mentioned

9) The spectral purity of colour light is called as, _____.
a) Luminance b) Brightness
c) Hue d) Saturation

10) A video consists of a sequence of, _____.
a) Frames b) Signals
c) Packets d) Slots

11) Composite video signal consists of _____.
a) camera signal corresponding to the desired picture information
b) blanking pulses to make the retrace invisible
c) synchronizing pulses to synchronize the transmitter and receiver scanning
d) all of the above

12) Digital television supports special features like _____.
a) PIP b) Games
c) Tele-text d) All of the mentioned

13) MPEG stands for _____.
a) Moving Picture Experts Group b) Motion Picture Experts Group
c) Moving Pixel Experts Group d) Motion Pixel Experts Group

14) MPEG-2, was designed for high-quality DVD with a data rate of, _____.
a) 3 to 6 Mbps b) 4 to 6 Mbps
c) 5 to 6 Mbps d) 6 to 6 Mbps

SLR-GF-242

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Audio Video Systems (197047802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer the following. (Any Four) **16**

a) With a neat block diagram, describe the principle of Disc recording.
b) List out the principle factors related to auditorium design in detail.
c) Derive the relationship between Velocity, Frequency and Wavelength.
d) How is the illusion of continuity created in television pictures? Why has the frame reception rate been chosen to be 25 and not 24 as in motion pictures?
e) Synchronizing pulses transmitted along with the picture signal justify the statement.

Q.3 Answer the following. (Any Two) **12**

a) Describe the basic principle of monochrome television transmission and reception.
b) Explain with a suitable block diagram, the encoding process in the PAL colour system. Why is the colour burst signal transmitted after each scanning line?
c) Discuss why is the modulated sub-carrier vectors shifted by 33° to constitute Q and I signal in the NTSC system? Why different bandwidths are assigned to Q and I signals?

Section – II

Q.4 Answer the following. (Any Four) **16**

a) List down different JPEG modes and discuss any one mode.
b) Discuss different MIDI related terms listed below.
1) Synthesizer
2) Sequencer
c) Compare headphones and headset?
d) Discuss advantages of digital television.
e) Explain how surround sound effect is produced in a digital TV system.

Q.5 Answer the following. (Any Two) **12**

a) Discuss the terms MPEG & JPEG in detail.
b) Discuss the MPEG audio encoder with suitable block diagram.
c) With a neat diagram explain Public addressing system for Auditorium.

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Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Audio Video Systems (197047802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Ability of the image reproducing system to represent the fine structure of an object is _____.
a) resolution b) aspect ratio
c) clarity d) none of the mentioned

2) The spectral purity of colour light is called as, _____.
a) Luminance b) Brightness
c) Hue d) Saturation

3) A video consists of a sequence of, _____.
a) Frames b) Signals
c) Packets d) Slots

4) Composite video signal consists of _____.
a) camera signal corresponding to the desired picture information
b) blanking pulses to make the retrace invisible
c) synchronizing pulses to synchronize the transmitter and receiver scanning
d) all of the above

5) Digital television supports special features like _____.
a) PIP b) Games
c) Tele-text d) All of the mentioned

6) MPEG stands for _____.
a) Moving Picture Experts Group b) Motion Picture Experts Group
c) Moving Pixel Experts Group d) Motion Pixel Experts Group

7) MPEG-2, was designed for high-quality DVD with a data rate of, _____.
a) 3 to 6 Mbps b) 4 to 6 Mbps
c) 5 to 6 Mbps d) 6 to 6 Mbps

8) Total absorption of sound is given by, _____.
a) $a = \sum \alpha s$ b) $a = \sum \beta s$
c) $a = \sum c s$ d) $a = \sum \alpha$

9) Absorption causes _____.
a) reduced sound energy b) reverberation/echo
c) bending around obstacles d) none of the above

10) Spectral Sensitivity of an eye for different colours can be given by, _____.
a) Spectral Graph b) Eye Response Graph
c) Sensitivity Graph d) None of above

11) By mixing Red + Blue we get, _____.
a) Yellow b) Magenta
c) Cyan d) White

12) The hue and saturation of a colour put together is known as, _____.
a) Colour mixing b) Chrominance
c) Monochrome signals d) None of above

13) Scanning lines used by PAL per frame is, _____.
a) 625 lines/frame b) 652 lines/frame
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14) The signals U and V are, _____.
a) Same as I and Q
b) Modified I and Q
c) Same as colour difference components R-Y and B-Y
d) None of the above

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Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Audio Video Systems (197047802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer the following. (Any Four) **16**

a) With a neat block diagram, describe the principle of Disc recording.
b) List out the principle factors related to auditorium design in detail.
c) Derive the relationship between Velocity, Frequency and Wavelength.
d) How is the illusion of continuity created in television pictures? Why has the frame reception rate been chosen to be 25 and not 24 as in motion pictures?
e) Synchronizing pulses transmitted along with the picture signal justify the statement.

Q.3 Answer the following. (Any Two) **12**

a) Describe the basic principle of monochrome television transmission and reception.
b) Explain with a suitable block diagram, the encoding process in the PAL colour system. Why is the colour burst signal transmitted after each scanning line?
c) Discuss why is the modulated sub-carrier vectors shifted by 33° to constitute Q and I signal in the NTSC system? Why different bandwidths are assigned to Q and I signals?

Section – II

Q.4 Answer the following. (Any Four) **16**

a) List down different JPEG modes and discuss any one mode.
b) Discuss different MIDI related terms listed below.
1) Synthesizer
2) Sequencer
c) Compare headphones and headset?
d) Discuss advantages of digital television.
e) Explain how surround sound effect is produced in a digital TV system.

Q.5 Answer the following. (Any Two) **12**

a) Discuss the terms MPEG & JPEG in detail.
b) Discuss the MPEG audio encoder with suitable block diagram.
c) With a neat diagram explain Public addressing system for Auditorium.

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Audio Video Systems (197047802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Composite video signal consists of _____.
a) camera signal corresponding to the desired picture information
b) blanking pulses to make the retrace invisible
c) synchronizing pulses to synchronize the transmitter and receiver scanning
d) all of the above

2) Digital television supports special features like _____.
a) PIP b) Games
c) Tele-text d) All of the mentioned

3) MPEG stands for _____.
a) Moving Picture Experts Group b) Motion Picture Experts Group
c) Moving Pixel Experts Group d) Motion Pixel Experts Group

4) MPEG-2, was designed for high-quality DVD with a data rate of, _____.
a) 3 to 6 Mbps b) 4 to 6 Mbps
c) 5 to 6 Mbps d) 6 to 6 Mbps

5) Total absorption of sound is given by, _____.
a) $a = \sum \alpha s$ b) $a = \sum \beta s$
c) $a = \sum c s$ d) $a = \sum \alpha$

6) Absorption causes _____.
a) reduced sound energy b) reverberation/echo
c) bending around obstacles d) none of the above

7) Spectral Sensitivity of an eye for different colours can be given by, _____.
a) Spectral Graph b) Eye Response Graph
c) Sensitivity Graph d) None of above

8) By mixing Red + Blue we get, _____.
a) Yellow b) Magenta
c) Cyan d) White

9) The hue and saturation of a colour put together is known as, _____.
a) Colour mixing b) Chrominance
c) Monochrome signals d) None of above

10) Scanning lines used by PAL per frame is, _____.
a) 625 lines/frame b) 652 lines/frame
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11) The signals U and V are, _____.
a) Same as I and Q
b) Modified I and Q
c) Same as colour difference components R-Y and B-Y
d) None of the above

12) Ability of the image reproducing system to represent the fine structure of an object is _____.
a) resolution b) aspect ratio
c) clarity d) none of the mentioned

13) The spectral purity of colour light is called as, _____.
a) Luminance b) Brightness
c) Hue d) Saturation

14) A video consists of a sequence of, _____.
a) Frames b) Signals
c) Packets d) Slots

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Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Audio Video Systems (197047802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer the following. (Any Four) **16**

a) With a neat block diagram, describe the principle of Disc recording.
b) List out the principle factors related to auditorium design in detail.
c) Derive the relationship between Velocity, Frequency and Wavelength.
d) How is the illusion of continuity created in television pictures? Why has the frame reception rate been chosen to be 25 and not 24 as in motion pictures?
e) Synchronizing pulses transmitted along with the picture signal justify the statement.

Q.3 Answer the following. (Any Two) **12**

a) Describe the basic principle of monochrome television transmission and reception.
b) Explain with a suitable block diagram, the encoding process in the PAL colour system. Why is the colour burst signal transmitted after each scanning line?
c) Discuss why is the modulated sub-carrier vectors shifted by 33° to constitute Q and I signal in the NTSC system? Why different bandwidths are assigned to Q and I signals?

Section – II

Q.4 Answer the following. (Any Four) **16**

a) List down different JPEG modes and discuss any one mode.
b) Discuss different MIDI related terms listed below.
1) Synthesizer
2) Sequencer
c) Compare headphones and headset?
d) Discuss advantages of digital television.
e) Explain how surround sound effect is produced in a digital TV system.

Q.5 Answer the following. (Any Two) **12**

a) Discuss the terms MPEG & JPEG in detail.
b) Discuss the MPEG audio encoder with suitable block diagram.
c) With a neat diagram explain Public addressing system for Auditorium.

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Audio Video Systems (197047802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Scanning lines used by PAL per frame is, _____.
a) 625 lines/frame b) 652 lines/frame
c) 216.5 lines/frame d) None of above

2) The signals U and V are, _____.
a) Same as I and Q
b) Modified I and Q
c) Same as colour difference components R-Y and B-Y
d) None of the above

3) Ability of the image reproducing system to represent the fine structure of an object is _____.
a) resolution b) aspect ratio
c) clarity d) none of the mentioned

4) The spectral purity of colour light is called as, _____.
a) Luminance b) Brightness
c) Hue d) Saturation

5) A video consists of a sequence of, _____.
a) Frames b) Signals
c) Packets d) Slots

6) Composite video signal consists of _____.
a) camera signal corresponding to the desired picture information
b) blanking pulses to make the retrace invisible
c) synchronizing pulses to synchronize the transmitter and receiver scanning
d) all of the above

7) Digital television supports special features like _____.
a) PIP b) Games
c) Tele-text d) All of the mentioned

8) MPEG stands for _____.
a) Moving Picture Experts Group b) Motion Picture Experts Group
c) Moving Pixel Experts Group d) Motion Pixel Experts Group

9) MPEG-2, was designed for high-quality DVD with a data rate of, _____.
a) 3 to 6 Mbps b) 4 to 6 Mbps
c) 5 to 6 Mbps d) 6 to 6 Mbps

10) Total absorption of sound is given by, _____.
a) $a = \sum \alpha s$ b) $a = \sum \beta s$
c) $a = \sum c s$ d) $a = \sum \alpha$

11) Absorption causes _____.
a) reduced sound energy b) reverberation/echo
c) bending around obstacles d) none of the above

12) Spectral Sensitivity of an eye for different colours can be given by, _____.
a) Spectral Graph b) Eye Response Graph
c) Sensitivity Graph d) None of above

13) By mixing Red + Blue we get, _____.
a) Yellow b) Magenta
c) Cyan d) White

14) The hue and saturation of a colour put together is known as, _____.
a) Colour mixing b) Chrominance
c) Monochrome signals d) None of above

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Seat No.	

Set S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Audio Video Systems (197047802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Answer the following. (Any Four) **16**

a) With a neat block diagram, describe the principle of Disc recording.
b) List out the principle factors related to auditorium design in detail.
c) Derive the relationship between Velocity, Frequency and Wavelength.
d) How is the illusion of continuity created in television pictures? Why has the frame reception rate been chosen to be 25 and not 24 as in motion pictures?
e) Synchronizing pulses transmitted along with the picture signal justify the statement.

Q.3 Answer the following. (Any Two) **12**

a) Describe the basic principle of monochrome television transmission and reception.
b) Explain with a suitable block diagram, the encoding process in the PAL colour system. Why is the colour burst signal transmitted after each scanning line?
c) Discuss why is the modulated sub-carrier vectors shifted by 33° to constitute Q and I signal in the NTSC system? Why different bandwidths are assigned to Q and I signals?

Section – II

Q.4 Answer the following. (Any Four) **16**

a) List down different JPEG modes and discuss any one mode.
b) Discuss different MIDI related terms listed below.
1) Synthesizer
2) Sequencer
c) Compare headphones and headset?
d) Discuss advantages of digital television.
e) Explain how surround sound effect is produced in a digital TV system.

Q.5 Answer the following. (Any Two) **12**

a) Discuss the terms MPEG & JPEG in detail.
b) Discuss the MPEG audio encoder with suitable block diagram.
c) With a neat diagram explain Public addressing system for Auditorium.

Seat No.	

Set **P**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (197047805)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) An example of discrete (digital) control is _____.
a) Varying the volume of a music system
b) Turning a lamp ON or OFF
c) Varying the brightness of a lamp
d) Controlling the speed of a fan

2) Which of the following cannot be an input that is given to the PLC?
a) Manual switches b) Relays
c) Sensors d) None of the above

3) The PLC is used in _____.
a) machine tools
b) automated assembly equipment
c) moulding and extrusion machines
d) all of the above

4) Ladder logic programming consists primarily of _____.
a) virtual relay contacts and coils
b) logic gate symbols with connecting lines
c) function blocks with connecting lines
d) text-based code

5) In PLC programming, a retentive function is one that: _____.
a) defaults to the "on" state
b) comes last in the program
c) defaults to the "off" state
d) is not reset after a power cycle

6) The _____ of metals is a function of temperature and increases with increasing temperature.
a) Coefficient of material b) Resistance
c) Conductivity d) Kappa

7) Noise reduction techniques should be utilized to avoid interfering voltages that might be otherwise generated in the system.
a) True b) False

8) The objective of process control is to keep key process operating parameters within narrow bounds of the _____.
a) Reference value b) Spot
c) Pith d) Inception point

9) The most popular language for PLCs is: _____.
a) Ladder diagram b) C++
c) OOP+ d) VHDL

10) Very often relays and valves are connected to: _____.
a) Input modules b) Output modules
c) Any of these d) None of the above

11) Voltage to current converter is also called as _____.
a) Current series positive feedback amplifier
b) Voltage series negative feedback amplifier
c) Current series negative feedback amplifier
d) Voltage series positive feedback amplifier

12) Which of the following application uses voltage to current converter?
a) Low voltage dc and ac voltmeter
b) Diode match finding
c) Light emitting diode
d) All of the mentioned

13) Which of the following is not of importance when a conveyor is designed?
a) Type of industry where the conveyor is being used
b) Type of material being carried by the conveyor
c) Cost
d) Length of travel of the conveyor

14) A shift register that will accept *a* parallel input or a bidirectional serial load and internal shift features is called as?
a) Tristate b) End around
c) Universal d) Conversion

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (197047805)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) What are the different blocks of PLC? Explain in detail.
b) Draw and explain instruction list programming method used in PLC.
c) Explain central heating system used in PLC.
d) Explain the function of ON-OFF delay timer.
e) Explain sequential function charts with suitable example.

Q.3 Attempt any two of the following questions. **12**

a) Develop the ladder diagram to start and stop motor using push buttons.
b) Explain subroutines with example used in PLC.
c) Draw and explain applications of internal relay used in PLC.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Write a note on ON/OFF controllers in detail.
b) Write short note on temperature sensors.
c) Compare between floating load and grounded load converter.
d) Explain the working of pressure sensor with suitable example.
e) Describe design of control logic for DAS.

Q.5 Attempt any two of the following questions. **12**

a) Explain Data Acquisition System using microcontrollers.
b) Explain different types of actuators with suitable example.
c) Derive a mathematical model for Proportional-Integral-Derivative (PID) controller.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (197047805)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The objective of process control is to keep key process operating parameters within narrow bounds of the _____.
a) Reference value b) Spot
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a) Ladder diagram b) C++
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3) Very often relays and valves are connected to: _____.
a) Input modules b) Output modules
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4) Voltage to current converter is also called as _____.
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5) Which of the following application uses voltage to current converter?
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6) Which of the following is not of importance when a conveyor is designed?
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b) Type of material being carried by the conveyor
c) Cost
d) Length of travel of the conveyor

7) A shift register that will accept *a* parallel input or a bidirectional serial load and internal shift features is called as?
a) Tristate b) End around
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8) An example of discrete (digital) control is _____.
a) Varying the volume of a music system
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9) Which of the following cannot be an input that is given to the PLC?
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c) function blocks with connecting lines
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12) In PLC programming, a retentive function is one that: _____.
a) defaults to the “on” state
b) comes last in the program
c) defaults to the “off” state
d) is not reset after a power cycle

13) The _____ of metals is a function of temperature and increases with increasing temperature.
a) Coefficient of material b) Resistance
c) Conductivity d) Kappa

14) Noise reduction techniques should be utilized to avoid interfering voltages that might be otherwise generated in the system.
a) True b) False

SLR-GF-244

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (197047805)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four of the following questions. **16**

a) What are the different blocks of PLC? Explain in detail.
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c) Explain central heating system used in PLC.
d) Explain the function of ON-OFF delay timer.
e) Explain sequential function charts with suitable example.

Q.3 Attempt any two of the following questions. **12**

a) Develop the ladder diagram to start and stop motor using push buttons.
b) Explain subroutines with example used in PLC.
c) Draw and explain applications of internal relay used in PLC.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Write a note on ON/OFF controllers in detail.
b) Write short note on temperature sensors.
c) Compare between floating load and grounded load converter.
d) Explain the working of pressure sensor with suitable example.
e) Describe design of control logic for DAS.

Q.5 Attempt any two of the following questions. **12**

a) Explain Data Acquisition System using microcontrollers.
b) Explain different types of actuators with suitable example.
c) Derive a mathematical model for Proportional-Integral-Derivative (PID) controller.

SLR-GF-244

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (197047805)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Voltage to current converter is also called as _____.
a) Current series positive feedback amplifier
b) Voltage series negative feedback amplifier
c) Current series negative feedback amplifier
d) Voltage series positive feedback amplifier

2) Which of the following application uses voltage to current converter?
a) Low voltage dc and ac voltmeter
b) Diode match finding
c) Light emitting diode
d) All of the mentioned

3) Which of the following is not of importance when a conveyor is designed?
a) Type of industry where the conveyor is being used
b) Type of material being carried by the conveyor
c) Cost
d) Length of travel of the conveyor

4) A shift register that will accept *a* parallel input or a bidirectional serial load and internal shift features is called as?
a) Tristate b) End around
c) Universal d) Conversion

5) An example of discrete (digital) control is _____.
a) Varying the volume of a music system
b) Turning a lamp ON or OFF
c) Varying the brightness of a lamp
d) Controlling the speed of a fan

6) Which of the following cannot be an input that is given to the PLC?
a) Manual switches b) Relays
c) Sensors d) None of the above

7) The PLC is used in _____.
a) machine tools
b) automated assembly equipment
c) moulding and extrusion machines
d) all of the above

8) Ladder logic programming consists primarily of _____.
a) virtual relay contacts and coils
b) logic gate symbols with connecting lines
c) function blocks with connecting lines
d) text-based code

9) In PLC programming, a retentive function is one that: _____.
a) defaults to the “on” state
b) comes last in the program
c) defaults to the “off” state
d) is not reset after a power cycle

10) The _____ of metals is a function of temperature and increases with increasing temperature.
a) Coefficient of material b) Resistance
c) Conductivity d) Kappa

11) Noise reduction techniques should be utilized to avoid interfering voltages that might be otherwise generated in the system.
a) True b) False

12) The objective of process control is to keep key process operating parameters within narrow bounds of the _____.
a) Reference value b) Spot
c) Pith d) Inception point

13) The most popular language for PLCs is: _____.
a) Ladder diagram b) C++
c) OOP+ d) VHDL

14) Very often relays and valves are connected to: _____.
a) Input modules b) Output modules
c) Any of these d) None of the above

SLR-GF-244

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (197047805)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) What are the different blocks of PLC? Explain in detail.
b) Draw and explain instruction list programming method used in PLC.
c) Explain central heating system used in PLC.
d) Explain the function of ON-OFF delay timer.
e) Explain sequential function charts with suitable example.

Q.3 Attempt any two of the following questions. **12**

a) Develop the ladder diagram to start and stop motor using push buttons.
b) Explain subroutines with example used in PLC.
c) Draw and explain applications of internal relay used in PLC.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Write a note on ON/OFF controllers in detail.
b) Write short note on temperature sensors.
c) Compare between floating load and grounded load converter.
d) Explain the working of pressure sensor with suitable example.
e) Describe design of control logic for DAS.

Q.5 Attempt any two of the following questions. **12**

a) Explain Data Acquisition System using microcontrollers.
b) Explain different types of actuators with suitable example.
c) Derive a mathematical model for Proportional-Integral-Derivative (PID) controller.

Seat No.	

Set | S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (197047805)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The _____ of metals is a function of temperature and increases with increasing temperature.
a) Coefficient of material b) Resistance
c) Conductivity d) Kappa

2) Noise reduction techniques should be utilized to avoid interfering voltages that might be otherwise generated in the system.
a) True b) False

3) The objective of process control is to keep key process operating parameters within narrow bounds of the _____.
a) Reference value b) Spot
c) Pith d) Inception point

4) The most popular language for PLCs is: _____.
a) Ladder diagram b) C++
c) OOP+ d) VHDL

5) Very often relays and valves are connected to: _____.
a) Input modules b) Output modules
c) Any of these d) None of the above

6) Voltage to current converter is also called as _____.
a) Current series positive feedback amplifier
b) Voltage series negative feedback amplifier
c) Current series negative feedback amplifier
d) Voltage series positive feedback amplifier

7) Which of the following application uses voltage to current converter?
a) Low voltage dc and ac voltmeter
b) Diode match finding
c) Light emitting diode
d) All of the mentioned

8) Which of the following is not of importance when a conveyor is designed?
a) Type of industry where the conveyor is being used
b) Type of material being carried by the conveyor
c) Cost
d) Length of travel of the conveyor

9) A shift register that will accept *a* parallel input or a bidirectional serial load and internal shift features is called as?
a) Tristate
b) End around
c) Universal
d) Conversion

10) An example of discrete (digital) control is _____.
a) Varying the volume of a music system
b) Turning a lamp ON or OFF
c) Varying the brightness of a lamp
d) Controlling the speed of a fan

11) Which of the following cannot be an input that is given to the PLC?
a) Manual switches
b) Relays
c) Sensors
d) None of the above

12) The PLC is used in _____.
a) machine tools
b) automated assembly equipment
c) moulding and extrusion machines
d) all of the above

13) Ladder logic programming consists primarily of _____.
a) virtual relay contacts and coils
b) logic gate symbols with connecting lines
c) function blocks with connecting lines
d) text-based code

14) In PLC programming, a retentive function is one that: _____.
a) defaults to the “on” state
b) comes last in the program
c) defaults to the “off” state
d) is not reset after a power cycle

SLR-GF-244

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
PLC and Industrial Controllers (197047805)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) What are the different blocks of PLC? Explain in detail.
b) Draw and explain instruction list programming method used in PLC.
c) Explain central heating system used in PLC.
d) Explain the function of ON-OFF delay timer.
e) Explain sequential function charts with suitable example.

Q.3 Attempt any two of the following questions. **12**

a) Develop the ladder diagram to start and stop motor using push buttons.
b) Explain subroutines with example used in PLC.
c) Draw and explain applications of internal relay used in PLC.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Write a note on ON/OFF controllers in detail.
b) Write short note on temperature sensors.
c) Compare between floating load and grounded load converter.
d) Explain the working of pressure sensor with suitable example.
e) Describe design of control logic for DAS.

Q.5 Attempt any two of the following questions. **12**

a) Explain Data Acquisition System using microcontrollers.
b) Explain different types of actuators with suitable example.
c) Derive a mathematical model for Proportional-Integral-Derivative (PID) controller.

SLR-GF-245

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Analytics (197047806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ compresses amount of data.
a) Feature extraction b) Interpolation
c) Normalization d) All of these

2) In _____ ranges each range [a, b] is chosen in such a way that (b - a) is the same for each range.
a) equi-log b) equi-depth
c) equi-width d) equilibrium

3) The goal of data mining is to extract _____ from data.
a) Relations b) Patterns
c) Knowledge d) All of these

4) _____ predicts the value of a given continuous feature based on the values of other features in the data.
a) Classification b) Clustering
c) Regression d) Association rule mining

5) A nice property of the Euclidean distance is that it is _____.
a) Rotation invariant b) Scale invariant
c) Distance invariant d) All of these

6) If a cluster of data consisted of the points (80, 56), (75, 53), (60, 50), and (68,54), then the cluster center is at _____.
a) (70.75, 53.25) b) (75.75, 55.25)
c) (62.35, 52.55) d) (68.25, 55.45)

7) The _____ algorithm is not guaranteed to converge to the global optimum and often terminates at a local optimum.
a) Linear regression b) Classification
c) k-means d) non linear regression

8) Which of below can be used for social media analytics?
a) NLP b) Segmentation
c) Clustering d) All of these

9) _____ analytics gains insight from historical data with reporting, scorecards etc.

a) Decision b) Descriptive
c) Predictive d) Rule based

10) _____ is a machine learning method in which models are trained using labeled data.

a) Clustering b) Supervised learning
c) Unsupervised learning d) Labeling

11) Take odd man out: Naïve Bayes, KNN, linear regression, decision tree _____.

a) Naïve Bayes b) KNN
c) Linear regression d) Decision tree

12) Which of below is not an advantage of data integration?

a) Faster query processing b) Dependency
c) Complex query processing d) High volume data processing

13) The two tiers of data warehouse architectures are _____.

a) client, DW server b) client, metadata
c) DW server, metadata d) metadata, DW server

14) If A= Entropy (4+, 3-) and B= Entropy (3-,4+), then _____.

a) A=B b) A>B
c) B>A d) insufficient data

SLR-GF-245

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Analytics (197047806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section –I

Q.2 Solve Any Two **12**

a) What is Data-preprocessing? Why it is important and what are its different types?
b) With two real life example describe how data mining is useful for business applications.
c) With suitable examples compare - structured, semi-structured and unstructured data.

Q.3 Solve Any Four. **16**

a) With suitable example show how to calculate Jaccard index for binary set data.
b) With suitable example compare different types of feature subset selection.
c) What is sampling in analytics? Explain probability and non-probability sampling.
d) Compare: data science, data analytics and machine learning.
e) With suitable example compare - univariate and bivariate analysis.

Section – II

Q.4 Solve Any Two. **12**

a) With suitable example explain decision tree algorithm.
b) With suitable example describe how a Naïve Bayes classifier can be used for prediction of class of a data record.
c) With suitable example explain K-means Clustering?

Q.5 Solve Any Four. **16**

a) Compare different types of data warehouse.
b) With suitable example discuss any one dimensionality reduction using axis rotation.
c) Explain different components of data warehouse implementation.
d) Distinguish between OLTP and OLAP.
e) Describe any four data warehouse access tools.

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Analytics (197047806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of below can be used for social media analytics?
a) NLP b) Segmentation
c) Clustering d) All of these

2) _____ analytics gains insight from historical data with reporting, scorecards etc.
a) Decision b) Descriptive
c) Predictive d) Rule based

3) _____ is a machine learning method in which models are trained using labeled data.
a) Clustering b) Supervised learning
c) Unsupervised learning d) Labeling

4) Take odd man out: Naïve Bayes, KNN, linear regression, decision tree _____.
a) Naïve Bayes b) KNN
c) Linear regression d) Decision tree

5) Which of below is not an advantage of data integration?
a) Faster query processing b) Dependency
c) Complex query processing d) High volume data processing

6) The two tiers of data warehouse architectures are _____.
a) client, DW server b) client, metadata
c) DW server, metadata d) metadata, DW server

7) If A= Entropy (4+, 3-) and B= Entropy (3-,4+), then _____.
a) A=B b) A>B
c) B>A d) insufficient data

8) _____ compresses amount of data.
a) Feature extraction b) Interpolation
c) Normalization d) All of these

9) In _____ ranges each range [a, b] is chosen in such a way that (b - a) is the same for each range.

a) equi-log b) equi-depth
c) equi-width d) equilibrium

10) The goal of data mining is to extract _____ from data.

a) Relations b) Patterns
c) Knowledge d) All of these

11) _____ predicts the value of a given continuous feature based on the values of other features in the data.

a) Classification b) Clustering
c) Regression d) Association rule mining

12) A nice property of the Euclidean distance is that it is _____.

a) Rotation invariant b) Scale invariant
c) Distance invariant d) All of these

13) If a cluster of data consisted of the points (80, 56), (75, 53), (60, 50), and (68,54), then the cluster center is at _____.

a) (70.75, 53.25) b) (75.75, 55.25)
c) (62.35, 52.55) d) (68.25, 55.45)

14) The _____ algorithm is not guaranteed to converge to the global optimum and often terminates at a local optimum.

a) Linear regression b) Classification
c) k-means d) non linear regression

Seat No.	

Set | Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Analytics (197047806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section –I

Q.2 Solve Any Two **12**

a) What is Data-preprocessing? Why it is important and what are its different types?
b) With two real life example describe how data mining is useful for business applications.
c) With suitable examples compare - structured, semi-structured and unstructured data.

Q.3 Solve Any Four. **16**

a) With suitable example show how to calculate Jaccard index for binary set data.
b) With suitable example compare different types of feature subset selection.
c) What is sampling in analytics? Explain probability and non-probability sampling.
d) Compare: data science, data analytics and machine learning.
e) With suitable example compare - univariate and bivariate analysis.

Section – II

Q.4 Solve Any Two. **12**

a) With suitable example explain decision tree algorithm.
b) With suitable example describe how a Naïve Bayes classifier can be used for prediction of class of a data record.
c) With suitable example explain K-means Clustering?

Q.5 Solve Any Four. **16**

a) Compare different types of data warehouse.
b) With suitable example discuss any one dimensionality reduction using axis rotation.
c) Explain different components of data warehouse implementation.
d) Distinguish between OLTP and OLAP.
e) Describe any four data warehouse access tools.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Analytics (197047806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Take odd man out: Naïve Bayes, KNN, linear regression, decision tree _____.
a) Naïve Bayes b) KNN
c) Linear regression d) Decision tree

2) Which of below is not an advantage of data integration?
a) Faster query processing b) Dependency
c) Complex query processing d) High volume data processing

3) The two tiers of data warehouse architectures are _____.
a) client, DW server b) client, metadata
c) DW server, metadata d) metadata, DW server

4) If A= Entropy (4+, 3-) and B= Entropy (3-,4+), then _____.
a) A=B b) A>B
c) B>A d) insufficient data

5) _____ compresses amount of data.
a) Feature extraction b) Interpolation
c) Normalization d) All of these

6) In _____ ranges each range [a, b] is chosen in such a way that (b - a) is the same for each range.
a) equi-log b) equi-depth
c) equi-width d) equilibrium

7) The goal of data mining is to extract _____ from data.
a) Relations b) Patterns
c) Knowledge d) All of these

8) _____ predicts the value of a given continuous feature based on the values of other features in the data.
a) Classification b) Clustering
c) Regression d) Association rule mining

9) A nice property of the Euclidean distance is that it is _____.
a) Rotation invariant b) Scale invariant
c) Distance invariant d) All of these

10) If a cluster of data consisted of the points (80, 56), (75, 53), (60, 50), and (68,54), then the cluster center is at _____.

a) (70.75, 53.25) b) (75.75, 55.25)
c) (62.35, 52.55) d) (68.25, 55.45)

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12) Which of below can be used for social media analytics?

a) NLP b) Segmentation
c) Clustering d) All of these

13) _____ analytics gains insight from historical data with reporting, scorecards etc.

a) Decision b) Descriptive
c) Predictive d) Rule based

14) _____ is a machine learning method in which models are trained using labeled data.

a) Clustering b) Supervised learning
c) Unsupervised learning d) Labeling

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Analytics (197047806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section –I

Q.2 Solve Any Two **12**

a) What is Data-preprocessing? Why it is important and what are its different types?
b) With two real life example describe how data mining is useful for business applications.
c) With suitable examples compare - structured, semi-structured and unstructured data.

Q.3 Solve Any Four. **16**

a) With suitable example show how to calculate Jaccard index for binary set data.
b) With suitable example compare different types of feature subset selection.
c) What is sampling in analytics? Explain probability and non-probability sampling.
d) Compare: data science, data analytics and machine learning.
e) With suitable example compare - univariate and bivariate analysis.

Section – II

Q.4 Solve Any Two. **12**

a) With suitable example explain decision tree algorithm.
b) With suitable example describe how a Naïve Bayes classifier can be used for prediction of class of a data record.
c) With suitable example explain K-means Clustering?

Q.5 Solve Any Four. **16**

a) Compare different types of data warehouse.
b) With suitable example discuss any one dimensionality reduction using axis rotation.
c) Explain different components of data warehouse implementation.
d) Distinguish between OLTP and OLAP.
e) Describe any four data warehouse access tools.

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Analytics (197047806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If a cluster of data consisted of the points (80, 56), (75, 53), (60, 50), and (68,54), then the cluster center is at _____.
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c) (62.35, 52.55) d) (68.25, 55.45)

2) The _____ algorithm is not guaranteed to converge to the global optimum and often terminates at a local optimum.
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c) Predictive d) Rule based

5) _____ is a machine learning method in which models are trained using labeled data.
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c) Unsupervised learning d) Labeling

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a) Naïve Bayes b) KNN
c) Linear regression d) Decision tree

7) Which of below is not an advantage of data integration?
a) Faster query processing b) Dependency
c) Complex query processing d) High volume data processing

8) The two tiers of data warehouse architectures are _____.
a) client, DW server b) client, metadata
c) DW server, metadata d) metadata, DW server

9) If A= Entropy (4+, 3-) and B= Entropy (3-,4+), then _____.
a) A=B b) A>B
c) B>A d) insufficient data

10) _____ compresses amount of data.
a) Feature extraction b) Interpolation
c) Normalization d) All of these

11) In _____ ranges each range [a, b] is chosen in such a way that (b - a) is the same for each range.
a) equi-log b) equi-depth
c) equi-width d) equilibrium

12) The goal of data mining is to extract _____ from data.
a) Relations b) Patterns
c) Knowledge d) All of these

13) _____ predicts the value of a given continuous feature based on the values of other features in the data.
a) Classification b) Clustering
c) Regression d) Association rule mining

14) A nice property of the Euclidean distance is that it is _____.
a) Rotation invariant b) Scale invariant
c) Distance invariant d) All of these

SLR-GF-245

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Analytics (197047806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section –I

Q.2 Solve Any Two **12**

a) What is Data-preprocessing? Why it is important and what are its different types?
b) With two real life example describe how data mining is useful for business applications.
c) With suitable examples compare - structured, semi-structured and unstructured data.

Q.3 Solve Any Four. **16**

a) With suitable example show how to calculate Jaccard index for binary set data.
b) With suitable example compare different types of feature subset selection.
c) What is sampling in analytics? Explain probability and non-probability sampling.
d) Compare: data science, data analytics and machine learning.
e) With suitable example compare - univariate and bivariate analysis.

Section – II

Q.4 Solve Any Two. **12**

a) With suitable example explain decision tree algorithm.
b) With suitable example describe how a Naïve Bayes classifier can be used for prediction of class of a data record.
c) With suitable example explain K-means Clustering?

Q.5 Solve Any Four. **16**

a) Compare different types of data warehouse.
b) With suitable example discuss any one dimensionality reduction using axis rotation.
c) Explain different components of data warehouse implementation.
d) Distinguish between OLTP and OLAP.
e) Describe any four data warehouse access tools.

SLR-GF-248

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Architecture (197047809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Computer architecture deals with _____.
a) The sizes of data types that are supported.
b) The sizes of data types and the types of operations that are supported
c) The types of operations
d) Interfaces to peripheral devices

2) Which of the following is a type of architecture used in the computers nowadays?
a) Micro architecture b) Harvard Architecture
c) Von-Neumann Architecture d) System Design

3) Execution of several activities at the same time.
a) Processing b) parallel processing
c) serial processing d) multitasking

4) A term for simultaneous access to a resource, physical or logical.
a) Multiprogramming b) Multitasking
c) Threads d) Concurrency

5) _____ leads to concurrency.
a) Serialization b) Parallelism
c) Serial processing d) Distribution

6) The main objective in building the multi-microprocessor is _____.
a) Greater throughput
b) Enhanced fault tolerance
c) Greater throughput and enhanced fault tolerance
d) None of the above mentioned

7) Overflow may occur while adding _____.
a) When two numbers are added that have large magnitudes and the same sign
b) When two numbers are added that have small magnitudes and the same sign
c) When two numbers are added that have large magnitudes and the different sign
d) When two numbers are added that have small magnitudes and the different sign

8) MIPS stands for?
a) Mandatory Instructions/sec
b) Millions of Instructions/sec
c) Most of Instructions/sec
d) Many Instructions / sec

9) Computer can be viewed from a number of levels, from the highest _____ level to the lowest _____ level.
a) High level language, digital logic
b) Assembly Logic, gate logic
c) User, transistor
d) Transistor, user

10) Which languages deal with hardware issues such as registers and the transfer of data between them.
a) High level language
b) User language
c) Simulator
d) Machine level

11) What is the base of octal number systems?
a) 16
b) 10
c) 8
d) 2

12) Which of the following ARC processor instruction can be used to load a memory from register?
a) Store
b) Str
c) Stor
d) St

13) Collections of desktop computers or servers connected by local area networks to act as a single larger computer are called as _____.
a) WAN
b) Collection
c) Cluster
d) adhoc-network

14) Direct addressing is used to access data items whose address is known at _____.
a) Assembly time
b) Compile time
c) Execution time
d) Any time

SLR-GF-248

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Architecture (197047809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any four. **16**

a) Describe levels of machine with neat diagram.
b) Convert of decimal to octal number;
i) $(35.147)_{10}$
ii) (107.15)10
c) Solve the following using binary subtraction.
i) $(21)_{10}$ - $(15)_{10}$
ii) $(49)_{10}$ - $(23)_{10}$
d) Explain ARC RISC processor control instructions.
e) Explain floating point representation in different format of 8bit, 16bit, 32 bit and 64 bit.

Q.3 Attempt any two. **12**

a) What is fetch execute cycle? Draw and explain an example of data path
b) Write short notes on:
i) ARC RISC processor Arithmetic instructions
ii) ARC RISC processor Logical instructions
c) What is Interrupt driven IO? Write it's working.

Section - II

Q.4 Attempt any four. **16**

a) Explain hardware based speculation.
b) What are the challenges of parallel processing?
c) Explain basic compiler techniques for exposing instruction level parallelism.
d) How to measure and summarize the performance of computing system?
e) Write short note on distributed shared memory.

Q.5 Attempt any two. **12**

a) Write note on a cost of computing system.
b) Explain different method to exploit ILP using multiple issue and static scheduling.
c) Explain dynamic scheduling using Tomasulo's algorithm.

SLR-GF-248

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Architecture (197047809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) MIPS stands for?
a) Mandatory Instructions/sec b) Millions of Instructions/sec
c) Most of Instructions/sec d) Many Instructions / sec

2) Computer can be viewed from a number of levels, from the highest _____ level to the lowest _____ level.
a) High level language, digital logic
b) Assembly Logic, gate logic
c) User, transistor
d) Transistor, user

3) Which languages deal with hardware issues such as registers and the transfer of data between them.
a) High level language
b) User language
c) Simulator
d) Machine level

4) What is the base of octal number systems?
a) 16 b) 10
c) 8 d) 2

5) Which of the following ARC processor instruction can be used to load a memory from register?
a) Store b) Str
c) Stor d) St

6) Collections of desktop computers or servers connected by local area networks to act as a single larger computer are called as _____.
a) WAN b) Collection
c) Cluster d) adhoc-network

7) Direct addressing is used to access data items whose address is known at _____.
a) Assembly time b) Compile time
c) Execution time d) Any time

8) Computer architecture deals with _____.
a) The sizes of data types that are supported.
b) The sizes of data types and the types of operations that are supported
c) The types of operations
d) Interfaces to peripheral devices

9) Which of the following is a type of architecture used in the computers nowadays?
a) Micro architecture b) Harvard Architecture
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10) Execution of several activities at the same time.
a) Processing b) parallel processing
c) serial processing d) multitasking

11) A term for simultaneous access to a resource, physical or logical.
a) Multiprogramming b) Multitasking
c) Threads d) Concurrency

12) _____ leads to concurrency.
a) Serialization b) Parallelism
c) Serial processing d) Distribution

13) The main objective in building the multi-microprocessor is _____.
a) Greater throughput
b) Enhanced fault tolerance
c) Greater throughput and enhanced fault tolerance
d) None of the above mentioned

14) Overflow may occur while adding _____.
a) When two numbers are added that have large magnitudes and the same sign
b) When two numbers are added that have small magnitudes and the same sign
c) When two numbers are added that have large magnitudes and the different sign
d) When two numbers are added that have small magnitudes and the different sign

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Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Architecture (197047809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any four. **16**

a) Describe levels of machine with neat diagram.
b) Convert of decimal to octal number;
i) $(35.147)_{10}$
ii) (107.15)10
c) Solve the following using binary subtraction.
i) $(21)_{10}$ - $(15)_{10}$
ii) $(49)_{10}$ - $(23)_{10}$
d) Explain ARC RISC processor control instructions.
e) Explain floating point representation in different format of 8bit, 16bit, 32 bit and 64 bit.

Q.3 Attempt any two. **12**

a) What is fetch execute cycle? Draw and explain an example of data path
b) Write short notes on:
i) ARC RISC processor Arithmetic instructions
ii) ARC RISC processor Logical instructions
c) What is Interrupt driven IO? Write it's working.

Section - II

Q.4 Attempt any four. **16**

a) Explain hardware based speculation.
b) What are the challenges of parallel processing?
c) Explain basic compiler techniques for exposing instruction level parallelism.
d) How to measure and summarize the performance of computing system?
e) Write short note on distributed shared memory.

Q.5 Attempt any two. **12**

a) Write note on a cost of computing system.
b) Explain different method to exploit ILP using multiple issue and static scheduling.
c) Explain dynamic scheduling using Tomasulo's algorithm.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Architecture (197047809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) What is the base of octal number systems?
a) 16 b) 10
c) 8 d) 2

2) Which of the following ARC processor instruction can be used to load a memory from register?
a) Store b) Str
c) Stor d) St

3) Collections of desktop computers or servers connected by local area networks to act as a single larger computer are called as _____.
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4) Direct addressing is used to access data items whose address is known at _____.
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c) Execution time d) Any time

5) Computer architecture deals with _____.
a) The sizes of data types that are supported.
b) The sizes of data types and the types of operations that are supported
c) The types of operations
d) Interfaces to peripheral devices

6) Which of the following is a type of architecture used in the computers nowadays?
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c) Von-Neumann Architecture d) System Design

7) Execution of several activities at the same time.
a) Processing b) parallel processing
c) serial processing d) multitasking

8) A term for simultaneous access to a resource, physical or logical.
a) Multiprogramming b) Multitasking
c) Threads d) Concurrency

9) _____ leads to concurrency.
a) Serialization b) Parallelism
c) Serial processing d) Distribution

10) The main objective in building the multi-microprocessor is _____.
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b) Enhanced fault tolerance
c) Greater throughput and enhanced fault tolerance
d) None of the above mentioned

11) Overflow may occur while adding _____.
a) When two numbers are added that have large magnitudes and the same sign
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12) MIPS stands for?
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b) Assembly Logic, gate logic
c) User, transistor
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14) Which languages deal with hardware issues such as registers and the transfer of data between them.
a) High level language
b) User language
c) Simulator
d) Machine level

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Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Architecture (197047809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any four. **16**

a) Describe levels of machine with neat diagram.
b) Convert of decimal to octal number;
i) $(35.147)_{10}$
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c) Solve the following using binary subtraction.
i) $(21)_{10}$ - $(15)_{10}$
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d) Explain ARC RISC processor control instructions.
e) Explain floating point representation in different format of 8bit, 16bit, 32 bit and 64 bit.

Q.3 Attempt any two. **12**

a) What is fetch execute cycle? Draw and explain an example of data path
b) Write short notes on:
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Section - II

Q.4 Attempt any four. **16**

a) Explain hardware based speculation.
b) What are the challenges of parallel processing?
c) Explain basic compiler techniques for exposing instruction level parallelism.
d) How to measure and summarize the performance of computing system?
e) Write short note on distributed shared memory.

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a) Write note on a cost of computing system.
b) Explain different method to exploit ILP using multiple issue and static scheduling.
c) Explain dynamic scheduling using Tomasulo's algorithm.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Architecture (197047809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) The main objective in building the multi-microprocessor is _____.
a) Greater throughput
b) Enhanced fault tolerance
c) Greater throughput and enhanced fault tolerance
d) None of the above mentioned

2) Overflow may occur while adding _____.
a) When two numbers are added that have large magnitudes and the same sign
b) When two numbers are added that have small magnitudes and the same sign
c) When two numbers are added that have large magnitudes and the different sign
d) When two numbers are added that have small magnitudes and the different sign

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d) Transistor, user

5) Which languages deal with hardware issues such as registers and the transfer of data between them.
a) High level language
b) User language
c) Simulator
d) Machine level

6) What is the base of octal number systems?
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c) Cluster d) adhoc-network

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a) Assembly time b) Compile time
c) Execution time d) Any time

10) Computer architecture deals with _____.
a) The sizes of data types that are supported.
b) The sizes of data types and the types of operations that are supported
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c) serial processing d) multitasking

13) A term for simultaneous access to a resource, physical or logical.
a) Multiprogramming b) Multitasking
c) Threads d) Concurrency

14) _____ leads to concurrency.
a) Serialization b) Parallelism
c) Serial processing d) Distribution

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Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computer Architecture (197047809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any four. **16**

a) Describe levels of machine with neat diagram.
b) Convert of decimal to octal number;
i) $(35.147)_{10}$
ii) (107.15)10
c) Solve the following using binary subtraction.
i) $(21)_{10}$ - $(15)_{10}$
ii) $(49)_{10}$ - $(23)_{10}$
d) Explain ARC RISC processor control instructions.
e) Explain floating point representation in different format of 8bit, 16bit, 32 bit and 64 bit.

Q.3 Attempt any two. **12**

a) What is fetch execute cycle? Draw and explain an example of data path
b) Write short notes on:
i) ARC RISC processor Arithmetic instructions
ii) ARC RISC processor Logical instructions
c) What is Interrupt driven IO? Write it's working.

Section - II

Q.4 Attempt any four. **16**

a) Explain hardware based speculation.
b) What are the challenges of parallel processing?
c) Explain basic compiler techniques for exposing instruction level parallelism.
d) How to measure and summarize the performance of computing system?
e) Write short note on distributed shared memory.

Q.5 Attempt any two. **12**

a) Write note on a cost of computing system.
b) Explain different method to exploit ILP using multiple issue and static scheduling.
c) Explain dynamic scheduling using Tomasulo's algorithm.

SLR-GF-249

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (BTN03501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Who is known as the - Father of Al?
a) Fisher Ada b) Alan Turing
c) John McCarthy d) Allen Newell

2) Among the given options, which search algorithm requires less memory?
a) Optimal Search b) Depth First Search
c) Breadth-First Search d) Linear Search

3) Among the given options, which is not the required property of Knowledge?
a) Inferential Efficiency
b) Inferential Adequacy
c) Representational Verification
d) Representational Adequacy

4) The exploration problem is where _____.
a) Agent contains the knowledge of State and actions
b) Agent does not contain the knowledge of State and actions
c) Only actions are known to the agent
d) None of the above

5) A hybrid Bayesian Network consist ____.
a) Discrete variables only
b) Discontinuous Variable
c) Both Discrete and Continuous variables
d) Continuous Variable only

6) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihoo d) All of the above

7) Which of the given element improve the performance of Al agent so that it can make better decisions?
a) Changing b) Performance Element
c) Learning Element d) None of the above

8) Which is true for Decision theory?
a) Decision Theory = Probability theory + utility theory
b) Decision Theory = Inference theory + utility theory
c) Decision Theory = Uncertainty + utility theory
d) Decision Theory = Probability theory + preference

9) General algorithm applied on game tree for making decision of win/lose is ___.
a) DFS/BFS Search Algorithms b) Heuristic Search Algorithms
c) Greedy Search Algorithms d) MIN/MAX Algorithms

10) The statement comprising the limitations of FOL is/are _____.
a) Expressiveness Formalizing
b) Natural Languages
c) Many-sorted Logic
d) All of the mentioned

11) Translate the following statement into FOL. “For every a, if a is a philosopher, then a is a scholar”
a) ∀ a philosopher(a) scholar(a) b) ∃ a philosopher(a) scholar(a)
c) All of the mentioned d) None of the mentioned

12) Which form is called as a conjunction of disjunction of literals?
a) Conjunctive normal form b) Disjunctive normal form
c) Normal form d) All of the mentioned

13) How the compactness of the Bayesian network can be described?
a) Locally structured b) Fully structured
c) Partial structure d) All of the mentioned

14) Knowledge may be _____.
I) Declarative
II) Procedural
III) Non-procedural
a) Only (I) b) Only (II)
c) Only (III) d) Both (I) and (II)

SLR-GF-249

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (BTN03501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three **12**

a) Explain advantages of AI.
b) Explain probabilistic logic with example.
c) Explain AO* algorithm with suitable example.
d) Define agent. Explain learning-based agent in AI.
e) Explain different Types of knowledge.

Q.3 Attempt Any One **08**

a) Explain objects, relations, events, actions, time, and space.
b) Define following term.
1) Problem reduction
2) And or Graph
3) Constraint propagation
4) Stochastic

Q.4 Explain A* algorithm in detail with example in detail. **08**

Section – II

Q.5 Attempt Any Three **12**

a) Explain Supervised learning form.
b) Explain need of machine learning in AI.
c) Explain reinforcement learning form.
d) Explain probability and use of it in AI.
e) Explain scope of AI.

Q.6 Attempt Any One. **08**

a) Explain Bayes' theorem in detail with example.
b) Explain following forms of learning
1) Semi-supervised
2) Unsupervised

Q.7 Explain problems, and approaches of AI in detail. **08**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (BTN03501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which is true for Decision theory?
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b) Decision Theory = Inference theory + utility theory
c) Decision Theory = Uncertainty + utility theory
d) Decision Theory = Probability theory + preference

2) General algorithm applied on game tree for making decision of win/lose is ___.
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b) Natural Languages
c) Many-sorted Logic
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4) Translate the following statement into FOL. "For every a, if a is a philosopher, then a is a scholar"
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5) Which form is called as a conjunction of disjunction of literals?
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7) Knowledge may be _____.
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II) Procedural
III) Non-procedural
a) Only (I) b) Only (II)
c) Only (III) d) Both (I) and (II)

8) Who is known as the - Father of Al?
a) Fisher Ada
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b) Performance Element
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Seat No.		Set	Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (BTN03501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt Any Three **12**

a) Explain advantages of AI.
b) Explain probabilistic logic with example.
c) Explain AO* algorithm with suitable example.
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e) Explain different Types of knowledge.

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Q.4 Explain A* algorithm in detail with example in detail. **08**

Section – II

Q.5 Attempt Any Three **12**

a) Explain Supervised learning form.
b) Explain need of machine learning in AI.
c) Explain reinforcement learning form.
d) Explain probability and use of it in AI.
e) Explain scope of AI.

Q.6 Attempt Any One. **08**

a) Explain Bayes' theorem in detail with example.
b) Explain following forms of learning
1) Semi-supervised
2) Unsupervised

Q.7 Explain problems, and approaches of AI in detail. **08**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (BTN03501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Translate the following statement into FOL. "For every a, if a is a philosopher, then a is a scholar"
a) ∀ a philosopher(a) scholar(a) b) ∃ a philosopher(a) scholar(a)
c) All of the mentioned d) None of the mentioned

2) Which form is called as a conjunction of disjunction of literals?
a) Conjunctive normal form b) Disjunctive normal form
c) Normal form d) All of the mentioned

3) How the compactness of the Bayesian network can be described?
a) Locally structured b) Fully structured
c) Partial structure d) All of the mentioned

4) Knowledge may be _____.
I) Declarative
II) Procedural
III) Non-procedural
a) Only (I) b) Only (II)
c) Only (III) d) Both (I) and (II)

5) Who is known as the - Father of Al?
a) Fisher Ada b) Alan Turing
c) John McCarthy d) Allen Newell

6) Among the given options, which search algorithm requires less memory?
a) Optimal Search b) Depth First Search
c) Breadth-First Search d) Linear Search

7) Among the given options, which is not the required property of Knowledge?
a) Inferential Efficiency
b) Inferential Adequacy
c) Representational Verification
d) Representational Adequacy

8) The exploration problem is where _____.
   a) Agent contains the knowledge of State and actions
   b) Agent does not contain the knowledge of State and actions
   c) Only actions are known to the agent
   d) None of the above

9) A hybrid Bayesian Network consist ____.
   a) Discrete variables only
   b) Discontinuous Variable
   c) Both Discrete and Continuous variables
   d) Continuous Variable only

10) The probabilistic reasoning depends upon _____.
   a) Estimation b) Observations
   c) Likelihoo d) All of the above

11) Which of the given element improve the performance of AI agent so that it can make better decisions?
   a) Changing b) Performance Element
   c) Learning Element d) None of the above

12) Which is true for Decision theory?
   a) Decision Theory = Probability theory + utility theory
   b) Decision Theory = Inference theory + utility theory
   c) Decision Theory = Uncertainty + utility theory
   d) Decision Theory = Probability theory + preference

13) General algorithm applied on game tree for making decision of win/lose is ___.
   a) DFS/BFS Search Algorithms b) Heuristic Search Algorithms
   c) Greedy Search Algorithms d) MIN/MAX Algorithms

14) The statement comprising the limitations of FOL is/are _____.
   a) Expressiveness Formalizing
   b) Natural Languages
   c) Many-sorted Logic
   d) All of the mentioned

SLR-GF-249

Seat No.		Set	R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (BTN03501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three **12**

a) Explain advantages of AI.
b) Explain probabilistic logic with example.
c) Explain AO* algorithm with suitable example.
d) Define agent. Explain learning-based agent in AI.
e) Explain different Types of knowledge.

Q.3 Attempt Any One **08**

a) Explain objects, relations, events, actions, time, and space.
b) Define following term.
1) Problem reduction
2) And or Graph
3) Constraint propagation
4) Stochastic

Q.4 Explain A* algorithm in detail with example in detail. **08**

Section – II

Q.5 Attempt Any Three **12**

a) Explain Supervised learning form.
b) Explain need of machine learning in AI.
c) Explain reinforcement learning form.
d) Explain probability and use of it in AI.
e) Explain scope of AI.

Q.6 Attempt Any One. **08**

a) Explain Bayes' theorem in detail with example.
b) Explain following forms of learning
1) Semi-supervised
2) Unsupervised

Q.7 Explain problems, and approaches of AI in detail. **08**

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (BTN03501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihoo d) All of the above

2) Which of the given element improve the performance of Al agent so that it can make better decisions?
a) Changing b) Performance Element
c) Learning Element d) None of the above

3) Which is true for Decision theory?
a) Decision Theory = Probability theory + utility theory
b) Decision Theory = Inference theory + utility theory
c) Decision Theory = Uncertainty + utility theory
d) Decision Theory = Probability theory + preference

4) General algorithm applied on game tree for making decision of win/lose is ___.
a) DFS/BFS Search Algorithms b) Heuristic Search Algorithms
c) Greedy Search Algorithms d) MIN/MAX Algorithms

5) The statement comprising the limitations of FOL is/are _____.
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b) Natural Languages
c) Many-sorted Logic
d) All of the mentioned

6) Translate the following statement into FOL. "For every a, if a is a philosopher, then a is a scholar"
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7) Which form is called as a conjunction of disjunction of literals?
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c) Breadth-First Search d) Linear Search

12) Among the given options, which is not the required property of Knowledge?

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b) Inferential Adequacy
c) Representational Verification
d) Representational Adequacy

13) The exploration problem is where _____.

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c) Only actions are known to the agent
d) None of the above

14) A hybrid Bayesian Network consist ____.

a) Discrete variables only
b) Discontinuous Variable
c) Both Discrete and Continuous variables
d) Continuous Variable only

SLR-GF-249

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (BTN03501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three **12**

a) Explain advantages of AI.
b) Explain probabilistic logic with example.
c) Explain AO* algorithm with suitable example.
d) Define agent. Explain learning-based agent in AI.
e) Explain different Types of knowledge.

Q.3 Attempt Any One **08**

a) Explain objects, relations, events, actions, time, and space.
b) Define following term.
1) Problem reduction
2) And or Graph
3) Constraint propagation
4) Stochastic

Q.4 Explain A* algorithm in detail with example in detail. **08**

Section – II

Q.5 Attempt Any Three **12**

a) Explain Supervised learning form.
b) Explain need of machine learning in AI.
c) Explain reinforcement learning form.
d) Explain probability and use of it in AI.
e) Explain scope of AI.

Q.6 Attempt Any One. **08**

a) Explain Bayes' theorem in detail with example.
b) Explain following forms of learning
1) Semi-supervised
2) Unsupervised

Q.7 Explain problems, and approaches of AI in detail. **08**

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) What is Dispatch Latency?
a) The time taken by the dispatcher to stop one process and start another
b) The time taken by processor to write a file on disk
c) The Time taken by the dispatcher to bring a process from Swap Space
d) None of the above

2) "Aging" is _____
a) Keeping track of cache contents
b) keeping track of what pages are currently residing in memory
c) keeping track of how many times a given page is referenced
d) Increasing the priority of jobs to ensure termination in finite time

3) In multilevel feedback scheduling algorithm: _____
a) a process can move to a different classified ready queue
b) classification of ready queue is permanent
c) processes are not classified into groups
d) none of the mentioned

4) FCFS algorithm is non-preemptive in nature, that is, once CPU time has been allocated to a process, other processes can get CPU time only after the current process has finished. This property of FCFS scheduling leads to the situation called _____
a) Convoy Effect b) Common Effect
c) Belady's Effect d) Aging effect

5) Which of the following statements are true?
I. Shortest remaining time first scheduling may cause starvation
II. Preemptive scheduling may cause starvation
III. Round robin is better than FCFS in terms of response time
a) I only b) I & II only
c) I, II, III d) II and III

6) The processes that are residing in main memory and are ready and waiting to execute are kept on a list called: _____
a) Job Queue b) Ready Queue
c) Execution Queue d) Process queue

7) Mutual exclusion can be provided by the _____
a) mutex locks
b) binary semaphores
c) both mutex locks and binary semaphores
d) none of the mentioned

8) If all processes I/O bound, the ready queue will almost always be _____ and the Short term Scheduler will have a _____ to do.
a) full, little b) full, lot
c) empty, little d) empty, lot

9) The segment of code in which the process may change common variables, update tables, write into files is known as: _____
a) Entry Section b) Remainder Section
c) Exit section d) Critical section

10) The _____ algorithm selects the request with the least seek time from the current head position.
a) FCFS Disk Scheduling b) SSTF Disk Scheduling
c) SCAN Scheduling d) C-SCAN Scheduling

11) Thrashing _____
a) is a natural consequence of virtual memory systems
b) can always be avoided by swapping
c) always occurs on large computers
d) is a high paging activity

12) For effective operating system, when to check for deadlock?
a) every time a resource request is made
b) at fixed time intervals
c) both (a) and (b)
d) None of the above

13) What is/are the requirement/s for the solution to critical section problem?
a) Mutual Exclusion b) Progress
c) Bounded Waiting d) All of the above

14) A _____ is a software module consisting of one or more procedures, an initialization sequence, and local data.
a) monitor b) message passing
c) binary semaphore d) None of these

Seat No.

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**

a) Compare FCFS, SJF, Priority and Round Robin Scheduling algorithms.

b) What are the different states of processes during its lifetime, explain in detail with diagram.

c) Explain necessary conditions for solution to critical section problem.

d) What is thread? Why it is called as lightweight process? Differentiate User thread and Kernel Thread.

Q.3 Answer any one **08**

a) Consider a system with four processes along with their Arrival time and Burst time as given below.

Process	Arrival Time (ms)	Burst Time (ms)
P1	0	5
P2	0	3
P3	0	3
P4	0	1

Consider, Preemptive Shortest Job First algorithm

i) Draw Gantt Chart
ii) Calculate Average waiting Time
iii) Calculate Average Turnaround Time
iv) Also find number of context switches.

b) How synchronization can be achieved for Bounded-Buffer Producer Consumer problem using semaphore. Write structure of producer and consumer process.

Q.4 Draw queuing diagram and state different types of queues used by processes during execution. How different scheduler selects processes from these queues for execution. Explain all scheduler in detail. **08**

Section – II

Q.5 Solve any Three. **12**

a) When deadlock detection algorithm determines a deadlock exists, then what is the mechanism for recovery from deadlock.

b) Explain importance of virtual memory with example.

c) Consider the following segment table

Segment	Base	Length	Logical Address
0	219	600	0430
1	2300	14	110
2	90	100	2500
3	1327	580	3400

What are the physical addresses for the given logical addresses?

d) Write a note on FCFS Disk Scheduling.

Q.6 Answer Any one **08**

a) Consider the following page reference string

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

How many page, fault would occur for the following page replacement algorithm?

a) LRU
b) FIFO
c) Optimal

Consider number of frames = 3. Which algorithm gives minimum page fault?

b) How paging mechanism is used to convert logical address into physical address. What is the difference between paging and segmentation?

Q.7 Consider the following snapshot of a system **08**

Process	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

Answer the following questions using Bankers algorithm:

1) What is the content of Need Matrix?
2) Is the system in safe state?
3) If request from process Pl arrives for (1,0,2) can the request be granted immediately.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) If all processes I/O bound, the ready queue will almost always be _____ and the Short term Scheduler will have a _____ to do.
a) full, little b) full, lot
c) empty, little d) empty, lot

2) The segment of code in which the process may change common variables, update tables, write into files is known as: _____
a) Entry Section b) Remainder Section
c) Exit section d) Critical section

3) The _____ algorithm selects the request with the least seek time from the current head position.
a) FCFS Disk Scheduling b) SSTF Disk Scheduling
c) SCAN Scheduling d) C-SCAN Scheduling

4) Thrashing _____
a) is a natural consequence of virtual memory systems
b) can always be avoided by swapping
c) always occurs on large computers
d) is a high paging activity

5) For effective operating system, when to check for deadlock?
a) every time a resource request is made
b) at fixed time intervals
c) both (a) and (b)
d) None of the above

6) What is/are the requirement/s for the solution to critical section problem?
a) Mutual Exclusion b) Progress
c) Bounded Waiting d) All of the above

7) A _____ is a software module consisting of one or more procedures, an initialization sequence, and local data.
a) monitor b) message passing
c) binary semaphore d) None of these

8) What is Dispatch Latency?
a) The time taken by the dispatcher to stop one process and start another
b) The time taken by processor to write a file on disk
c) The Time taken by the dispatcher to bring a process from Swap Space
d) None of the above

9) "Aging" is _____
a) Keeping track of cache contents
b) keeping track of what pages are currently residing in memory
c) keeping track of how many times a given page is referenced
d) Increasing the priority of jobs to ensure termination in finite time

10) In multilevel feedback scheduling algorithm: _____
a) a process can move to a different classified ready queue
b) classification of ready queue is permanent
c) processes are not classified into groups
d) none of the mentioned

11) FCFS algorithm is non-preemptive in nature, that is, once CPU time has been allocated to a process, other processes can get CPU time only after the current process has finished. This property of FCFS scheduling leads to the situation called _____
a) Convoy Effect b) Common Effect
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12) Which of the following statements are true?
I. Shortest remaining time first scheduling may cause starvation
II. Preemptive scheduling may cause starvation
III. Round robin is better than FCFS in terms of response time
a) I only b) I & II only
c) I, II, III d) II and III

13) The processes that are residing in main memory and are ready and waiting to execute are kept on a list called: _____
a) Job Queue b) Ready Queue
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14) Mutual exclusion can be provided by the _____
a) mutex locks
b) binary semaphores
c) both mutex locks and binary semaphores
d) none of the mentioned

Seat No.

Set Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**

a) Compare FCFS, SJF, Priority and Round Robin Scheduling algorithms.

b) What are the different states of processes during its lifetime, explain in detail with diagram.

c) Explain necessary conditions for solution to critical section problem.

d) What is thread? Why it is called as lightweight process? Differentiate User thread and Kernel Thread.

Q.3 Answer any one **08**

a) Consider a system with four processes along with their Arrival time and Burst time as given below.

Process	Arrival Time (ms)	Burst Time (ms)
P1	0	5
P2	0	3
P3	0	3
P4	0	1

Consider, Preemptive Shortest Job First algorithm

i) Draw Gantt Chart
ii) Calculate Average waiting Time
iii) Calculate Average Turnaround Time
iv) Also find number of context switches.

b) How synchronization can be achieved for Bounded-Buffer Producer Consumer problem using semaphore. Write structure of producer and consumer process.

Q.4 Draw queuing diagram and state different types of queues used by processes during execution. How different scheduler selects processes from these queues for execution. Explain all scheduler in detail. **08**

Section – II

Q.5 Solve any Three. **12**

a) When deadlock detection algorithm determines a deadlock exists, then what is the mechanism for recovery from deadlock.

b) Explain importance of virtual memory with example.

c) Consider the following segment table

Segment	Base	Length	Logical Address
0	219	600	0430
1	2300	14	110
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What are the physical addresses for the given logical addresses?

d) Write a note on FCFS Disk Scheduling.

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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Thrashing _____
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2) For effective operating system, when to check for deadlock?
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3) What is/are the requirement/s for the solution to critical section problem?
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4) A _____ is a software module consisting of one or more procedures, an initialization sequence, and local data.
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b) Remainder Section
c) Exit section
d) Critical section

14) The _____ algorithm selects the request with the least seek time from the current head position.

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b) SSTF Disk Scheduling
c) SCAN Scheduling
d) C-SCAN Scheduling

SLR-GF-250

Seat No.

Set R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**

a) Compare FCFS, SJF, Priority and Round Robin Scheduling algorithms.

b) What are the different states of processes during its lifetime, explain in detail with diagram.

c) Explain necessary conditions for solution to critical section problem.

d) What is thread? Why it is called as lightweight process? Differentiate User thread and Kernel Thread.

Q.3 Answer any one **08**

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Q.4 Draw queuing diagram and state different types of queues used by processes during execution. How different scheduler selects processes from these queues for execution. Explain all scheduler in detail. **08**

Section – II

Q.5 Solve any Three. **12**

a) When deadlock detection algorithm determines a deadlock exists, then what is the mechanism for recovery from deadlock.

b) Explain importance of virtual memory with example.

c) Consider the following segment table

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3	1327	580	3400

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a) Consider the following page reference string

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

How many page, fault would occur for the following page replacement algorithm?

a) LRU
b) FIFO
c) Optimal

Consider number of frames = 3. Which algorithm gives minimum page fault?

b) How paging mechanism is used to convert logical address into physical address. What is the difference between paging and segmentation?

Q.7 Consider the following snapshot of a system **08**

Process	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

Answer the following questions using Bankers algorithm:

1) What is the content of Need Matrix?
2) Is the system in safe state?
3) If request from process Pl arrives for (1,0,2) can the request be granted immediately.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) The processes that are residing in main memory and are ready and waiting to execute are kept on a list called: _____
a) Job Queue b) Ready Queue
c) Execution Queue d) Process queue

2) Mutual exclusion can be provided by the _____
a) mutex locks
b) binary semaphores
c) both mutex locks and binary semaphores
d) none of the mentioned

3) If all processes I/O bound, the ready queue will almost always be _____ and the Short term Scheduler will have a _____ to do.
a) full, little b) full, lot
c) empty, little d) empty, lot

4) The segment of code in which the process may change common variables, update tables, write into files is known as: _____
a) Entry Section b) Remainder Section
c) Exit section d) Critical section

5) The _____ algorithm selects the request with the least seek time from the current head position.
a) FCFS Disk Scheduling b) SSTF Disk Scheduling
c) SCAN Scheduling d) C-SCAN Scheduling

6) Thrashing _____
a) is a natural consequence of virtual memory systems
b) can always be avoided by swapping
c) always occurs on large computers
d) is a high paging activity

7) For effective operating system, when to check for deadlock?
a) every time a resource request is made
b) at fixed time intervals
c) both (a) and (b)
d) None of the above

8) What is/are the requirement/s for the solution to critical section problem?
a) Mutual Exclusion b) Progress
c) Bounded Waiting d) All of the above

9) A _____ is a software module consisting of one or more procedures, an initialization sequence, and local data.
a) monitor b) message passing
c) binary semaphore d) None of these

10) What is Dispatch Latency?
a) The time taken by the dispatcher to stop one process and start another
b) The time taken by processor to write a file on disk
c) The Time taken by the dispatcher to bring a process from Swap Space
d) None of the above

11) "Aging" is _____
a) Keeping track of cache contents
b) keeping track of what pages are currently residing in memory
c) keeping track of how many times a given page is referenced
d) Increasing the priority of jobs to ensure termination in finite time

12) In multilevel feedback scheduling algorithm: _____
a) a process can move to a different classified ready queue
b) classification of ready queue is permanent
c) processes are not classified into groups
d) none of the mentioned

13) FCFS algorithm is non-preemptive in nature, that is, once CPU time has been allocated to a process, other processes can get CPU time only after the current process has finished. This property of FCFS scheduling leads to the situation called _____
a) Convoy Effect b) Common Effect
c) Belady's Effect d) Aging effect

14) Which of the following statements are true?
I. Shortest remaining time first scheduling may cause starvation
II. Preemptive scheduling may cause starvation
III. Round robin is better than FCFS in terms of response time
a) I only b) I & II only
c) I, II, III d) II and III

SLR-GF-250

Seat No.

Set S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Operating Systems (BTN03502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Questions are compulsory.
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Section – I

Q.2 Solve any three. **12**

a) Compare FCFS, SJF, Priority and Round Robin Scheduling algorithms.

b) What are the different states of processes during its lifetime, explain in detail with diagram.

c) Explain necessary conditions for solution to critical section problem.

d) What is thread? Why it is called as lightweight process? Differentiate User thread and Kernel Thread.

Q.3 Answer any one **08**

a) Consider a system with four processes along with their Arrival time and Burst time as given below.

Process	Arrival Time (ms)	Burst Time (ms)
P1	0	5
P2	0	3
P3	0	3
P4	0	1

Consider, Preemptive Shortest Job First algorithm

i) Draw Gantt Chart
ii) Calculate Average waiting Time
iii) Calculate Average Turnaround Time
iv) Also find number of context switches.

b) How synchronization can be achieved for Bounded-Buffer Producer Consumer problem using semaphore. Write structure of producer and consumer process.

Q.4 Draw queuing diagram and state different types of queues used by processes during execution. How different scheduler selects processes from these queues for execution. Explain all scheduler in detail. **08**

Section – II

Q.5 Solve any Three. **12**

a) When deadlock detection algorithm determines a deadlock exists, then what is the mechanism for recovery from deadlock.

b) Explain importance of virtual memory with example.

c) Consider the following segment table

Segment	Base	Length	Logical Address
0	219	600	0430
1	2300	14	110
2	90	100	2500
3	1327	580	3400

What are the physical addresses for the given logical addresses?

d) Write a note on FCFS Disk Scheduling.

Q.6 Answer Any one **08**

a) Consider the following page reference string

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

How many page, fault would occur for the following page replacement algorithm?

a) LRU
b) FIFO
c) Optimal

Consider number of frames = 3. Which algorithm gives minimum page fault?

b) How paging mechanism is used to convert logical address into physical address. What is the difference between paging and segmentation?

Q.7 Consider the following snapshot of a system **08**

Process	Allocation			Max			Available		
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Answer the following questions using Bankers algorithm:

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Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov–2023
COMPUTER SCIENCE AND ENGINEERING
Database Engineering (BTN03503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) B- tree eliminates redundant storage of _____.
a) Search keys b) Indices
c) Buckets d) Bucket skew

2) Number of types of ordered indices are _____.
a) 2 b) 3
c) 4 d) 5

3) Nonleaf nodes of B+- tree structure form a _____.
a) Multilevel clustered indices b) Sparse indices
c) Multilevel dense indices d) Multilevel sparse indices

4) What is the purpose of index in sql server?
a) To enhance the query performance
b) To provide an index to a record
c) To perform fast searches
d) All of the mentioned

5) Consider money is transferred from
1) account-A to account-B
2) account-B to account-A
Which of the following form a transaction?
a) Only 1 b) Only 2
c) Both 1 and 2 individually d) Either 1 or 2

6) The prime attribute of relation schema R is an attribute that appears _____.
a) In all candidate keys of R b) In some candidate keys of R
c) In Primary key d) In foreign key

7) The maximum number of superkey for relation $R(A, B, C, D, E, F, G, H, I, J)$ WITH A as a candidate key _____.
a) 4 b) 5
c) 7 d) 8

8) Let $R(A, B, C, D, E)$ be a relation schema with following functional dependency $\{C \rightarrow F, E \rightarrow A, EC \rightarrow D, A \rightarrow B\}$ Which of the following is the key for R
a) $[CD]$ b) $[EC]$
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9) Which of the following statement about normal form is false
a) BCNF is stricter than 3NF
b) Lossless and dependency preserving decomposition possible into 3NF
c) Lossless and dependency preserving decomposition possible into BCNF
d) Any relation between two attribute in BCNF

10) Identify the correct statement.
a) Physical level Abstraction: describes how a record is stored
b) Physical level Abstraction: describes how schema is stored in a data base
c) Physical level Abstraction: hides details of data types
d) Physical level Abstraction: describes the data relationships in a data base

11) Consider the two relations below.
The primary keys are underlined. Identify all possible foreign key(s) from the options.
loan (loan_number, branch_name, amount)
borrower (customer_name + loan_number)
a) customer_name
b) Loan_number
c) loan_number, customer_name
d) loan_number, customer_name, branch_name

12) Identify the correct statement.
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d) (2245, John) is specifies a relation and the schema of the relation

13) An entity in A is associated with at most one entity in B. An entity in B, however, can be associated with any number (zero or more) of entities in A.
a) One-to-many
b) One-to-one
c) Many-to-many
d) Many-to-one

14) Which of the following makes the transaction permanent in the database?
a) View
b) Commit
c) Rollback
d) Flashback

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov–2023
COMPUTER SCIENCE AND ENGINEERING
Database Engineering (BTN03503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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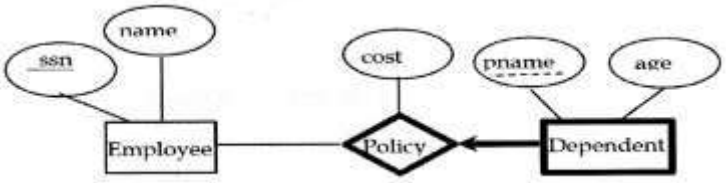
Section – I

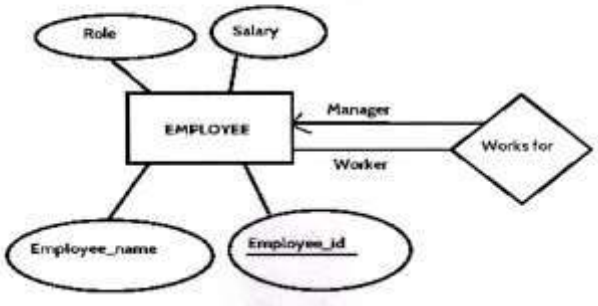
Q.2 Attempt any three. **12**

a) Explain the difference between two-tier architecture and three tier architecture?
b) What are different types of database users?
c) What are different types of attributes?
d) Draw and explain basic E-R diagram notations.

Q.3 Attempt any two. **16**

a) Convert following E-R model to Relational Model.





b) Find the highest normal form of a relation.
1) R(A,B,C,D,E) with FD Set $\{A \to D, B \to A, BC \to D, AC \to BE\}$
2) R(A,B,C,D,E) with FD Set $\{BC \to D, AC \to BE, B \to E\}$

c) Find Prime & Non Prime attribute from the given set of FDs.
1) $\{AB \to C, \quad C \to D, \quad C \to E, \quad E \to F, \quad F \to A\}$
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Section – II

Q.4 Attempt any three **12**

a) Explain Transaction model.
b) Differentiate ordered indices and hashing.
c) List and explain ACID properties with example.
d) Write various types of failures.

Q.5 Attempt any two. **16**

a) Explain 2PC protocol.
b) What is conflict serializibility?
c) Explain B-tree index file with insertion and deletion.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov–2023
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Duration: 30 Minutes Marks:14

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1) Let $R(A,B,C,D,E)$ be a relation schema with following functional dependency $\{C \to F, E \to A, EC \to D, A \to B\}$ Which of the following is the key for R
a) $[CD]$ b) $[EC]$
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2) Which of the following statement about normal form is false
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Seat No.		Set	Q

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COMPUTER SCIENCE AND ENGINEERING
Database Engineering (BTN03503)

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Section – I

Q.2 Attempt any three. **12**

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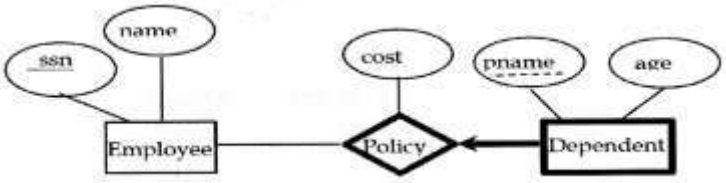

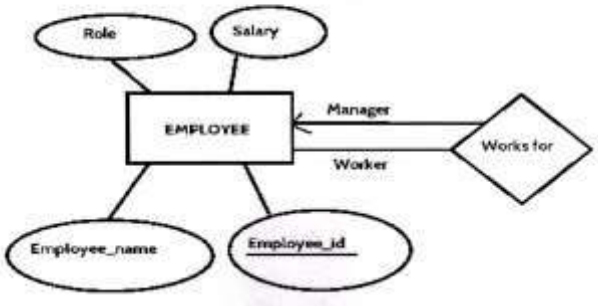

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SLR-GF-251

Seat No.		Set	R

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Database Engineering (BTN03503)

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Seat No.		Set	R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov–2023
COMPUTER SCIENCE AND ENGINEERING
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Day & Date: Saturday, 30-12-2023 Max. Marks: 56
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Section – I

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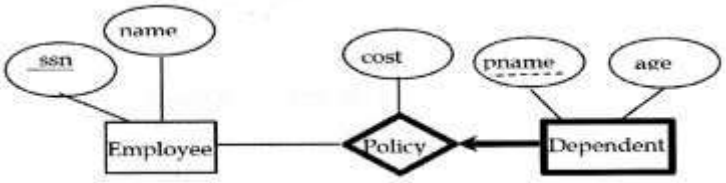

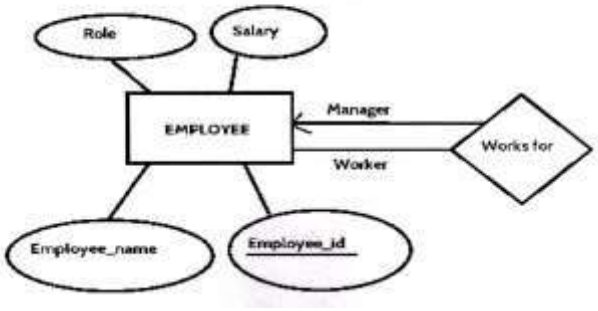

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Section – II

Q.4 Attempt any three **12**

a) Explain Transaction model.
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c) List and explain ACID properties with example.
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b) What is conflict serializibility?
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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov–2023
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5) Identify the correct statement.
a) Physical level Abstraction: describes how a record is stored
b) Physical level Abstraction: describes how schema is stored in a data base
c) Physical level Abstraction: hides details of data types
d) Physical level Abstraction: describes the data relationships in a data base

6) Consider the two relations below.
The primary keys are underlined. Identify all possible foreign key(s) from the options.
loan (loan_number, branch_name, amount)
borrower (customer_name + loan_number)
a) customer_name
b) Loan_number
c) loan_number, customer_name
d) loan_number, customer_name, branch_name

7) Identify the correct statement.
a) student (ss#, name) is a relation
b) (2245, John) is an instance of a relation schema
c) (2245, John) specifies a relation schema
d) (2245, John) is specifies a relation and the schema of the relation

8) An entity in A is associated with at most one entity in B. An entity in B, however, can be associated with any number (zero or more) of entities in A.
a) One-to-many b) One-to-one
c) Many-to-many d) Many-to-one

9) Which of the following makes the transaction permanent in the database?
a) View b) Commit
c) Rollback d) Flashback

10) B- tree eliminates redundant storage of _____.
a) Search keys b) Indices
c) Buckets d) Bucket skew

11) Number of types of ordered indices are _____.
a) 2 b) 3
c) 4 d) 5

12) Nonleaf nodes of B+- tree structure form a _____.
a) Multilevel clustered indices b) Sparse indices
c) Multilevel dense indices d) Multilevel sparse indices

13) What is the purpose of index in sql server?
a) To enhance the query performance
b) To provide an index to a record
c) To perform fast searches
d) All of the mentioned

14) Consider money is transferred from
1) account-A to account-B
2) account-B to account-A
Which of the following form a transaction?
a) Only 1 b) Only 2
c) Both 1 and 2 individually d) Either 1 or 2

SLR-GF-251

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov–2023
COMPUTER SCIENCE AND ENGINEERING
Database Engineering (BTN03503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

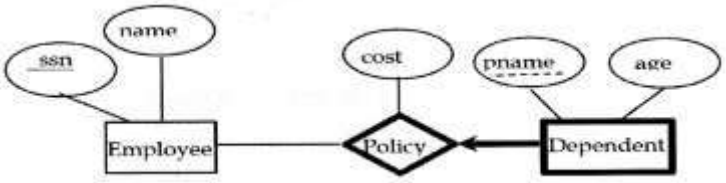
Section – I

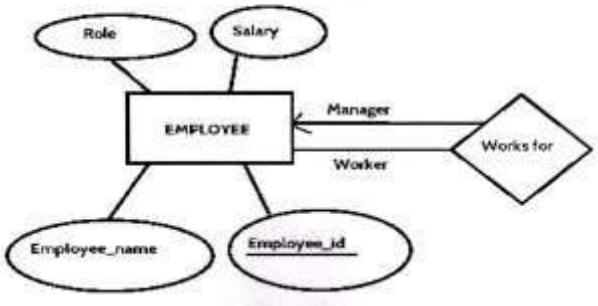
Q.2 Attempt any three. **12**

a) Explain the difference between two-tier architecture and three tier architecture?
b) What are different types of database users?
c) What are different types of attributes?
d) Draw and explain basic E-R diagram notations.

Q.3 Attempt any two. **16**

a) Convert following E-R model to Relational Model.





b) Find the highest normal form of a relation.
1) R(A,B,C,D,E) with FD Set $\{A \to D, B \to A, BC \to D, AC \to BE\}$
2) R(A,B,C,D,E) with FD Set $\{BC \to D, AC \to BE, B \to E\}$

c) Find Prime & Non Prime attribute from the given set of FDs.
1) $\{AB \to C, \quad C \to D, \quad C \to E, \quad E \to F, \quad F \to A\}$
2) $\{A \to B, \quad BC \to D, \quad E \to C, \quad D \to A\}$

Section – II

Q.4 Attempt any three **12**

a) Explain Transaction model.
b) Differentiate ordered indices and hashing.
c) List and explain ACID properties with example.
d) Write various types of failures.

Q.5 Attempt any two. **16**

a) Explain 2PC protocol.
b) What is conflict serializibility?
c) Explain B-tree index file with insertion and deletion.

SLR-GF-252

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What is the time complexity for following pseudocode _____?

```
Algorithm Sum(n, A[])
{
        S:=0;
        For i:1 to n do
                S:S+A[i];
        return (S);
}
```

a) 2n+3 b) 2n+2
c) 2n+1 d) None

2) Two main measures for the efficiency of an algorithm are _____.
a) Time and space b) Processor and memory
c) Complexity and capacity d) Data and space

3) The Time complexity of finding max and min element if $n = 2$, using divide and conquer method _____.
a) $T(n) = 2T(n/2) + 2$ b) $T(n) = 2$
c) $T(n) = 1$ d) $T(n) = 0$

4) In binary search, we compare the value with the elements in the _____ position of the array.
a) Right b) Left
c) Random d) Middle

5) Using Greedy method, an object i is placed into the knapsack, the value of solution sector Xi.
a) 0 or 1 b) $0 <= xi <= 1$
c) 0 and 1 d) None

6) The output of Kruskal and Prims algorithm is _____.
a) Maximum spanning tree b) Spanning tree
c) Minimum spanning tree d) None of these

7) Consider a job scheduling problem with 4 jobs J1, J2, J3, J4 and with corresponding deadlines: (d1, d2, d3, d4) = (4, 2, 4, 2). Which of the following is not a feasible schedule without violating any job schedule?

a) J2, J4, J1, J3 b) J4, J1, J2, J3
c) J4, J2, J1, J3 d) J4, J2, J3, J1

8) Which of the following is/are property/properties of a dynamic programming problem?

a) Evolutionary Approach
b) Require More Time
c) Optimal Substructure & Overlapping Subproblems
d) Greedy Approach

9) The correct matching for the following pairs is _____.

A. Multistage graph	1. Greedy Method
B. Kruskal Algorithm	2. Dynamic Programming
C. Merge Sort	3. Backtracking
D. Hamilton Cycle	4. Divide and Conquer

a) A-3,B-2,C-4,D-1 b) A-4,B-3,C-1,D-2
c) A-2,B-1,C-4,D-3 d) None

10) Backtracking algorithm is implemented by constructing a tree of choices called as?

a) State-space tree b) State-chart tree
c) Node tree d) Backtracking tree

11) In how many directions do queens attack each other?

a) 1 b) 2
c) 3 d) 4

12) Of the following given options, which one of the following is a correct option that provides an optimal solution for 4-queens problem?

a) (3, 1, 4, 2) b) (2, 3, 1,4)
c) (4, 3, 2,1) d) (4, 2, 3,1)

13) Problems that can be solved in polynomial time are known as?

a) Intractable b) Tractable
c) Decision d) Complete

14) Hamiltonian path problem is _____.

a) NP problem b) N class problem
c) P class problem d) NP complete problem

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Attempt any Three: **12**

a) Define and explain asymptotic notations with examples.

b) Find the time complexity of following algorithm.

```
Algorithm add(a,b,c,m,n)
{
   for i=1 to m do
        for j=1 to n do
                c[i;j]=a[i,j]+b[i,j];
}
```

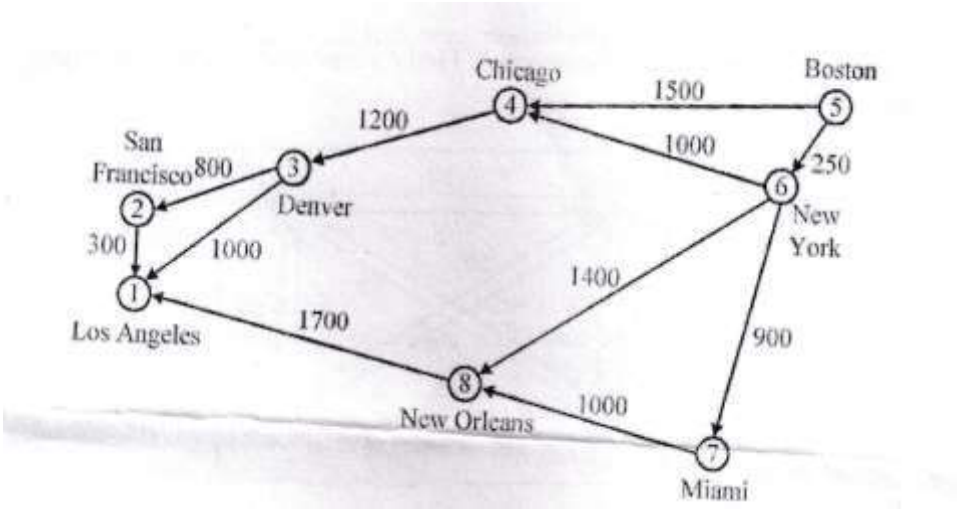
c) Prove that time required for merge sort is O(n.logn).

d) Explain optimal storage on tape. Find optimal storage sequence on 3 tapes t0, t1, t2 for program of lengths.
12, 5, 8, 32, 7, 5, 18, 26, 4.

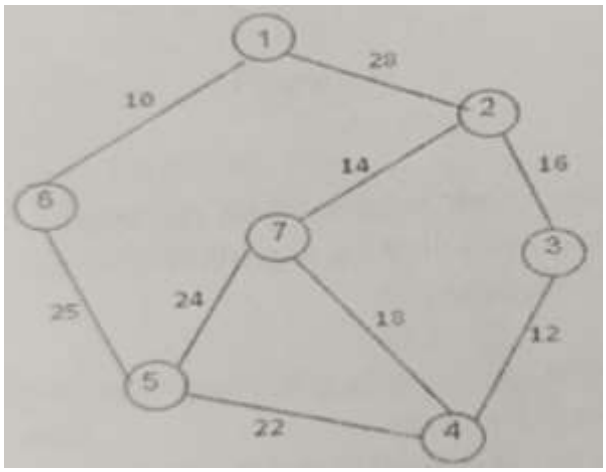
Q.3 Attempt any One: **08**

a) Sort the following elements using quick sort show each iteration separately.
65, 70, 75, 80, 85, 60, 55, 50, 45.

b) Find the shortest path from Boston to all other cities by using Greedy method.



Q.4 Define spanning tree. Derive minimum cost spanning tree of following graph by prim's algorithm. **08**



Section – II

Q.5 Attempt any Three: **12**

a) Write the difference between the Greedy method and Dynamic programming.

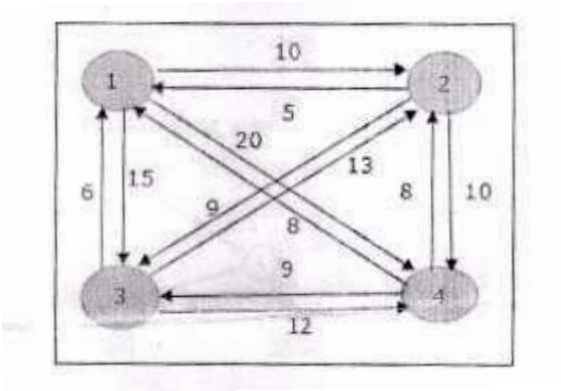
b) What is meant by Backtracking? Explain graph coloring problem.

c) Write note on P, NP, NP-Complete and NP-Hard.

d) Explain Tractable and non-Tractable Problem.

Q.6 Attempt any One: **08**

a) Consider the following directed graph. Find optimal tour length of travelling sales person problem.



b) Write short note on sum of subset problem. Consider a set S= {5, 10, 12, 13, 15, 18} and m=30 solve it for obtaining sub of subset.

Q.7 Explain the general method of Dynamic Programming. Generate the set, $0 <= i <= 3$, for following knapsack instance with $\mathrm{n} = 3, (\mathrm{p1}, \mathrm{p2}, \mathrm{p3}) = (1,2,5)$ and $(\mathrm{w1}, \mathrm{w2}, \mathrm{w3}) = (2,3,4)$ and $\mathrm{m} = 6$. Find optimal solution using dynamic programming. **08**

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is/are property/properties of a dynamic programming problem?
a) Evolutionary Approach
b) Require More Time
c) Optimal Substructure & Overlapping Subproblems
d) Greedy Approach

2) The correct matching for the following pairs is _____.

A. Multistage graph	1. Greedy Method
B. Kruskal Algorithm	2. Dynamic Programming
C. Merge Sort	3. Backtracking
D. Hamilton Cycle	4. Divide and Conquer

a) A-3,B-2,C-4,D-1 b) A-4,B-3,C-1,D-2
c) A-2,B-1,C-4,D-3 d) None

3) Backtracking algorithm is implemented by constructing a tree of choices called as?
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4) In how many directions do queens attack each other?
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6) Problems that can be solved in polynomial time are known as?
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7) Hamiltonian path problem is _____.

a) NP problem
b) N class problem
c) P class problem
d) NP complete problem

8) What is the time complexity for following pseudocode _____?

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Algorithm Sum(n, A[])
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}
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a) 2n+3
b) 2n+2
c) 2n+1
d) None

9) Two main measures for the efficiency of an algorithm are _____.
a) Time and space
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10) The Time complexity of finding max and min element if $n = 2$, using divide and conquer method _____.
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14) Consider a job scheduling problem with 4 jobs J1, J2, J3, J4 and with corresponding deadlines: (d1, d2, d3, d4) = (4, 2, 4, 2). Which of the following is not a feasible schedule without violating any job schedule?
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b) J4, J1, J2, J3
c) J4, J2, J1, J3
d) J4, J2, J3, J1

SLR-GF-252

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Attempt any Three: **12**

a) Define and explain asymptotic notations with examples.

b) Find the time complexity of following algorithm.

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Algorithm add(a,b,c,m,n)
{
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        for j=1 to n do
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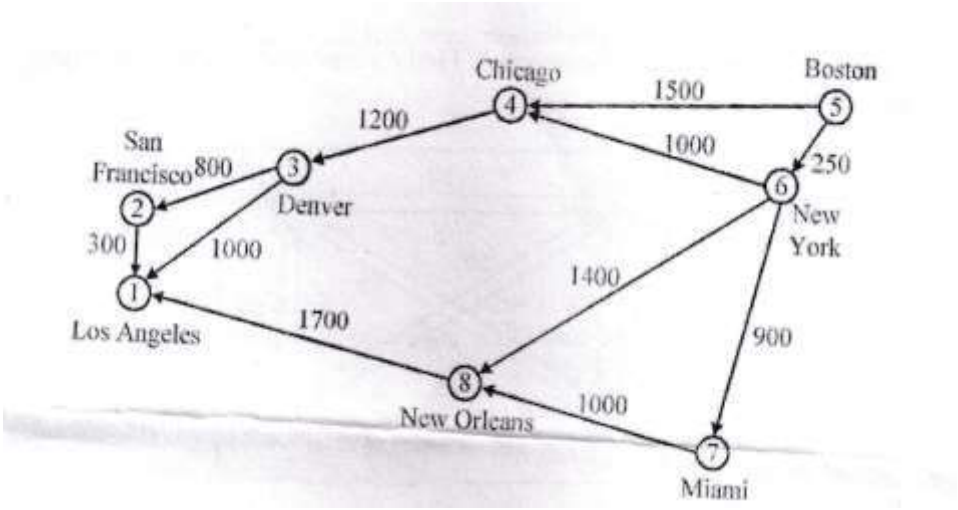
c) Prove that time required for merge sort is O(n.logn).

d) Explain optimal storage on tape. Find optimal storage sequence on 3 tapes t0, t1, t2 for program of lengths.
12, 5, 8, 32, 7, 5, 18, 26, 4.

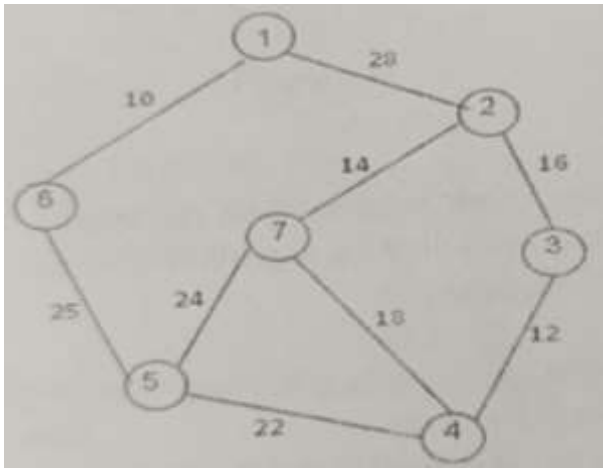
Q.3 Attempt any One: **08**

a) Sort the following elements using quick sort show each iteration separately.
65, 70, 75, 80, 85, 60, 55, 50, 45.

b) Find the shortest path from Boston to all other cities by using Greedy method.



Q.4 Define spanning tree. Derive minimum cost spanning tree of following graph by prim's algorithm. **08**



Section – II

Q.5 Attempt any Three: **12**

a) Write the difference between the Greedy method and Dynamic programming.

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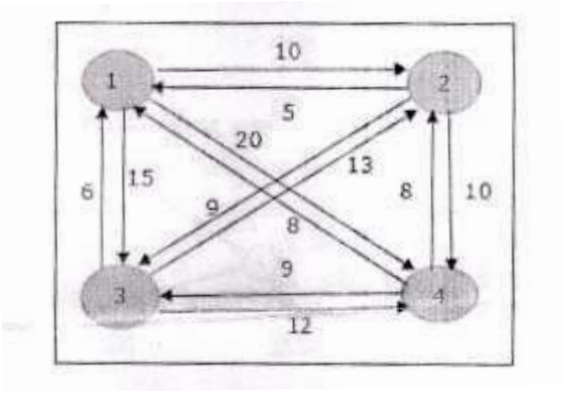
c) Write note on P, NP, NP-Complete and NP-Hard.

d) Explain Tractable and non-Tractable Problem.

Q.6 Attempt any One: **08**

a) Consider the following directed graph. Find optimal tour length of travelling sales person problem.



b) Write short note on sum of subset problem. Consider a set S= {5, 10, 12, 13, 15, 18} and m=30 solve it for obtaining sub of subset.

Q.7 Explain the general method of Dynamic Programming. Generate the set, $0 <= i <= 3$, for following knapsack instance with $\mathrm{n} = 3, (\mathrm{p1}, \mathrm{p2}, \mathrm{p3}) = (1,2,5)$ and $(\mathrm{w1}, \mathrm{w2}, \mathrm{w3}) = (2,3,4)$ and $\mathrm{m} = 6$. Find optimal solution using dynamic programming. **08**

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In how many directions do queens attack each other?
a) 1 b) 2
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2) Of the following given options, which one of the following is a correct option that provides an optimal solution for 4-queens problem?
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5) What is the time complexity for following pseudocode _____?

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a) J2, J4, J1, J3 b) J4, J1, J2, J3
c) J4, J2, J1, J3 d) J4, J2, J3, J1

12) Which of the following is/are property/properties of a dynamic programming problem?

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13) The correct matching for the following pairs is _____.

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B. Kruskal Algorithm	2. Dynamic Programming
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a) A-3,B-2,C-4,D-1 b) A-4,B-3,C-1,D-2
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14) Backtracking algorithm is implemented by constructing a tree of choices called as?

a) State-space tree b) State-chart tree
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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Attempt any Three: **12**

a) Define and explain asymptotic notations with examples.

b) Find the time complexity of following algorithm.

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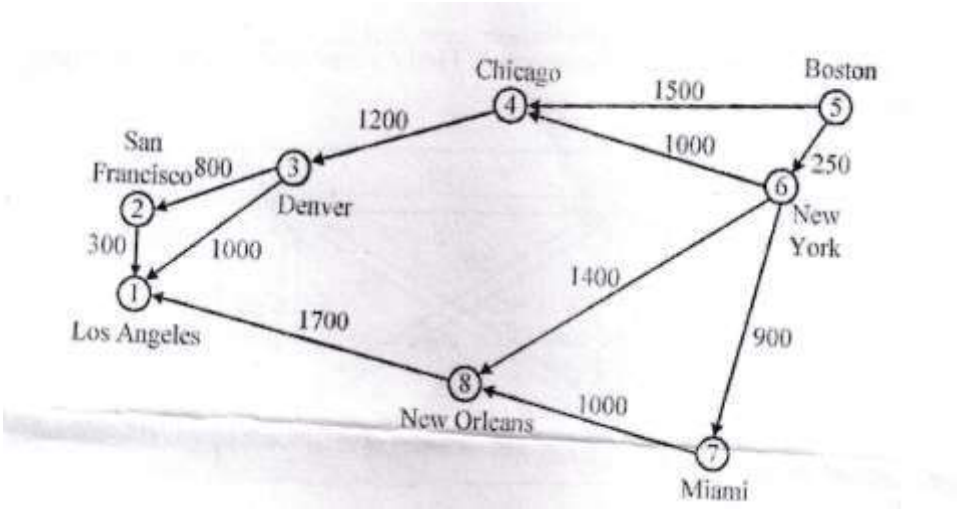
c) Prove that time required for merge sort is O(n.logn).

d) Explain optimal storage on tape. Find optimal storage sequence on 3 tapes t0, t1, t2 for program of lengths.
12, 5, 8, 32, 7, 5, 18, 26, 4.

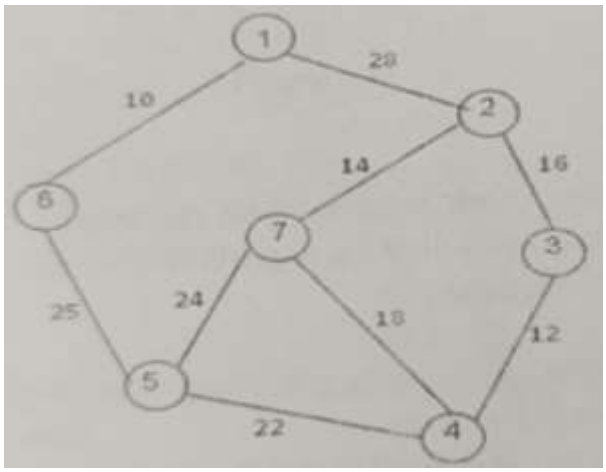
Q.3 Attempt any One: **08**

a) Sort the following elements using quick sort show each iteration separately.
65, 70, 75, 80, 85, 60, 55, 50, 45.

b) Find the shortest path from Boston to all other cities by using Greedy method.



Q.4 Define spanning tree. Derive minimum cost spanning tree of following graph by prim's algorithm. **08**



Section – II

Q.5 Attempt any Three: **12**

a) Write the difference between the Greedy method and Dynamic programming.
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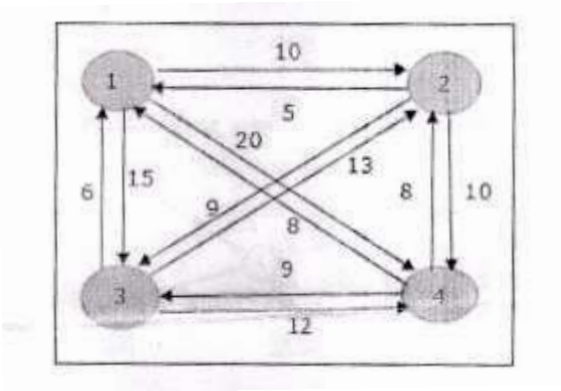
c) Write note on P, NP, NP-Complete and NP-Hard.
d) Explain Tractable and non-Tractable Problem.

Q.6 Attempt any One: **08**

a) Consider the following directed graph. Find optimal tour length of travelling sales person problem.



b) Write short note on sum of subset problem. Consider a set S= {5, 10, 12, 13, 15, 18} and m=30 solve it for obtaining sub of subset.

Q.7 Explain the general method of Dynamic Programming. Generate the set, $0 <= i <= 3$, for following knapsack instance with $\mathrm{n} = 3, (\mathrm{p1}, \mathrm{p2}, \mathrm{p3}) = (1,2,5)$ and $(\mathrm{w1}, \mathrm{w2}, \mathrm{w3}) = (2,3,4)$ and $\mathrm{m} = 6$. Find optimal solution using dynamic programming. **08**

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The output of Kruskal and Prims algorithm is _____.
a) Maximum spanning tree b) Spanning tree
c) Minimum spanning tree d) None of these

2) Consider a job scheduling problem with 4 jobs J1, J2, J3, J4 and with corresponding deadlines: (d1, d2, d3, d4) = (4, 2, 4, 2). Which of the following is not a feasible schedule without violating any job schedule?
a) J2, J4, J1, J3 b) J4, J1, J2, J3
c) J4, J2, J1, J3 d) J4, J2, J3, J1

3) Which of the following is/are property/properties of a dynamic programming problem?
a) Evolutionary Approach
b) Require More Time
c) Optimal Substructure & Overlapping Subproblems
d) Greedy Approach

4) The correct matching for the following pairs is _____.

A. Multistage graph	1. Greedy Method
B. Kruskal Algorithm	2. Dynamic Programming
C. Merge Sort	3. Backtracking
D. Hamilton Cycle	4. Divide and Conquer

a) A-3,B-2,C-4,D-1 b) A-4,B-3,C-1,D-2
c) A-2,B-1,C-4,D-3 d) None

5) Backtracking algorithm is implemented by constructing a tree of choices called as?
a) State-space tree b) State-chart tree
c) Node tree d) Backtracking tree

6) In how many directions do queens attack each other?
a) 1 b) 2
c) 3 d) 4

7) Of the following given options, which one of the following is a correct option that provides an optimal solution for 4-queens problem?

a) (3, 1, 4, 2) b) (2, 3, 1,4)
c) (4, 3, 2,1) d) (4, 2, 3,1)

8) Problems that can be solved in polynomial time are known as?

a) Intractable b) Tractable
c) Decision d) Complete

9) Hamiltonian path problem is _____.

a) NP problem b) N class problem
c) P class problem d) NP complete problem

10) What is the time complexity for following pseudocode _____?

```
Algorithm Sum(n, A[])
{
        S:=0;
        For i:1 to n do
                S:S+A[i];
        return (S);
}
```

a) 2n+3 b) 2n+2
c) 2n+1 d) None

11) Two main measures for the efficiency of an algorithm are _____.

a) Time and space b) Processor and memory
c) Complexity and capacity d) Data and space

12) The Time complexity of finding max and min element if $n = 2$, using divide and conquer method _____.

a) $T(n) = 2T(n/2) + 2$ b) $T(n) = 2$
c) $T(n) = 1$ d) $T(n) = 0$

13) In binary search, we compare the value with the elements in the _____ position of the array.

a) Right b) Left
c) Random d) Middle

14) Using Greedy method, an object i is placed into the knapsack, the value of solution sector Xi.

a) 0 or 1 b) $0 <= xi <= 1$
c) 0 and 1 d) None

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Design and Analysis of Algorithm (BTN03504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Attempt any Three: **12**

a) Define and explain asymptotic notations with examples.

b) Find the time complexity of following algorithm.

```
Algorithm add(a,b,c,m,n)
{
   for i=1 to m do
        for j=1 to n do
                c[i;j]=a[i,j]+b[i,j];
}
```

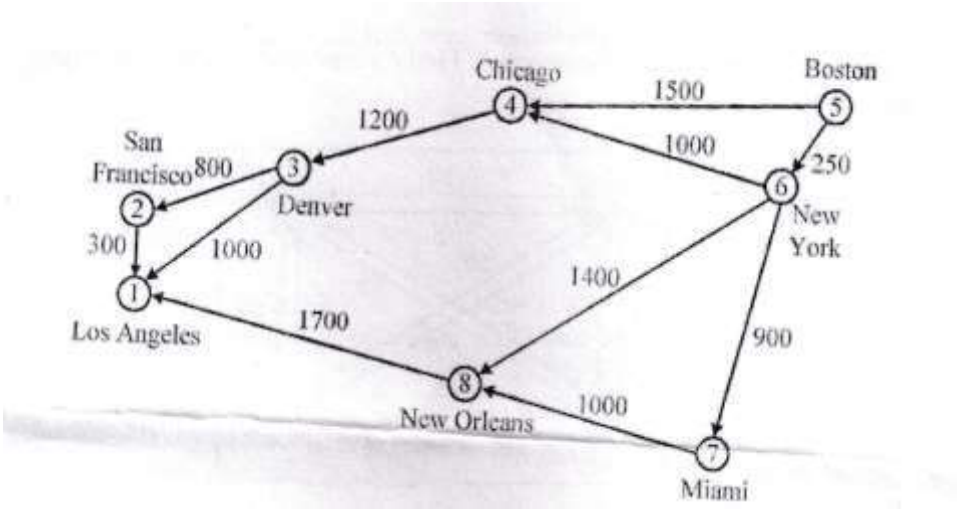
c) Prove that time required for merge sort is O(n.logn).

d) Explain optimal storage on tape. Find optimal storage sequence on 3 tapes t0, t1, t2 for program of lengths.
12, 5, 8, 32, 7, 5, 18, 26, 4.

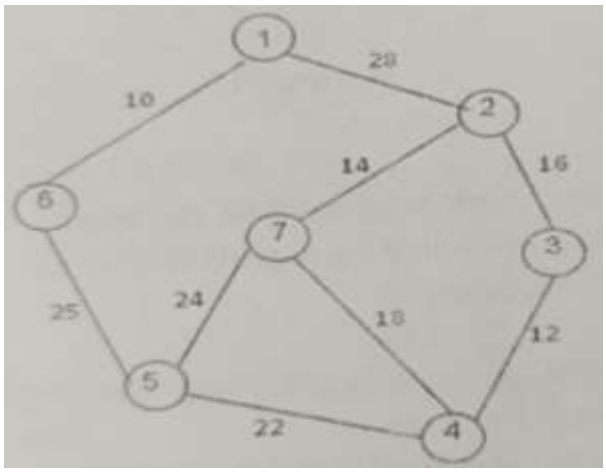
Q.3 Attempt any One: **08**

a) Sort the following elements using quick sort show each iteration separately.
65, 70, 75, 80, 85, 60, 55, 50, 45.

b) Find the shortest path from Boston to all other cities by using Greedy method.



Q.4 Define spanning tree. Derive minimum cost spanning tree of following graph by prim's algorithm. **08**



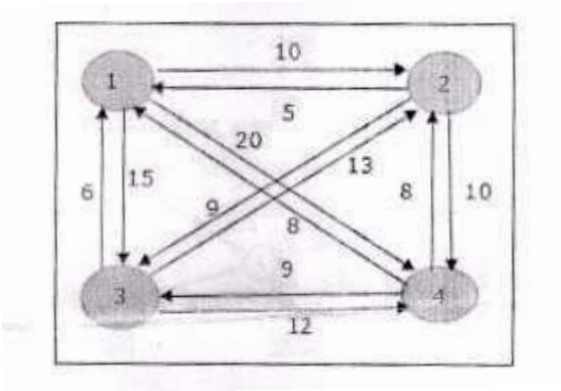
Section – II

Q.5 Attempt any Three: **12**

a) Write the difference between the Greedy method and Dynamic programming.
b) What is meant by Backtracking? Explain graph coloring problem.
c) Write note on P, NP, NP-Complete and NP-Hard.
d) Explain Tractable and non-Tractable Problem.

Q.6 Attempt any One: **08**

a) Consider the following directed graph. Find optimal tour length of travelling sales person problem.



b) Write short note on sum of subset problem. Consider a set S= {5, 10, 12, 13, 15, 18} and m=30 solve it for obtaining sub of subset.

Q.7 Explain the general method of Dynamic Programming. Generate the set, $0 <= i <= 3$, for following knapsack instance with $\mathrm{n} = 3, (\mathrm{p1}, \mathrm{p2}, \mathrm{p3}) = (1,2,5)$ and $(\mathrm{w1}, \mathrm{w2}, \mathrm{w3}) = (2,3,4)$ and $\mathrm{m} = 6$. Find optimal solution using dynamic programming. **08**

SLR-GF-253

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Which of the following is true about reinforcement learning?
a) The agent gets rewards or penalty according to the action
b) It is an online learning
c) The target of an agent is to maximize the rewards
d) All of the above

2) In RL _____ task is called if it has start state and termination state and it can be completed in finite sequence of steps.
a) episodic b) continuous
c) both a) and b) d) none of these

3) What is Q-learning?
a) A type of reinforcement learning where accuracy degrades over time
b) A Supervised machine learning with rewards
c) A type of unsupervised learning that relies heavily on a well-established model
d) A type of reinforcement learning that focuses on rewards

4) All the updates done in DP algorithms are called _____ because they are based on an expectation over all possible next states.
a) Predicted updates b) Sample updates
c) Expected updates d) Past updates

5) The process of making a new policy that improves on an original policy, by making it greedy with respect to the value function of the original policy, is called _____.
a) Policy prediction b) Policy process
c) Greedy policy process d) Policy improvement

6) In the MDP process, the probability of reaching to next state depends on _____.
a) Current state and action taken b) Past history of states
c) Both a) and b) d) None of these

7) _____ method effectively combines, in each of its sweeps, one sweep of policy evaluation and one sweep of policy improvement.
a) Policy iteration
b) Policy prediction
c) Value iteration
d) None of these

8) Monte Carlo Method can be used for _____.
a) Episodic problems
b) Continuous problems
c) Both a) and b)
d) None of these

9) In TD methods estimates are updated based in part on other learned estimates, without waiting for a final outcome. This process is called _____.
a) Policy prediction
b) Bootstrapping
c) Value iteration
d) None of these

10) A _____ would produce all possible sums and their probabilities of occurring, where as a _____ would produce an individual sum drawn according to this probability distribution.
a) Distribution model, Sample model
b) Sample model, Distribution model
c) Sample model, Stochastic model
d) None of these

11) The multi-armed bandit problem is a generalized use case for _____.
a) Supervised learning
b) Unsupervised learning
c) Reinforcement learning
d) All of the above

12) The motivation behind Dyna-Q+ is to give a _____ for actions that have not been tried for a long time, since there is a greater chance that the dynamics for that actions might have changed.
a) Bonus reward
b) Discounted reward
c) Punishment
d) None of these

13) In _____ method, the same reinforcement learning method is used both for learning from real experience and for planning from simulated experience.
a) Dynamic programming
b) Dyna-Q
c) SARSA
d) Monte Carlo

14) Bellman equation helps in finding _____.
a) optimal policy
b) value function
c) both a and b
d) none of these

SLR-GF-253

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) What are the elements of reinforcement learning? Give illustrations for each element.
b) Compare between the different kinds of Machine Learning and show how RL is different.
c) What is 10-armed bandit problem? Explain its applications.
d) Sketch and explain the agent-environment interface in a Markov decision process.

Q.3 Attempt the following. (Any Two) **16**

a) Explain policy and value functions. Derive the bellman equation for value function and explain how it is used to find the optimal policy.
b) Write short note on:
i) Returns and episodes
ii) Policy and value function
c) Explain in detail the Action-value methods for computing action values in 10-armed bandit problem.

Section – II

Q.4 Attempt the following. (Any Three) **12**

a) List the features of Temporal Difference Learning. Illustrate each of them.
b) Illustrate the working of SARSA (On-Policy TD control) method.
c) Explain the policy iteration method in dynamic programming.
d) Differentiate between model based and model free learning.

Q.5 Attempt the following (Any Two) **16**

a) What is TD-Gammon? Explain it in detail.
b) Write short note on:
i) Prioritized sweeping
ii) Monte Carlo method
c) What is Dyna-Q? Write and explain the tabular Dyna-Q algorithm.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Monte Carlo Method can be used for _____.
a) Episodic problems b) Continuous problems
c) Both a) and b) d) None of these

2) In TD methods estimates are updated based in part on other learned estimates, without waiting for a final outcome. This process is called _____.
a) Policy prediction b) Bootstrapping
c) Value iteration d) None of these

3) A _____ would produce all possible sums and their probabilities of occurring, where as a _____ would produce an individual sum drawn according to this probability distribution.
a) Distribution model, Sample model
b) Sample model, Distribution model
c) Sample model, Stochastic model
d) None of these

4) The multi-armed bandit problem is a generalized use case for _____.
a) Supervised learning b) Unsupervised learning
c) Reinforcement learning d) All of the above

5) The motivation behind Dyna-Q+ is to give a _____ for actions that have not been tried for a long time, since there is a greater chance that the dynamics for that actions might have changed.
a) Bonus reward b) Discounted reward
c) Punishment d) None of these

6) In _____ method, the same reinforcement learning method is used both for learning from real experience and for planning from simulated experience.
a) Dynamic programming b) Dyna-Q
c) SARSA d) Monte Carlo

7) Bellman equation helps in finding _____.
a) optimal policy b) value function
c) both a and b d) none of these

8) Which of the following is true about reinforcement learning?
a) The agent gets rewards or penalty according to the action
b) It is an online learning
c) The target of an agent is to maximize the rewards
d) All of the above

9) In RL _____ task is called if it has start state and termination state and it can be completed in finite sequence of steps.
a) episodic
b) continuous
c) both a) and b)
d) none of these

10) What is Q-learning?
a) A type of reinforcement learning where accuracy degrades over time
b) A Supervised machine learning with rewards
c) A type of unsupervised learning that relies heavily on a well-established model
d) A type of reinforcement learning that focuses on rewards

11) All the updates done in DP algorithms are called _____ because they are based on an expectation over all possible next states.
a) Predicted updates
b) Sample updates
c) Expected updates
d) Past updates

12) The process of making a new policy that improves on an original policy, by making it greedy with respect to the value function of the original policy, is called _____.
a) Policy prediction
b) Policy process
c) Greedy policy process
d) Policy improvement

13) In the MDP process, the probability of reaching to next state depends on _____.
a) Current state and action taken
b) Past history of states
c) Both a) and b)
d) None of these

14) _____ method effectively combines, in each of its sweeps, one sweep of policy evaluation and one sweep of policy improvement.
a) Policy iteration
b) Policy prediction
c) Value iteration
d) None of these

SLR-GF-253

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) What are the elements of reinforcement learning? Give illustrations for each element.
b) Compare between the different kinds of Machine Learning and show how RL is different.
c) What is 10-armed bandit problem? Explain its applications.
d) Sketch and explain the agent-environment interface in a Markov decision process.

Q.3 Attempt the following. (Any Two) **16**

a) Explain policy and value functions. Derive the bellman equation for value function and explain how it is used to find the optimal policy.
b) Write short note on:
i) Returns and episodes
ii) Policy and value function
c) Explain in detail the Action-value methods for computing action values in 10-armed bandit problem.

Section – II

Q.4 Attempt the following. (Any Three) **12**

a) List the features of Temporal Difference Learning. Illustrate each of them.
b) Illustrate the working of SARSA (On-Policy TD control) method.
c) Explain the policy iteration method in dynamic programming.
d) Differentiate between model based and model free learning.

Q.5 Attempt the following (Any Two) **16**

a) What is TD-Gammon? Explain it in detail.
b) Write short note on:
i) Prioritized sweeping
ii) Monte Carlo method
c) What is Dyna-Q? Write and explain the tabular Dyna-Q algorithm.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) The multi-armed bandit problem is a generalized use case for _____.
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c) Reinforcement learning d) All of the above

2) The motivation behind Dyna-Q+ is to give a _____ for actions that have not been tried for a long time, since there is a greater chance that the dynamics for that actions might have changed.
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c) Punishment d) None of these

3) In _____ method, the same reinforcement learning method is used both for learning from real experience and for planning from simulated experience.
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c) SARSA d) Monte Carlo

4) Bellman equation helps in finding _____.
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5) Which of the following is true about reinforcement learning?
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b) It is an online learning
c) The target of an agent is to maximize the rewards
d) All of the above

6) In RL _____ task is called if it has start state and termination state and it can be completed in finite sequence of steps.
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c) both a) and b) d) none of these

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a) A type of reinforcement learning where accuracy degrades over time
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d) A type of reinforcement learning that focuses on rewards

8) All the updates done in DP algorithms are called _____ because they are based on an expectation over all possible next states.
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b) Sample updates
c) Expected updates
d) Past updates

9) The process of making a new policy that improves on an original policy, by making it greedy with respect to the value function of the original policy, is called _____.
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b) Policy process
c) Greedy policy process
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10) In the MDP process, the probability of reaching to next state depends on _____.
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b) Policy prediction
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12) Monte Carlo Method can be used for _____.
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b) Bootstrapping
c) Value iteration
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14) A _____ would produce all possible sums and their probabilities of occurring, where as a _____ would produce an individual sum drawn according to this probability distribution.
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b) Sample model, Distribution model
c) Sample model, Stochastic model
d) None of these

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) What are the elements of reinforcement learning? Give illustrations for each element.
b) Compare between the different kinds of Machine Learning and show how RL is different.
c) What is 10-armed bandit problem? Explain its applications.
d) Sketch and explain the agent-environment interface in a Markov decision process.

Q.3 Attempt the following. (Any Two) **16**

a) Explain policy and value functions. Derive the bellman equation for value function and explain how it is used to find the optimal policy.
b) Write short note on:
i) Returns and episodes
ii) Policy and value function
c) Explain in detail the Action-value methods for computing action values in 10-armed bandit problem.

Section – II

Q.4 Attempt the following. (Any Three) **12**

a) List the features of Temporal Difference Learning. Illustrate each of them.
b) Illustrate the working of SARSA (On-Policy TD control) method.
c) Explain the policy iteration method in dynamic programming.
d) Differentiate between model based and model free learning.

Q.5 Attempt the following (Any Two) **16**

a) What is TD-Gammon? Explain it in detail.
b) Write short note on:
i) Prioritized sweeping
ii) Monte Carlo method
c) What is Dyna-Q? Write and explain the tabular Dyna-Q algorithm.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) In the MDP process, the probability of reaching to next state depends on _____.
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c) Both a) and b) d) None of these

2) _____ method effectively combines, in each of its sweeps, one sweep of policy evaluation and one sweep of policy improvement.
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c) Value iteration d) None of these

3) Monte Carlo Method can be used for _____.
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c) Value iteration d) None of these

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a) Distribution model, Sample model
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c) Sample model, Stochastic model
d) None of these

6) The multi-armed bandit problem is a generalized use case for _____.
a) Supervised learning b) Unsupervised learning
c) Reinforcement learning d) All of the above

7) The motivation behind Dyna-Q+ is to give a _____ for actions that have not been tried for a long time, since there is a greater chance that the dynamics for that actions might have changed.
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a) Dynamic programming b) Dyna-Q
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9) Bellman equation helps in finding _____.
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10) Which of the following is true about reinforcement learning?
a) The agent gets rewards or penalty according to the action
b) It is an online learning
c) The target of an agent is to maximize the rewards
d) All of the above

11) In RL _____ task is called if it has start state and termination state and it can be completed in finite sequence of steps.
a) episodic b) continuous
c) both a) and b) d) none of these

12) What is Q-learning?
a) A type of reinforcement learning where accuracy degrades over time
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d) A type of reinforcement learning that focuses on rewards

13) All the updates done in DP algorithms are called _____ because they are based on an expectation over all possible next states.
a) Predicted updates b) Sample updates
c) Expected updates d) Past updates

14) The process of making a new policy that improves on an original policy, by making it greedy with respect to the value function of the original policy, is called _____.
a) Policy prediction b) Policy process
c) Greedy policy process d) Policy improvement

SLR-GF-253

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Reinforcement Learning (BTN03512)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) What are the elements of reinforcement learning? Give illustrations for each element.
b) Compare between the different kinds of Machine Learning and show how RL is different.
c) What is 10-armed bandit problem? Explain its applications.
d) Sketch and explain the agent-environment interface in a Markov decision process.

Q.3 Attempt the following. (Any Two) **16**

a) Explain policy and value functions. Derive the bellman equation for value function and explain how it is used to find the optimal policy.
b) Write short note on:
i) Returns and episodes
ii) Policy and value function
c) Explain in detail the Action-value methods for computing action values in 10-armed bandit problem.

Section – II

Q.4 Attempt the following. (Any Three) **12**

a) List the features of Temporal Difference Learning. Illustrate each of them.
b) Illustrate the working of SARSA (On-Policy TD control) method.
c) Explain the policy iteration method in dynamic programming.
d) Differentiate between model based and model free learning.

Q.5 Attempt the following (Any Two) **16**

a) What is TD-Gammon? Explain it in detail.
b) Write short note on:
i) Prioritized sweeping
ii) Monte Carlo method
c) What is Dyna-Q? Write and explain the tabular Dyna-Q algorithm.

SLR-GF-254

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Data preparation phase include _____ activity.
a) Access and combine the data table
b) Look for error
c) Transform data
d) All of the above

2) Which of the following is belongs to operational database.
a) CRM
b) ERP
c) Supply chain and logistics management system
d) All of the above

3) Each column of the table describes a _____ and each row describes an _____.
a) Variable, attributes b) Variables, Observation
c) Variable, features d) All of the above

4) What is the output of dataframe, head() method ____.
a) return only the first row
b) return only headers or column name of the DataFrame
c) return the first five rows of the DataFrame
d) throw an exception as it expects parameter(number) in parenthesis

5) Which of the following command is use to display all default datasets in seaborn?
a) sns.get_dataset_names() b) sns.set_dataset_names()
c) Both A and B d) None of the mentioned

6) plt.subplot(2, 1, 2) method display _____.
a) 2 panel, 1 column, and 2 rows b) 2 rows, 1 column, and 2 panel
c) 2 columns, 1 row, and 2 panel d) All of the mentioned

7) Which of the following array is use for getting and setting smaller subarrays within a larger array?
a) Indexing of arrays b) Reshaping of arrays
c) Slicing of arrays d) Joining and splitting of arrays

8) How is an index for data elements assigned while creating a Pandas series?
a) Created automatically or Needs to be assigned
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c) Index is not applicable as series in one-dimensional
d) All of the mentioned

9) In plt.errorbar(x,y,yerr=dy,fmt= 'k') method, fmt indicates _____.
a) Controlling the appearance of lines
b) Controlling the appearance of point
c) None
d) Controlling the appearance of lines and points

10) The _____ transformation display the range is between 0 and 1.
a) min-max transformation
b) z-score transformation
c) standard deviation
d) decimal scaling transformation

11) Folium Python library is used for visualizing _____data.
a) Text data
b) Geospatial data
c) Multimedia data
d) Click stream data

12) Metrics to measure Central Tendency is/are _____.
a) Mean
b) Mode
c) Median
d) All

13) Contour Plot is use to display three-dimensional data in _____.
a) two dimensions
b) one dimensions
c) n dimensions
d) three dimensions

14) Which of the following method shows topographical features both on land and under the ocean using Basemap library?
a) bluemarble()
b) etopo()
c) lcc()
d) None

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Summaries the different sources of data.
b) Elaborate the types of variables in detail with example.
c) Why there is a need to generate consistent scale across variables? Describe with example.
d) List types of tables. How Cross classification table is better than summary table?
e) How Pivot Table is defer than Groupby method. Elaborate with example.

Q.3 Attempt the following (Any Two) **12**

a) Visualize the strong positive correlation between two variables using correlation coefficient method. Use suitable example.
b) Apply the rules of broadcasting in Numpy with suitable example.
c) What do you mean by Central Tendency? Identify the following statistics for the variable Age from given Table.
i) Mode
ii) Median
iii) Mean
iv) Range
v) Variance
vi) Standard deviation

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Greek	43
N. Cook	68
W. Hands	77
P. Ress	45
F. Marsh	28

Section – II

Q.4 Answer the following (Any Four) **16**

a) Elaborate the features of Pandas.

b) Write a program to create DataFrame from dictionary of Series.

c) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

d) What is frequency distribution table? Draw a frequency distribution table for suitable example.

e) Write a program to perform slicing and merging of two datasets using Pandas library.

Q.5 Answer the following (Any Two) **12**

a) Why contour plot is required? Write a python code to design a labeled contour plot along with color bar.

b) Elaborate matplotlib and seaborn python libraries. Write a python program to. draw a Geographic Data with Basemap method. Include all the aesthetic to draw a geographic data.

c) Write the Python code to visualize the Scatter plot, Bar Chart, and simple line plot. Consider suitable dataset of variables and observations.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) How is an index for data elements assigned while creating a Pandas series?
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6) Contour Plot is use to display three-dimensional data in _____.
a) two dimensions b) one dimensions
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7) Which of the following method shows topographical features both on land and under the ocean using Basemap library?
a) bluemarble() b) etopo()
c) lcc() d) None

8) Data preparation phase include _____ activity.
a) Access and combine the data table
b) Look for error
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d) All of the above

9) Which of the following is belongs to operational database.
a) CRM
b) ERP
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10) Each column of the table describes a _____ and each row describes an _____.
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14) Which of the following array is use for getting and setting smaller subarrays within a larger array?
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Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Summaries the different sources of data.
b) Elaborate the types of variables in detail with example.
c) Why there is a need to generate consistent scale across variables? Describe with example.
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M. Owen	24
S. Greek	43
N. Cook	68
W. Hands	77
P. Ress	45
F. Marsh	28

Section – II

Q.4 Answer the following (Any Four) **16**

a) Elaborate the features of Pandas.

b) Write a program to create DataFrame from dictionary of Series.

c) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

d) What is frequency distribution table? Draw a frequency distribution table for suitable example.

e) Write a program to perform slicing and merging of two datasets using Pandas library.

Q.5 Answer the following (Any Two) **12**

a) Why contour plot is required? Write a python code to design a labeled contour plot along with color bar.

b) Elaborate matplotlib and seaborn python libraries. Write a python program to. draw a Geographic Data with Basemap method. Include all the aesthetic to draw a geographic data.

c) Write the Python code to visualize the Scatter plot, Bar Chart, and simple line plot. Consider suitable dataset of variables and observations.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Folium Python library is used for visualizing _____data.
a) Text data b) Geospatial data
c) Multimedia data d) Click stream data

2) Metrics to measure Central Tendency is/are _____.
a) Mean b) Mode
c) Median d) All

3) Contour Plot is use to display three-dimensional data in _____.
a) two dimensions b) one dimensions
c) n dimensions d) three dimensions

4) Which of the following method shows topographical features both on land and under the ocean using Basemap library?
a) bluemarble() b) etopo()
c) lcc() d) None

5) Data preparation phase include _____ activity.
a) Access and combine the data table
b) Look for error
c) Transform data
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6) Which of the following is belongs to operational database.
a) CRM
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7) Each column of the table describes a _____ and each row describes an _____.
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11) Which of the following array is use for getting and setting smaller subarrays within a larger array?
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c) standard deviation d) decimal scaling transformation

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Summaries the different sources of data.
b) Elaborate the types of variables in detail with example.
c) Why there is a need to generate consistent scale across variables? Describe with example.
d) List types of tables. How Cross classification table is better than summary table?
e) How Pivot Table is defer than Groupby method. Elaborate with example.

Q.3 Attempt the following (Any Two) **12**

a) Visualize the strong positive correlation between two variables using correlation coefficient method. Use suitable example.
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M. Owen	24
S. Greek	43
N. Cook	68
W. Hands	77
P. Ress	45
F. Marsh	28

Section – II

Q.4 Answer the following (Any Four) **16**

a) Elaborate the features of Pandas.

b) Write a program to create DataFrame from dictionary of Series.

c) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

d) What is frequency distribution table? Draw a frequency distribution table for suitable example.

e) Write a program to perform slicing and merging of two datasets using Pandas library.

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a) Why contour plot is required? Write a python code to design a labeled contour plot along with color bar.

b) Elaborate matplotlib and seaborn python libraries. Write a python program to. draw a Geographic Data with Basemap method. Include all the aesthetic to draw a geographic data.

c) Write the Python code to visualize the Scatter plot, Bar Chart, and simple line plot. Consider suitable dataset of variables and observations.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) plt.subplot(2, 1, 2) method display _____.
a) 2 panel, 1 column, and 2 rows b) 2 rows, 1 column, and 2 panel
c) 2 columns, 1 row, and 2 panel d) All of the mentioned

2) Which of the following array is use for getting and setting smaller subarrays within a larger array?
a) Indexing of arrays b) Reshaping of arrays
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3) How is an index for data elements assigned while creating a Pandas series?
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c) standard deviation d) decimal scaling transformation

6) Folium Python library is used for visualizing _____data.
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8) Contour Plot is use to display three-dimensional data in _____.
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9) Which of the following method shows topographical features both on land and under the ocean using Basemap library?

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11) Which of the following is belongs to operational database.

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c) Both A and B d) None of the mentioned

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Preprocessing & Visualization (BTN03513)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Summaries the different sources of data.
b) Elaborate the types of variables in detail with example.
c) Why there is a need to generate consistent scale across variables? Describe with example.
d) List types of tables. How Cross classification table is better than summary table?
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Q.3 Attempt the following (Any Two) **12**

a) Visualize the strong positive correlation between two variables using correlation coefficient method. Use suitable example.
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S. Greek	43
N. Cook	68
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P. Ress	45
F. Marsh	28

Section – II

Q.4 Answer the following (Any Four) **16**

a) Elaborate the features of Pandas.

b) Write a program to create DataFrame from dictionary of Series.

c) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

d) What is frequency distribution table? Draw a frequency distribution table for suitable example.

e) Write a program to perform slicing and merging of two datasets using Pandas library.

Q.5 Answer the following (Any Two) **12**

a) Why contour plot is required? Write a python code to design a labeled contour plot along with color bar.

b) Elaborate matplotlib and seaborn python libraries. Write a python program to. draw a Geographic Data with Basemap method. Include all the aesthetic to draw a geographic data.

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SLR-GF-255

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options **14**

1) What is Cyber Security?
a) Cyber Security provides security against malware
b) Cyber Security provides security against cyber-terrorists
c) Cyber Security protects a system from cyber attacks
d) All of the mentioned

2) Which of the following is an objective of network security?
a) Confidentiality b) Integrity
c) Availability d) All of the above

3) Which of the following is a type of cyber attack?
a) Phishing b) SQL Injections
c) Password Attack d) All of the above

4) Which of the following act violates cyber security?
a) Exploit b) Attack
c) Threat d) Vulnerability

5) Which of the following do Cyber attackers commonly target for fetching IP address of a target or victim user?
a) ip tracker b) emails
c) websites d) web pages

6) Which of the following is an internet scam done by cyber-criminals where the user is convinced digitally to provide confidential information.
a) MiTM attack
b) Phishing attack
c) Website attack
d) DoS attack

7) _____ is the cyclic practice for identifying & classifying and then solving the vulnerabilities in a system.
a) Bug protection b) Bug bounty
c) Vulnerability measurement d) Vulnerability management

8) A _____ is a trusted third party that assigns a symmetric key to two parties.
a) KDC b) CA
c) KDD d) None of above

9) In the _____ mode, IPSec protects the whole IP packet, including the original IP header.
a) Transport b) Tunnel
c) AH d) ESP

10) In _____ the cryptographic algorithms and secrets are sent with the massage.
a) IPSec b) SSL
c) TLS d) PGP

11) _____ is a computer on a network which act as an intermediary for connections with other computers on the network.
a) Proxy Server b) Anonymizer
c) Both a & b d) Neither a nor b

12) Phishing execute following sequential steps _____.
a) Planning, Collection, Setup, Attack
b) Planning, Setup, Collection, Attack
c) Planning, Setup, Attack, Collection
d) Collection, Planning, Setup, Attack

13) Following is the event dependent program executed only when certain event occur _____.
a) Logic Bomb b) Salami
c) Email Bombing d) Trojan Horse

14) Financial motivation hacking coming under type of _____.
a) Hungry for Recognition b) Not interested in Recognition
c) The insider d) The Outsider

SLR-GF-255

Seat No.		Set	P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four. **16**

a) Explain model of network security.
b) Write a note security attacks.
c) Write a note on key management Kerberos.
d) Write a note on ARP attack.
e) Explain man-in-the-middle attacks.

Q.3 Attempt any two. **12**

a) Explain block cipher modes of operation with suitable diagram.
b) Write a note HMAC.
c) Describe digital signature standard.

Section – II

Q.4 Attempt any four. **16**

a) Explain IP security Architecture.
b) Write note on fuzzing.
c) Write a note on PGP.
d) Define the term
1) E – mail bombing
2) Salami attack
3) Logic bomb
4) Data didding
e) Write a note on firewall Design principal.

Q.5 Attempt any two. **12**

a) Write a note on S/MIME.
b) Explain attacks and defenses in details.
c) Write a note on Firewall Design principal.

SLR-GF-255

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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SLR-GF-255

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four. **16**

a) Explain model of network security.
b) Write a note security attacks.
c) Write a note on key management Kerberos.
d) Write a note on ARP attack.
e) Explain man-in-the-middle attacks.

Q.3 Attempt any two. **12**

a) Explain block cipher modes of operation with suitable diagram.
b) Write a note HMAC.
c) Describe digital signature standard.

Section – II

Q.4 Attempt any four. **16**

a) Explain IP security Architecture.
b) Write note on fuzzing.
c) Write a note on PGP.
d) Define the term
1) E – mail bombing
2) Salami attack
3) Logic bomb
4) Data didding
e) Write a note on firewall Design principal.

Q.5 Attempt any two. **12**

a) Write a note on S/MIME.
b) Explain attacks and defenses in details.
c) Write a note on Firewall Design principal.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options **14**

1) _____ is a computer on a network which act as an intermediary for connections with other computers on the network.
a) Proxy Server b) Anonymizer
c) Both a & b d) Neither a nor b

2) Phishing execute following sequential steps _____.
a) Planning, Collection, Setup, Attack
b) Planning, Setup, Collection, Attack
c) Planning, Setup, Attack, Collection
d) Collection, Planning, Setup, Attack

3) Following is the event dependent program executed only when certain event occur _____.
a) Logic Bomb b) Salami
c) Email Bombing d) Trojan Horse

4) Financial motivation hacking coming under type of _____.
a) Hungry for Recognition b) Not interested in Recognition
c) The insider d) The Outsider

5) What is Cyber Security?
a) Cyber Security provides security against malware
b) Cyber Security provides security against cyber-terrorists
c) Cyber Security protects a system from cyber attacks
d) All of the mentioned

6) Which of the following is an objective of network security?
a) Confidentiality b) Integrity
c) Availability d) All of the above

7) Which of the following is a type of cyber attack?
a) Phishing b) SQL Injections
c) Password Attack d) All of the above

8) Which of the following act violates cyber security?
a) Exploit b) Attack
c) Threat d) Vulnerability

9) Which of the following do Cyber attackers commonly target for fetching IP address of a target or victim user?

a) ip tracker
b) emails
c) websites
d) web pages

10) Which of the following is an internet scam done by cyber-criminals where the user is convinced digitally to provide confidential information.

a) MiTM attack
b) Phishing attack
c) Website attack
d) DoS attack

11) _____ is the cyclic practice for identifying & classifying and then solving the vulnerabilities in a system.

a) Bug protection
b) Bug bounty
c) Vulnerability measurement
d) Vulnerability management

12) A _____ is a trusted third party that assigns a symmetric key to two parties.

a) KDC
b) CA
c) KDD
d) None of above

13) In the _____ mode, IPSec protects the whole IP packet, including the original IP header.

a) Transport
b) Tunnel
c) AH
d) ESP

14) In _____ the cryptographic algorithms and secrets are sent with the massage.

a) IPSec
b) SSL
c) TLS
d) PGP

SLR-GF-255

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four. **16**

a) Explain model of network security.
b) Write a note security attacks.
c) Write a note on key management Kerberos.
d) Write a note on ARP attack.
e) Explain man-in-the-middle attacks.

Q.3 Attempt any two. **12**

a) Explain block cipher modes of operation with suitable diagram.
b) Write a note HMAC.
c) Describe digital signature standard.

Section – II

Q.4 Attempt any four. **16**

a) Explain IP security Architecture.
b) Write note on fuzzing.
c) Write a note on PGP.
d) Define the term
1) E – mail bombing
2) Salami attack
3) Logic bomb
4) Data didding
e) Write a note on firewall Design principal.

Q.5 Attempt any two. **12**

a) Write a note on S/MIME.
b) Explain attacks and defenses in details.
c) Write a note on Firewall Design principal.

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options **14**

1) Which of the following is an internet scam done by cyber-criminals where the user is convinced digitally to provide confidential information.
a) MiTM attack
b) Phishing attack
c) Website attack
d) DoS attack

2) _____ is the cyclic practice for identifying & classifying and then solving the vulnerabilities in a system.
a) Bug protection b) Bug bounty
c) Vulnerability measurement d) Vulnerability management

3) A _____ is a trusted third party that assigns a symmetric key to two parties.
a) KDC b) CA
c) KDD d) None of above

4) In the _____ mode, IPSec protects the whole IP packet, including the original IP header.
a) Transport b) Tunnel
c) AH d) ESP

5) In _____ the cryptographic algorithms and secrets are sent with the massage.
a) IPSec b) SSL
c) TLS d) PGP

6) _____ is a computer on a network which act as an intermediary for connections with other computers on the network.
a) Proxy Server b) Anonymizer
c) Both a & b d) Neither a nor b

7) Phishing execute following sequential steps _____.
a) Planning, Collection, Setup, Attack
b) Planning, Setup, Collection, Attack
c) Planning, Setup, Attack, Collection
d) Collection, Planning, Setup, Attack

8) Following is the event dependent program executed only when certain event occur _____.
a) Logic Bomb
b) Salami
c) Email Bombing
d) Trojan Horse

9) Financial motivation hacking coming under type of _____.
a) Hungry for Recognition
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d) The Outsider

10) What is Cyber Security?
a) Cyber Security provides security against malware
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d) All of the mentioned

11) Which of the following is an objective of network security?
a) Confidentiality
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c) Availability
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12) Which of the following is a type of cyber attack?
a) Phishing
b) SQL Injections
c) Password Attack
d) All of the above

13) Which of the following act violates cyber security?
a) Exploit
b) Attack
c) Threat
d) Vulnerability

14) Which of the following do Cyber attackers commonly target for fetching IP address of a target or victim user?
a) ip tracker
b) emails
c) websites
d) web pages

SLR-GF-255

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Network Security and Secure Coding (BTN03514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four. **16**

a) Explain model of network security.
b) Write a note security attacks.
c) Write a note on key management Kerberos.
d) Write a note on ARP attack.
e) Explain man-in-the-middle attacks.

Q.3 Attempt any two. **12**

a) Explain block cipher modes of operation with suitable diagram.
b) Write a note HMAC.
c) Describe digital signature standard.

Section – II

Q.4 Attempt any four. **16**

a) Explain IP security Architecture.
b) Write note on fuzzing.
c) Write a note on PGP.
d) Define the term
1) E – mail bombing
2) Salami attack
3) Logic bomb
4) Data didding
e) Write a note on firewall Design principal.

Q.5 Attempt any two. **12**

a) Write a note on S/MIME.
b) Explain attacks and defenses in details.
c) Write a note on Firewall Design principal.

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
COMPUTER SCIENCE & ENGINEERING
Economics (BTN03506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

2) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

3) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

4) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

5) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

6) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

7) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

8) Which of the following is international trade?

a) Trade between countries
b) Trade between regions
c) Trade between provinces
d) Both (b) and (c)

9) Who is the 'lender of the last resort' in the banking structure of India?

a) State Bank of India
b) Reserve Bank of India
c) EXIM Bank of India
d) Union Bank of India

10) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

Seat No.	

Set | P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
COMPUTER SCIENCE & ENGINEERING
Economics (BTN03506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

SLR-GF-256

Seat No.		Set	Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
COMPUTER SCIENCE & ENGINEERING
Economics (BTN03506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

2) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

3) Which of the following is international trade?
a) Trade between countries b) Trade between regions
c) Trade between provinces d) Both (b) and (c)

4) Who is the 'lender of the last resort' in the banking structure of India?
a) State Bank of India b) Reserve Bank of India
c) EXIM Bank of India d) Union Bank of India

5) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

6) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

7) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

8) "Wealth of Nations" was written by _____.
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c) Real worth of debt decreases
d) They have to pay more amount

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a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

Seat No.	

Set | Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
COMPUTER SCIENCE & ENGINEERING
Economics (BTN03506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
COMPUTER SCIENCE & ENGINEERING
Economics (BTN03506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Who is the 'lender of the last resort' in the banking structure of India?
a) State Bank of India b) Reserve Bank of India
c) EXIM Bank of India d) Union Bank of India

2) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

3) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

4) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
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5) "Wealth of Nations" was written by _____.
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a) They have to pay less amount
b) Real worth of debt increased
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7) In a mixed economy which sector(s) is / are found _____
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c) None
d) Bothe (a) public and (b) private

8) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

9) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

10) Which of the following is international trade?
a) Trade between countries
b) Trade between regions
c) Trade between provinces
d) Both (b) and (c)

SLR-GF-256

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
COMPUTER SCIENCE & ENGINEERING
Economics (BTN03506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

SLR-GF-256

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
COMPUTER SCIENCE & ENGINEERING
Economics (BTN03506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

2) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

3) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

4) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

5) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

6) Which of the following is international trade?
a) Trade between countries b) Trade between regions
c) Trade between provinces d) Both (b) and (c)

7) Who is the 'lender of the last resort' in the banking structure of India?
a) State Bank of India b) Reserve Bank of India
c) EXIM Bank of India d) Union Bank of India

8) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False b) True
c) Partly true d) Partly False

9) Law of demand must fail in case of _____.

a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

10) All things remain equal, if input prices increase _____.

a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

SLR-GF-256

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
COMPUTER SCIENCE & ENGINEERING
Economics (BTN03506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

SLR-GF-257

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) The term 'Intellectual Property Rights' covers _____.
a) Copyrights b) Know-how
c) Trade dress d) All of these

2) The following cannot be exploited by assigning or by licensing the rights to others _____.
a) Patents b) Designs
c) Trademark d) All of these

3) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

4) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

5) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

6) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

7) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

8) What is the term of Patent?

a) 35 years b) 25 years

c) 20 years d) 15 years

9) Statutory requirement of “Abstract” is provided in _____ of Indian patents act,1970 and rules 2003.

a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)

c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

10) The following can be patented _____.

a) Machine b) Process

c) Composition of matter d) All of these

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

SLR-GF-257

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

2) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

3) What is the term of Patent?
a) 35 years b) 25 years
c) 20 years d) 15 years

4) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

5) The following can be patented _____.
a) Machine b) Process
c) Composition of matter d) All of these

6) The term 'Intellectual Property Rights' covers _____.
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c) Trade dress d) All of these

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a) Patents b) Designs
c) Trademark d) All of these

8) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

9) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

10) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

2) The following can be patented _____.
a) Machine b) Process
c) Composition of matter d) All of these

3) The term 'Intellectual Property Rights' covers _____.
a) Copyrights b) Know-how
c) Trade dress d) All of these

4) The following cannot be exploited by assigning or by licensing the rights to others _____.
a) Patents b) Designs
c) Trademark d) All of these

5) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
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6) Trade mark _____.
a) is represented graphically
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c) may include shapes of goods or combination of colors
d) All of the above

7) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

8) Who fills the invention disclosure form (IDF)?

a) Inventor
b) Patent Attorney
c) Assignee
d) Patent Searcher

9) What is copyright meant for?

a) Film work
b) Books
c) Essay
d) All of these

10) What is the term of Patent?

a) 35 years
b) 25 years
c) 20 years
d) 15 years

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
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9) The term 'Intellectual Property Rights' covers _____.

a) Copyrights b) Know-how
c) Trade dress d) All of these

10) The following cannot be exploited by assigning or by licensing the rights to others _____.

a) Patents b) Designs
c) Trademark d) All of these

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Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN03507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
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Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The term sociology was coined by _____
a) Herbert Spencer b) August Comte
c) Karl Marx d) Max Weber

2) _____ and role are interrelated and inter-depended.
a) Position b) Status
c) Role d) Person

3) Rural society is _____.
a) Heterogeneous b) Homogeneous
c) Cultural d) Normative

4) Urban family is _____ unit.
a) Monogamous b) Polygamous
c) Mono-lateral d) Unilateral

5) Castes hierarchy is supposed to be _____.
a) Manual b) Formal
c) Divine d) Legal

6) The term Modernization was given by _____.
a) Ghurye b) Dr. Ambedkar
c) Shakespeare d) Srinivas

7) The two directions of social change are _____
a) uncertain - uncertain b) linear - cyclical
c) formal - informal d) negative - positive

8) _____ legalizes the sexual relation between man and woman
a) leaders b) Industry
c) Marriage d) Ideology

9) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

10) Environmental science is the study of _____.

a) nature
b) society
c) diversity
d) surroundings

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 **Write answer on any four of the following.** **16**

a) Explain the meaning and elements of social structure.
b) Discuss on the conventional feature of marriage in India.
c) Elucidate nature and types of social institutions.
d) Explain the nature and process of social change.
e) Give and account of nature and types of social movements.
f) What is social mobility?

Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The term Modernization was given by _____.
a) Ghurye b) Dr. Ambedkar
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2) The two directions of social change are _____
a) uncertain - uncertain b) linear - cyclical
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3) _____ legalizes the sexual relation between man and woman
a) leaders b) Industry
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4) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

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7) _____ and role are interrelated and inter-depended.
a) Position b) Status
c) Role d) Person

8) Rural society is _____.
a) Heterogeneous b) Homogeneous
c) Cultural d) Normative

9) Urban family is _____ unit.
a) Monogamous b) Polygamous
c) Mono-lateral d) Unilateral

10) Castes hierarchy is supposed to be _____.

a) Manual b) Formal

c) Divine d) Legal

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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Q.2 **Write answer on any four of the following.** **16**

a) Explain the meaning and elements of social structure.
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c) Elucidate nature and types of social institutions.
d) Explain the nature and process of social change.
e) Give and account of nature and types of social movements.
f) What is social mobility?

Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

2) Environmental science is the study of _____.
a) nature b) society
c) diversity d) surroundings

3) The term sociology was coined by _____
a) Herbert Spencer b) August Comte
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9) The two directions of social change are _____
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c) formal - informal d) negative - positive

10) _____ legalizes the sexual relation between man and woman

a) leaders
b) Industry
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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
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OR

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Rural society is _____.
a) Heterogeneous b) Homogeneous
c) Cultural d) Normative

2) Urban family is _____ unit.
a) Monogamous b) Polygamous
c) Mono-lateral d) Unilateral

3) Castes hierarchy is supposed to be _____.
a) Manual b) Formal
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4) The term Modernization was given by _____.
a) Ghurye b) Dr. Ambedkar
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5) The two directions of social change are _____
a) uncertain - uncertain b) linear - cyclical
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a) age bond b) time bond
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8) Environmental science is the study of _____.
a) nature b) society
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9) The term sociology was coined by _____
a) Herbert Spencer b) August Comte
c) Karl Marx d) Max Weber

10) _____ and role are interrelated and inter-depended.

a) Position
b) Status
c) Role
d) Person

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Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Introduction to Sociology (BTN03508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
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Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

SLR-GF-259

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Which factors improve coping?
a) Social support b) Optimism
c) Perceived control d) All of the above

2) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

3) Which of the following statements is true?
a) The stress response is nonspecific
b) Different kinds of stressors produce exactly the same response
c) Different people respond to the same stressor differently
d) All of the above

4) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
b) When he expects a positive outcome
c) When he thinks he does not have control over the situation
d) When he has a good social support network

5) Aches, shallow breathing and sweating, frequent colds are _____.
a) Physical symptoms of stress
b) Behavioral symptoms of stress
c) Emotional symptoms of stress
d) Cognitive symptoms of stress

6) What thoughts come to the mind when you're under negative stress?
a) You think that you can cope with the situation
b) You think that you cannot cope with the situation
c) You think that everything will get fine eventually
d) You think that you will get help immediately

7) Which of the following are the physical symptoms of anxiety?

a) Racing heart
b) Sweaty palms
c) Flushed cheeks
d) All of the above

8) Which of the following is true about 'deep breathing relaxation technique'?

a) It can be self-taught
b) It releases tension from the body and clears your mind
c) You have to do this under-water
d) Only 'a' & 'b' are true

9) Which of the following are stress busters?

a) Trying to find something funny in a difficult situation
b) Developing a support network
c) Taking a mindful walk
d) All of the above

10) When danger or stress is perceived/experienced, this response occurs in the body _____.

a) Exhaustion
b) Adaption
c) Fight-or-flight
d) Resistance

SLR-GF-259

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

Seat No.	

Set **Q**

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COMPUTER SCIENCE & ENGINEERING
Stress and Coping (BTN03509)

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SLR-GF-259

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

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Seat No.		Set	R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
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MCQ/Objective Type Questions

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c) Perceived control d) All of the above

4) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

5) Which of the following statements is true?
a) The stress response is nonspecific
b) Different kinds of stressors produce exactly the same response
c) Different people respond to the same stressor differently
d) All of the above

6) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
b) When he expects a positive outcome
c) When he thinks he does not have control over the situation
d) When he has a good social support network

7) Aches, shallow breathing and sweating, frequent colds are _____.
a) Physical symptoms of stress
b) Behavioral symptoms of stress
c) Emotional symptoms of stress
d) Cognitive symptoms of stress

8) What thoughts come to the mind when you're under negative stress?
a) You think that you can cope with the situation
b) You think that you cannot cope with the situation
c) You think that everything will get fine eventually
d) You think that you will get help immediately

9) Which of the following are the physical symptoms of anxiety?
a) Racing heart b) Sweaty palms
c) Flushed cheeks d) All of the above

10) Which of the following is true about 'deep breathing relaxation technique'?
a) It can be self-taught
b) It releases tension from the body and clears your mind
c) You have to do this under-water
d) Only 'a' & 'b' are true

SLR-GF-259

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Which of the following statements is true?
a) The stress response is nonspecific
b) Different kinds of stressors produce exactly the same response
c) Different people respond to the same stressor differently
d) All of the above

2) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
b) When he expects a positive outcome
c) When he thinks he does not have control over the situation
d) When he has a good social support network

3) Aches, shallow breathing and sweating, frequent colds are _____.
a) Physical symptoms of stress
b) Behavioral symptoms of stress
c) Emotional symptoms of stress
d) Cognitive symptoms of stress

4) What thoughts come to the mind when you're under negative stress?
a) You think that you can cope with the situation
b) You think that you cannot cope with the situation
c) You think that everything will get fine eventually
d) You think that you will get help immediately

5) Which of the following are the physical symptoms of anxiety?
a) Racing heart b) Sweaty palms
c) Flushed cheeks d) All of the above

6) Which of the following is true about 'deep breathing relaxation technique'?
a) It can be self-taught
b) It releases tension from the body and clears your mind
c) You have to do this under-water
d) Only 'a' & 'b' are true

7) Which of the following are stress busters?
a) Trying to find something funny in a difficult situation
b) Developing a support network
c) Taking a mindful walk
d) All of the above

8) When danger or stress is perceived/experienced, this response occurs in the body _____.
a) Exhaustion
b) Adaption
c) Fight-or-flight
d) Resistance

9) Which factors improve coping?
a) Social support
b) Optimism
c) Perceived control
d) All of the above

10) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

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Seat No.	

Set S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Stress and Coping (BTN03509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

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Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Professional Ethics & Human Value (BTN03510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

2) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

3) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

4) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

5) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

6) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

7) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

8) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

9) Human values are essential for _____.

a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

10) _____ is defined as the duty, obligation or even authority.

a) Work
b) Responsibility
c) Democracy
d) authority

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Professional Ethics & Human Value (BTN03510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Professional Ethics & Human Value (BTN03510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

2) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

3) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

4) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

5) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

6) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

7) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

8) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

9) What is Integrity?

a) Unity of thought
b) Word and deed
c) Open mindedness
d) All of these

10) Ethical issues that can affect an engineer's professional and personal life are termed as _____.

a) Macro ethics
b) Micro ethics
c) Morals
d) Rights

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Professional Ethics & Human Value (BTN03510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Professional Ethics & Human Value (BTN03510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

2) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

3) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

4) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

5) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

6) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

7) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

8) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

9) Value and skills should go hand in hand _____.

a) True b) False
c) Cannot tell d) Wrong question

10) _____ are the basic Human aspirations.

a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Professional Ethics & Human Value (BTN03510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Professional Ethics & Human Value (BTN03510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

2) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

3) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

4) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

5) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

6) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

7) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

8) _____ is defined as the duty, obligation or even authority.

a) Work b) Responsibility
c) Democracy d) authority

9) Many complex social problems exist in the _____.

a) Industry/ Business b) Society
c) Home d) None of the above

10) Ethics is the word that refers to _____.

a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

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Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Professional Ethics & Human Value (BTN03510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
System Programming (BTN03601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 PM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Semantic gap is the gap between _____.
a) Application domain & Execution domain
b) Application & PL domain
c) PL & Execution domain
d) None of above

2) The macro processor must _____.
a) recognize macro definitions and macro calls
b) save the macro definitions
c) expand macro calls and substitute arguments
d) All of the above

3) Consider the following assembly code

```
START 100
MOVER AREG,A
ADD   AREG,B
MOVEM AREG,C
STOP
A  DC   '5'
B  DC   '8'
C  DS    1
```

The content of symbol table for above code will be.

a)

Symbol	Address	Length
A	103	1
B	104	1
C	105	1

b)

Symbol	Address	Length
A	104	1
B	105	1
C	106	1

c)

Symbol	Address	Length
A	105	1
B	106	1
C	107	1

d)

Symbol	Address	Length
A	104	1
B	106	1
C	105	1

4)
```
        START   101
        READ    N
        PRINT   N
N       DS      01
```
What is equivalent variant I for above assembly language code?

a) (AD, 02) (C, 101)
(IS, 09) N
(IS, 10) N
(DL, 02) (C, 1)

b) (AD, 01) (C, 101)
(IS, 09) N
(IS, 09) N
(DL, 02) (C, 1)

c) (AD, 01) (C, 101)
(IS, 09) N
(IS, 10) N
(DL, 09) (C, 1)

d) (AD, 01) (C, 101)
(IS, 09) N
(IS, 10) N
(DL, 02) (C, 1)

5) A macro statement is a statement from which an _____ language statement may be generated during macro expansion.

a) Machine b) Assembly
c) Programming d) Object

6) The problem of forward references is tackled using a process called _____ in single pass assembler.

a) Backtracking b) Synchronization
c) Aging d) Back patching

7) Address assigned by the Linker to a Program is called as _____.

a) Load Origin b) Load time address
c) Linked Origin d) Link time address

8) In an absolute loading scheme, the four functions are accomplished as, ___

a) Allocation-by programmer, Linking-by assembler, Relocation-by assembler, loading-Loader
b) Allocation-by assembler, Linking-by linker, Relocation-by assembler, loading-Loader
c) Allocation-by programmer, Linking-by programmer, Relocation-by assembler, loading-Loader
d) Allocation-by programmer, linking-by programmer, Relocation-by programmer, loading-Loader

9) If translated origin and linked origin are different, then relocation is performed by _____.

a) Linker b) Loader
c) Translator d) Both a) and b)

10) In direct linking loader which is not related with object program?
a) ESD b) RLD
c) BSS d) TXT

11) _____ is used to solve problem of allocation in relocating loader.
a) Transfer vector b) Program length information
c) Relocation bit d) None of the above

12) Register descriptor contains _____ fields.
a) Status and Operand descriptor#
b) Status only
c) Status and Register descriptor#
d) None

13) Overlays are used _____.
a) Reduce Execution time b) Reduce cost
c) Reduce memory requirement d) Reduce linking requirement

14) When optimization is applied over small segment of program consisting of a few source statements, it is called _____.
a) Local transformation b) Global transformation
c) Body transformation d) None of the above

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
System Programming (BTN03601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 PM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three **12**

a) Explain the different types of parameters in macros.
b) Explain Pass-I of Two-Pass assembler along with data structure used.
c) What is Language Processing Development Tools and explain the YACC tool in detail.
d) Define Assembler directives and explain the following Assembler directives with syntax and example
i) ORIGIN
ii) EQU
iii) LTORG
iv) START
v) END

Q.3 Attempt any one **08**

Explain in detail advanced macro facilities with examples.

OR

What is Front End and Back End of Toy Compiler? Explain with example.

Q.4 For the following assembly program **08**

a) Show the content of symbol table at the end of pass-I
b) Show the intermediate code generated for the program (Variant-I).
c) Show the target program generated for the program.

```
        START   100
A       DS      3
L1      MOVER   AREG, B
        ADD     AREG, C
        MOVEM   AREG, D
D       EQU     A+1
L2      PRINT D
        ORIGIN  A-1
C       DC      '5'
        ORIGIN  L2+1
        STOP
B       DC      '19'
        END     L1
```

Section – II

Q.5 Attempt any three questions **12**

a) Explain the aspects of compilation.

b) Define linking. Explain Self relocating program.

c) What are functions performed by loaders? Explain.

d) Explain different Triples quadruples and Indirect triples for expressions used by Compiler and show the contents of Triples Quadruples for the following expression.

$a + b^{*}c + d^{*}e \uparrow f$

and for Indirect triple consider the following expression

$z = a + b^{*}c + d^{*}e \uparrow f$ $\quad\quad$ $y = x + b^{*}c$

Q.6 Attempt any one question **08**

Write and explain "Evaluation order for operators" using RR label and Draw an expression tree and decide evaluation order of operators for the following expression.

$$f + (x + y)^{*}((a + b)/(c - d))$$

OR

Explain the concept of linking. What are binary programs & object modules used in linking.

Q.7 What are the different types of Loaders and explain any two types with advantages and disadvantages? **08**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
System Programming (BTN03601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 PM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In an absolute loading scheme, the four functions are accomplished as, ___
a) Allocation-by programmer, Linking-by assembler, Relocation-by assembler, loading-Loader
b) Allocation-by assembler, Linking-by linker, Relocation-by assembler, loading-Loader
c) Allocation-by programmer, Linking-by programmer, Relocation-by assembler, loading-Loader
d) Allocation-by programmer, linking-by programmer, Relocation-by programmer, loading-Loader

2) If translated origin and linked origin are different, then relocation is performed by _____.
a) Linker b) Loader
c) Translator d) Both a) and b)

3) In direct linking loader which is not related with object program?
a) ESD b) RLD
c) BSS d) TXT

4) _____ is used to solve problem of allocation in relocating loader.
a) Transfer vector b) Program length information
c) Relocation bit d) None of the above

5) Register descriptor contains _____ fields.
a) Status and Operand descriptor#
b) Status only
c) Status and Register descriptor#
d) None

6) Overlays are used _____.
a) Reduce Execution time b) Reduce cost
c) Reduce memory requirement d) Reduce linking requirement

7) When optimization is applied over small segment of program consisting of a few source statements, it is called _____.

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b) Global transformation
c) Body transformation
d) None of the above

8) Semantic gap is the gap between _____.

a) Application domain & Execution domain
b) Application & PL domain
c) PL & Execution domain
d) None of above

9) The macro processor must _____.

a) recognize macro definitions and macro calls
b) save the macro definitions
c) expand macro calls and substitute arguments
d) All of the above

10) Consider the following assembly code

```
START 100
MOVER AREG,A
ADD   AREG,B
MOVEM AREG,C
STOP
A  DC   '5'
B  DC   '8'
C  DS    1
```

The content of symbol table for above code will be.

a)

Symbol	Address	Length
A	103	1
B	104	1
C	105	1

b)

Symbol	Address	Length
A	104	1
B	105	1
C	106	1

c)

Symbol	Address	Length
A	105	1
B	106	1
C	107	1

d)

Symbol	Address	Length
A	104	1
B	106	1
C	105	1

11)
```
        START   101
        READ    N
        PRINT   N
N       DS      01
```
What is equivalent variant I for above assembly language code?

a) (AD, 02) (C, 101)
(IS, 09) N
(IS, 10) N
(DL, 02) (C, 1)

b) (AD, 01) (C, 101)
(IS, 09) N
(IS, 09) N
(DL, 02) (C, 1)

c) (AD, 01) (C, 101)
(IS, 09) N
(IS, 10) N
(DL, 09) (C, 1)

d) (AD, 01) (C, 101)
(IS, 09) N
(IS, 10) N
(DL, 02) (C, 1)

12) A macro statement is a statement from which an _____ language statement may be generated during macro expansion.

a) Machine
b) Assembly
c) Programming
d) Object

13) The problem of forward references is tackled using a process called _____ in single pass assembler.

a) Backtracking
b) Synchronization
c) Aging
d) Back patching

14) Address assigned by the Linker to a Program is called as _____.

a) Load Origin
b) Load time address
c) Linked Origin
d) Link time address

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
System Programming (BTN03601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 PM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three **12**

a) Explain the different types of parameters in macros.
b) Explain Pass-I of Two-Pass assembler along with data structure used.
c) What is Language Processing Development Tools and explain the YACC tool in detail.
d) Define Assembler directives and explain the following Assembler directives with syntax and example
i) ORIGIN
ii) EQU
iii) LTORG
iv) START
v) END

Q.3 Attempt any one **08**

Explain in detail advanced macro facilities with examples.

OR

What is Front End and Back End of Toy Compiler? Explain with example.

Q.4 For the following assembly program **08**

a) Show the content of symbol table at the end of pass-I
b) Show the intermediate code generated for the program (Variant-I).
c) Show the target program generated for the program.

```
        START   100
A       DS      3
L1      MOVER   AREG, B
        ADD     AREG, C
        MOVEM   AREG, D
D       EQU     A+1
L2      PRINT D
        ORIGIN  A-1
C       DC      '5'
        ORIGIN  L2+1
        STOP
B       DC      '19'
        END     L1
```

Section – II

Q.5 Attempt any three questions **12**

a) Explain the aspects of compilation.

b) Define linking. Explain Self relocating program.

c) What are functions performed by loaders? Explain.

d) Explain different Triples quadruples and Indirect triples for expressions used by Compiler and show the contents of Triples Quadruples for the following expression.

$a + b^{*}c + d^{*}e \uparrow f$

and for Indirect triple consider the following expression

$z = a + b^{*}c + d^{*}e \uparrow f$ $\quad\quad$ $y = x + b^{*}c$

Q.6 Attempt any one question **08**

Write and explain "Evaluation order for operators" using RR label and Draw an expression tree and decide evaluation order of operators for the following expression.

$$f + (x + y)^{*}((a + b)/(c - d))$$

OR

Explain the concept of linking. What are binary programs & object modules used in linking.

Q.7 What are the different types of Loaders and explain any two types with advantages and disadvantages? **08**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
System Programming (BTN03601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 PM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is used to solve problem of allocation in relocating loader.
a) Transfer vector b) Program length information
c) Relocation bit d) None of the above

2) Register descriptor contains _____ fields.
a) Status and Operand descriptor#
b) Status only
c) Status and Register descriptor#
d) None

3) Overlays are used _____.
a) Reduce Execution time b) Reduce cost
c) Reduce memory requirement d) Reduce linking requirement

4) When optimization is applied over small segment of program consisting of a few source statements, it is called _____.
a) Local transformation b) Global transformation
c) Body transformation d) None of the above

5) Semantic gap is the gap between _____.
a) Application domain & Execution domain
b) Application & PL domain
c) PL & Execution domain
d) None of above

6) The macro processor must _____.
a) recognize macro definitions and macro calls
b) save the macro definitions
c) expand macro calls and substitute arguments
d) All of the above

7) Consider the following assembly code

```
START 100
MOVER AREG,A
ADD   AREG,B
MOVEM AREG,C
STOP
A  DC   '5'
B  DC   '8'
C  DS   1
```

The content of symbol table for above code will be.

a)

Symbol	Address	Length
A	103	1
B	104	1
C	105	1

b)

Symbol	Address	Length
A	104	1
B	105	1
C	106	1

c)

Symbol	Address	Length
A	105	1
B	106	1
C	107	1

d)

Symbol	Address	Length
A	104	1
B	106	1
C	105	1

8)

```
      START   101
      READ    N
      PRINT   N
N     DS      01
```

What is equivalent variant I for above assembly language code?

a)
```
(AD, 02) (C, 101)
(IS, 09) N
(IS, 10) N
(DL, 02) (C, 1)
```

b)
```
(AD, 01) (C, 101)
(IS, 09) N
(IS, 09) N
(DL, 02) (C, 1)
```

c)
```
(AD, 01) (C, 101)
(IS, 09) N
(IS, 10) N
(DL, 09) (C, 1)
```

d)
```
(AD, 01) (C, 101)
(IS, 09) N
(IS, 10) N
(DL, 02) (C, 1)
```

9) A macro statement is a statement from which an _____ language statement may be generated during macro expansion.

a) Machine
b) Assembly
c) Programming
d) Object

10) The problem of forward references is tackled using a process called _____ in single pass assembler.

a) Backtracking
b) Synchronization
c) Aging
d) Back patching

11) Address assigned by the Linker to a Program is called as _____.

a) Load Origin
b) Load time address
c) Linked Origin
d) Link time address

12) In an absolute loading scheme, the four functions are accomplished as, ___

a) Allocation-by programmer, Linking-by assembler, Relocation-by assembler, loading-Loader
b) Allocation-by assembler, Linking-by linker, Relocation-by assembler, loading-Loader
c) Allocation-by programmer, Linking-by programmer, Relocation-by assembler, loading-Loader
d) Allocation-by programmer, linking-by programmer, Relocation-by programmer, loading-Loader

13) If translated origin and linked origin are different, then relocation is performed by _____.

a) Linker
b) Loader
c) Translator
d) Both a) and b)

14) In direct linking loader which is not related with object program?

a) ESD
b) RLD
c) BSS
d) TXT

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
System Programming (BTN03601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 PM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three **12**

a) Explain the different types of parameters in macros.
b) Explain Pass-I of Two-Pass assembler along with data structure used.
c) What is Language Processing Development Tools and explain the YACC tool in detail.
d) Define Assembler directives and explain the following Assembler directives with syntax and example
i) ORIGIN
ii) EQU
iii) LTORG
iv) START
v) END

Q.3 Attempt any one **08**

Explain in detail advanced macro facilities with examples.

OR

What is Front End and Back End of Toy Compiler? Explain with example.

Q.4 For the following assembly program **08**

a) Show the content of symbol table at the end of pass-I
b) Show the intermediate code generated for the program (Variant-I).
c) Show the target program generated for the program.

```
        START   100
A       DS      3
L1      MOVER   AREG, B
        ADD     AREG, C
        MOVEM   AREG, D
D       EQU     A+1
L2      PRINT D
        ORIGIN  A-1
C       DC      '5'
        ORIGIN  L2+1
        STOP
B       DC      '19'
        END     L1
```

Section – II

Q.5 Attempt any three questions **12**

a) Explain the aspects of compilation.

b) Define linking. Explain Self relocating program.

c) What are functions performed by loaders? Explain.

d) Explain different Triples quadruples and Indirect triples for expressions used by Compiler and show the contents of Triples Quadruples for the following expression.

$a + b^{*}c + d^{*}e \uparrow f$

and for Indirect triple consider the following expression

$z = a + b^{*}c + d^{*}e \uparrow f$ $\quad\quad$ $y = x + b^{*}c$

Q.6 Attempt any one question **08**

Write and explain "Evaluation order for operators" using RR label and Draw an expression tree and decide evaluation order of operators for the following expression.

$$f + (x + y)^{*}((a + b)/(c - d))$$

OR

Explain the concept of linking. What are binary programs & object modules used in linking.

Q.7 What are the different types of Loaders and explain any two types with advantages and disadvantages? **08**

Seat No.	

Set | S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
System Programming (BTN03601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 PM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The problem of forward references is tackled using a process called _____ in single pass assembler.
a) Backtracking b) Synchronization
c) Aging d) Back patching

2) Address assigned by the Linker to a Program is called as _____.
a) Load Origin b) Load time address
c) Linked Origin d) Link time address

3) In an absolute loading scheme, the four functions are accomplished as, ___
a) Allocation-by programmer, Linking-by assembler, Relocation-by assembler, loading-Loader
b) Allocation-by assembler, Linking-by linker, Relocation-by assembler, loading-Loader
c) Allocation-by programmer, Linking-by programmer, Relocation-by assembler, loading-Loader
d) Allocation-by programmer, linking-by programmer, Relocation-by programmer, loading-Loader

4) If translated origin and linked origin are different, then relocation is performed by _____.
a) Linker b) Loader
c) Translator d) Both a) and b)

5) In direct linking loader which is not related with object program?
a) ESD b) RLD
c) BSS d) TXT

6) _____ is used to solve problem of allocation in relocating loader.
a) Transfer vector b) Program length information
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b) Status only
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8) Overlays are used _____.
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11) The macro processor must _____.
a) recognize macro definitions and macro calls
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c) expand macro calls and substitute arguments
d) All of the above

12) Consider the following assembly code

```
START 100
MOVER AREG,A
ADD   AREG,B
MOVEM AREG,C
STOP
A  DC   '5'
B  DC   '8'
C  DS   1
```

The content of symbol table for above code will be.

a)

Symbol	Address	Length
A	103	1
B	104	1
C	105	1

b)

Symbol	Address	Length
A	104	1
B	105	1
C	106	1

c)

Symbol	Address	Length
A	105	1
B	106	1
C	107	1

d)

Symbol	Address	Length
A	104	1
B	106	1
C	105	1

13)
```
        START   101
        READ    N
        PRINT   N
N       DS      01
```
What is equivalent variant I for above assembly language code?

a) (AD, 02) (C, 101)
(IS, 09) N
(IS, 10) N
(DL, 02) (C, 1)

b) (AD, 01) (C, 101)
(IS, 09) N
(IS, 09) N
(DL, 02) (C, 1)

c) (AD, 01) (C, 101)
(IS, 09) N
(IS, 10) N
(DL, 09) (C, 1)

d) (AD, 01) (C, 101)
(IS, 09) N
(IS, 10) N
(DL, 02) (C, 1)

14) A macro statement is a statement from which an _____ language statement may be generated during macro expansion.

a) Machine
b) Assembly
c) Programming
d) Object

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
System Programming (BTN03601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 PM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three **12**

a) Explain the different types of parameters in macros.
b) Explain Pass-I of Two-Pass assembler along with data structure used.
c) What is Language Processing Development Tools and explain the YACC tool in detail.
d) Define Assembler directives and explain the following Assembler directives with syntax and example
i) ORIGIN
ii) EQU
iii) LTORG
iv) START
v) END

Q.3 Attempt any one **08**

Explain in detail advanced macro facilities with examples.

OR

What is Front End and Back End of Toy Compiler? Explain with example.

Q.4 For the following assembly program **08**

a) Show the content of symbol table at the end of pass-I
b) Show the intermediate code generated for the program (Variant-I).
c) Show the target program generated for the program.

```
        START   100
A       DS      3
L1      MOVER   AREG, B
        ADD     AREG, C
        MOVEM   AREG, D
D       EQU     A+1
L2      PRINT D
        ORIGIN  A-1
C       DC      '5'
        ORIGIN  L2+1
        STOP
B       DC      '19'
        END     L1
```

Section – II

Q.5 Attempt any three questions **12**

a) Explain the aspects of compilation.

b) Define linking. Explain Self relocating program.

c) What are functions performed by loaders? Explain.

d) Explain different Triples quadruples and Indirect triples for expressions used by Compiler and show the contents of Triples Quadruples for the following expression.

$a + b^{*}c + d^{*}e \uparrow f$

and for Indirect triple consider the following expression

$z = a + b^{*}c + d^{*}e \uparrow f$ $\quad\quad$ $y = x + b^{*}c$

Q.6 Attempt any one question **08**

Write and explain "Evaluation order for operators" using RR label and Draw an expression tree and decide evaluation order of operators for the following expression.

$$f + (x + y)^{*}((a + b)/(c - d))$$

OR

Explain the concept of linking. What are binary programs & object modules used in linking.

Q.7 What are the different types of Loaders and explain any two types with advantages and disadvantages? **08**

SLR-GF-262

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (BTN03602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Following is not an application of IoT?
a) FASTag b) Smart watch
c) Autonomous Vehicle d) Router

2) As per definition of IoT, IoT =
a) Data + Networks + Sensors
b) Services + Data
c) Services + Data + Networks + Sensors
d) Sensors + Nodes

3) IoT devices has _____ Identity.
a) Common b) Unique
c) same for all d) none

4) Oracle IoT applications are designed on _____ platform.
a) PaaS b) SaaS
c) IaaS d) all of above

5) In M2M systems _____ is used for decision making.
a) AI b) ML
c) DL d) All of above

6) In M2M Home Automation system, which of following is used?
a) Controller b) Sensors
c) Decision making system d) All of above

7) Which of the following are the type of Actuator?
a) Hydraulic b) Pneumatic
c) Optical d) All of the above

8) CoAP is used in Constrained Networks, Constrained networks means _____.
a) Low bandwidth b) High Congestion
c) Low power consumption d) all of above

9) The minimum size of CoAP Protocol is _____ bytes.
a) 4 b) 8
c) 255 d) 20

10) In 6LoWPAN, each node has _____ address.
a) IPv4 b) IPv3
c) IPv6 d) IPv5

11) DoS attacks are carried out by _____.
a) flooding b) crashing system
c) both a and b d) None

12) After DDoS attack, the node is work as _____.
a) boat b) zombie
c) both a and b d) none

13) A sequence of actions are performed by person in order to harm the system is called as _____.
a) use case b) misuse case
c) both a and b d) none

14) While designing the Home Automation system, following sensor is used ____.
a) Temperature b) Gas
c) Light d) all of above

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (BTN03602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Explain the characteristics of IoT.
b) What are the sources of IoT. Explain them.
c) What are the requirements of M2M system?
d) What Is Participatory sensing? Explain it.
e) What are types of RFID? Explain the structure of RFID.

Q.3 Solve any two **12**

a) What are the components of levels of IoT? Explain the levels of IoT with neat sketch.
b) How IoT is transforming the automotive industry.
c) What are the IoT Enabling technologies? Explain them in details.

Section – II

Q.4 Solve any four **16**

a) Draw REST architecture and explain it.
b) Explain 802.15.4 with the superframe structure.
c) What are the common causes of Vulnerability?
d) What are the security issues arises with IoT, explain them.
e) Explain 6LoWPAN with suitable diagram.

Q.5 Solve any two **12**

a) Draw Constrained Application Protocol format and explain it.
b) Design and explain the Healthcare System with suitable example using IoT.
c) What is IoT security tomography? What are the types of Tomography? Draw and explain layered attacker model.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (BTN03602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) CoAP is used in Constrained Networks, Constrained networks means _____.
a) Low bandwidth b) High Congestion
c) Low power consumption d) all of above

2) The minimum size of CoAP Protocol is _____ bytes.
a) 4 b) 8
c) 255 d) 20

3) In 6LoWPAN, each node has _____ address.
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4) DoS attacks are carried out by _____.
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8) Following is not an application of IoT?
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9) As per definition of IoT, IoT =
a) Data + Networks + Sensors
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c) Services + Data + Networks + Sensors
d) Sensors + Nodes

10) IoT devices has _____ Identity.
a) Common b) Unique
c) same for all d) none

11) Oracle IoT applications are designed on _____ platform.
a) PaaS b) SaaS
c) IaaS d) all of above

12) In M2M systems _____ is used for decision making.
a) AI b) ML
c) DL d) All of above

13) In M2M Home Automation system, which of following is used?
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c) Decision making system d) All of above

14) Which of the following are the type of Actuator?
a) Hydraulic b) Pneumatic
c) Optical d) All of the above

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (BTN03602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

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Section – II

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Seat No.		Set	R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (BTN03602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) DoS attacks are carried out by _____.
a) flooding b) crashing system
c) both a and b d) None

2) After DDoS attack, the node is work as _____.
a) boat b) zombie
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a) Temperature b) Gas
c) Light d) all of above

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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (BTN03602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Explain the characteristics of IoT.
b) What are the sources of IoT. Explain them.
c) What are the requirements of M2M system?
d) What Is Participatory sensing? Explain it.
e) What are types of RFID? Explain the structure of RFID.

Q.3 Solve any two **12**

a) What are the components of levels of IoT? Explain the levels of IoT with neat sketch.
b) How IoT is transforming the automotive industry.
c) What are the IoT Enabling technologies? Explain them in details.

Section – II

Q.4 Solve any four **16**

a) Draw REST architecture and explain it.
b) Explain 802.15.4 with the superframe structure.
c) What are the common causes of Vulnerability?
d) What are the security issues arises with IoT, explain them.
e) Explain 6LoWPAN with suitable diagram.

Q.5 Solve any two **12**

a) Draw Constrained Application Protocol format and explain it.
b) Design and explain the Healthcare System with suitable example using IoT.
c) What is IoT security tomography? What are the types of Tomography? Draw and explain layered attacker model.

SLR-GF-262

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (BTN03602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In M2M Home Automation system, which of following is used?
a) Controller b) Sensors
c) Decision making system d) All of above

2) Which of the following are the type of Actuator?
a) Hydraulic b) Pneumatic
c) Optical d) All of the above

3) CoAP is used in Constrained Networks, Constrained networks means _____.
a) Low bandwidth b) High Congestion
c) Low power consumption d) all of above

4) The minimum size of CoAP Protocol is _____ bytes.
a) 4 b) 8
c) 255 d) 20

5) In 6LoWPAN, each node has _____ address.
a) IPv4 b) IPv3
c) IPv6 d) IPv5

6) DoS attacks are carried out by _____.
a) flooding b) crashing system
c) both a and b d) None

7) After DDoS attack, the node is work as _____.
a) boat b) zombie
c) both a and b d) none

8) A sequence of actions are performed by person in order to harm the system is called as _____.
a) use case b) misuse case
c) both a and b d) none

9) While designing the Home Automation system, following sensor is used ____.
a) Temperature b) Gas
c) Light d) all of above

10) Following is not an application of IoT?
a) FASTag b) Smart watch
c) Autonomous Vehicle d) Router

11) As per definition of IoT, IoT =
a) Data + Networks + Sensors
b) Services + Data
c) Services + Data + Networks + Sensors
d) Sensors + Nodes

12) IoT devices has _____ Identity.
a) Common b) Unique
c) same for all d) none

13) Oracle IoT applications are designed on _____ platform.
a) PaaS b) SaaS
c) IaaS d) all of above

14) In M2M systems _____ is used for decision making.
a) AI b) ML
c) DL d) All of above

SLR-GF-262

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (BTN03602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Explain the characteristics of IoT.
b) What are the sources of IoT. Explain them.
c) What are the requirements of M2M system?
d) What Is Participatory sensing? Explain it.
e) What are types of RFID? Explain the structure of RFID.

Q.3 Solve any two **12**

a) What are the components of levels of IoT? Explain the levels of IoT with neat sketch.
b) How IoT is transforming the automotive industry.
c) What are the IoT Enabling technologies? Explain them in details.

Section – II

Q.4 Solve any four **16**

a) Draw REST architecture and explain it.
b) Explain 802.15.4 with the superframe structure.
c) What are the common causes of Vulnerability?
d) What are the security issues arises with IoT, explain them.
e) Explain 6LoWPAN with suitable diagram.

Q.5 Solve any two **12**

a) Draw Constrained Application Protocol format and explain it.
b) Design and explain the Healthcare System with suitable example using IoT.
c) What is IoT security tomography? What are the types of Tomography? Draw and explain layered attacker model.

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Engineering (BTN03603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following is not defined in a good Software Requirement Specification (SRS) document?
a) Functional Requirement
b) Nonfunctional Requirement
c) Goals of implementation
d) Algorithm for software implementation

2) Which design identifies the software as a system with many components interacting with each other?
a) Architectural design b) High-level design
c) Detailed design d) Both b & c

3) Software consists of _____.
a) Set of instructions + operating procedures
b) Programs + documentation + operating procedures
c) Programs + hardware manuals
d) Set of programs

4) Which is the most important feature of spiral model?
a) Quality management b) Risk management
c) Performance management d) Efficiency management

5) Which is not a step of Requirement Engineering?
a) Requirements elicitation b) Requirements analysis
c) Requirements design d) Requirements documentation

6) IEEE 830-1993 is a IEEE recommended standard for _____
a) Software Requirement Specification
b) Software design
c) Testing
d) Both a and b

7) Which plan describes how the skills and experience of the project team members will be developed?
a) HR Plan b) Manager Plan
c) Team Plan d) Staff Development Plan

8) Alpha and Beta Testing are forms of _____.

a) Acceptance testing b) Integration testing
c) System Testing d) Unit testing

9) Staff turnover, poor communication with the customer are risks that are extrapolated from past experience are called _____.

a) Business risks b) Predictable risks
c) Project risks d) Technical risks

10) Software safety is a quality assurance activity that focuses on hazards that may cause an entire system to fall.

a) True b) False

11) Effective software project management focuses on the 4 P's. What are those fours P's?

a) People, performance, payment, product
b) People, product, process, project
c) People, product, performance, project
d) All of the above

12) Which of the following is/are considered stakeholder in the software process?

a) Customers b) End-users
c) Project managers d) All of the above

13) Who conducts the daily scrum call?

a) Business Analyst b) Team Leader
c) Scrum Master d) Product Owner

14) Which coupling is also known as "Global coupling"?

a) Content Coupling b) Stamp Coupling
c) Data coupling d) Common coupling

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Engineering (BTN03603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) What is software process? Define characteristics of software process.
b) Explain Architecture View model (4+1) Model.
c) What is coupling and cohesion? List the types of both.
d) Explain Time Boxing Model.
e) Explain characteristics of SRS.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Give Zero level DFD for Student Management System.
b) List and Explain techniques used for Object Oriented Design.
c) Explain functional specification with Use case for product biding, purchase and all use cases.

Section – II

Q.4 Answer any Four. **16**

a) Write a short note on CMM.
b) Explain adaptive project management life cycle.
c) Explain Inspection and Audit Process.
d) Write a short note White-Box Testing.
e) Explain Iterative Project Management Life Cycle.

Q.5 Answer any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain in detail Users acceptance testing. Explain its types.
c) Explain in detail software configuration management process.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Engineering (BTN03603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Alpha and Beta Testing are forms of _____.
a) Acceptance testing b) Integration testing
c) System Testing d) Unit testing

2) Staff turnover, poor communication with the customer are risks that are extrapolated from past experience are called _____.
a) Business risks b) Predictable risks
c) Project risks d) Technical risks

3) Software safety is a quality assurance activity that focuses on hazards that may cause an entire system to fall.
a) True b) False

4) Effective software project management focuses on the 4 P's. What are those fours P's?
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c) People, product, performance, project
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7) Which coupling is also known as "Global coupling"?
a) Content Coupling b) Stamp Coupling
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8) Which of the following is not defined in a good Software Requirement Specification (SRS) document?
a) Functional Requirement
b) Nonfunctional Requirement
c) Goals of implementation
d) Algorithm for software implementation

9) Which design identifies the software as a system with many components interacting with each other?
a) Architectural design
b) High-level design
c) Detailed design
d) Both b & c

10) Software consists of _____.
a) Set of instructions + operating procedures
b) Programs + documentation + operating procedures
c) Programs + hardware manuals
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11) Which is the most important feature of spiral model?
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b) Risk management
c) Performance management
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12) Which is not a step of Requirement Engineering?
a) Requirements elicitation
b) Requirements analysis
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a) Software Requirement Specification
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a) HR Plan
b) Manager Plan
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d) Staff Development Plan

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Engineering (BTN03603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

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d) Explain Time Boxing Model.
e) Explain characteristics of SRS.

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b) List and Explain techniques used for Object Oriented Design.
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Section – II

Q.4 Answer any Four. **16**

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c) Explain Inspection and Audit Process.
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Q.5 Answer any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain in detail Users acceptance testing. Explain its types.
c) Explain in detail software configuration management process.

Seat No.	

Set | R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Engineering (BTN03603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Effective software project management focuses on the 4 P's. What are those fours P's?
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c) People, product, performance, project
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Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Engineering (BTN03603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
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Section – I

Q.2 Attempt any Four. **16**

a) What is software process? Define characteristics of software process.
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d) Explain Time Boxing Model.
e) Explain characteristics of SRS.

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Section – II

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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Engineering (BTN03603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

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Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Engineering (BTN03603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) What is software process? Define characteristics of software process.
b) Explain Architecture View model (4+1) Model.
c) What is coupling and cohesion? List the types of both.
d) Explain Time Boxing Model.
e) Explain characteristics of SRS.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Give Zero level DFD for Student Management System.
b) List and Explain techniques used for Object Oriented Design.
c) Explain functional specification with Use case for product biding, purchase and all use cases.

Section – II

Q.4 Answer any Four. **16**

a) Write a short note on CMM.
b) Explain adaptive project management life cycle.
c) Explain Inspection and Audit Process.
d) Write a short note White-Box Testing.
e) Explain Iterative Project Management Life Cycle.

Q.5 Answer any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain in detail Users acceptance testing. Explain its types.
c) Explain in detail software configuration management process.

SLR-GF-264

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) AWS stands for _____.
a) Amazon Wide Software b) Amazon Web Service
c) Amazon Web Site d) None of the above

2) Three service models are defined in cloud computing technology are _____.
a) SaaS, BaaS, PaaS b) SaaS, PaaS, IaaS
c) AaS, PaaS, LaaS d) None of the above

3) Which of the following is an example of a IaaS Cloud service?
a) DigitalOcean b) Linode
c) Rackspace d) All of the above

4) _____ where a VM can be moved from one physical machine to another even as it continues to execute.
a) Load balancing b) Migration
c) Live migration d) Server consolidation

5) _____ provides virtual machines, virtual storage, virtual infrastructure and other hardware assets.
a) IaaS b) SaaS
c) PaaS d) All of the mentioned

6) Which of the following is a more sophisticated load balancer?
a) Workspace managers b) Rack server managers
c) Network server managers d) Workload managers

7) IDaaS stands for?
a) ID-as-a-Service b) Identity-as-a-Service
c) Intranet-as-a-Service d) Interoperability-as-a-Service

8) Which are the three conceptual layers in CometCloud?
a) development, application, physical
b) infrastructure, dynamic, static
c) transport, network, programming
d) programming, service, infrastructure

9) Which of the following service provider provides the highest level of service?
a) SaaS b) PaaS
c) IaaS d) All of the mentioned

10) Which of the following are a common means for losing encrypted data?
a) lose the keys b) lose the encryption standard
c) lose the account d) all of the mentioned

11) Which of the following was one of the weaker aspects of early cloud computing service offerings?
a) Logging b) Integrity checking
c) Consistency checking d) None of the mentioned

12) Which one of the following statements is false?
a) Service Level Agreements (SLAs) is a small aspect of cloud computing.
b) Cloud computing does not have an impact on Software licensing.
c) Cloud computing present new opportunities to users and developers.
d) All of the mentioned

13) Which of the following model type is not trusted in terms of security?
a) Public b) Private
c) Hybrid d) None of the mentioned

14) CaaS stands for _____ as service.
a) Compliance b) Computer
c) Cold d) None of these

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Three. **12**

a) Write note on desired features of a cloud.
b) What is VM Provisioning and Migration in Action?
c) With examples explain Infrastructure as a Service Providers.
d) What is an identity? Explain with example.

Q.3 Attempt Any Two **16**

a) Explain the concept of seven-step model of migration into a cloud.
b) Explain the Virtual Machines Provisioning and Manageability in detail.
c) Write a short note on:
i) IaaS workloads
ii) Pods
iii) Aggregation
iv) Silos

Section – II

Q.4 Attempt Any Three. **12**

a) Describe about the concept of Aneka cloud platform.
b) Explain the concept of Aneka hybrid cloud Architecture.
c) Describe about the Security mapping in cloud security.
d) What are the Data Privacy and Security Issues in cloud computing?

Q.5 Attempt Any Two. **16**

a) Describe about Encryption Auditing and compliance in cloud security.
b) Write a note on Commercial and Business Considerations-A Cloud User's Viewpoint.
c) Explain Jurisdictional Issues Raised by Virtualization and Data Location in detail.

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which are the three conceptual layers in CometCloud?
a) development, application, physical
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c) transport, network, programming
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a) Logging b) Integrity checking
c) Consistency checking d) None of the mentioned

5) Which one of the following statements is false?
a) Service Level Agreements (SLAs) is a small aspect of cloud computing.
b) Cloud computing does not have an impact on Software licensing.
c) Cloud computing present new opportunities to users and developers.
d) All of the mentioned

6) Which of the following model type is not trusted in terms of security?
a) Public b) Private
c) Hybrid d) None of the mentioned

7) CaaS stands for _____ as service.
a) Compliance b) Computer
c) Cold d) None of these

8) AWS stands for _____.
a) Amazon Wide Software b) Amazon Web Service
c) Amazon Web Site d) None of the above

9) Three service models are defined in cloud computing technology are _____.
a) SaaS, BaaS, PaaS
b) SaaS, PaaS, IaaS
c) AaS, PaaS, LaaS
d) None of the above

10) Which of the following is an example of a IaaS Cloud service?
a) DigitalOcean
b) Linode
c) Rackspace
d) All of the above

11) _____ where a VM can be moved from one physical machine to another even as it continues to execute.
a) Load balancing
b) Migration
c) Live migration
d) Server consolidation

12) _____ provides virtual machines, virtual storage, virtual infrastructure and other hardware assets.
a) IaaS
b) SaaS
c) PaaS
d) All of the mentioned

13) Which of the following is a more sophisticated load balancer?
a) Workspace managers
b) Rack server managers
c) Network server managers
d) Workload managers

14) IDaaS stands for?
a) ID-as-a-Service
b) Identity-as-a-Service
c) Intranet-as-a-Service
d) Interoperability-as-a-Service

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Three. **12**

a) Write note on desired features of a cloud.
b) What is VM Provisioning and Migration in Action?
c) With examples explain Infrastructure as a Service Providers.
d) What is an identity? Explain with example.

Q.3 Attempt Any Two **16**

a) Explain the concept of seven-step model of migration into a cloud.
b) Explain the Virtual Machines Provisioning and Manageability in detail.
c) Write a short note on:
i) IaaS workloads
ii) Pods
iii) Aggregation
iv) Silos

Section – II

Q.4 Attempt Any Three. **12**

a) Describe about the concept of Aneka cloud platform.
b) Explain the concept of Aneka hybrid cloud Architecture.
c) Describe about the Security mapping in cloud security.
d) What are the Data Privacy and Security Issues in cloud computing?

Q.5 Attempt Any Two. **16**

a) Describe about Encryption Auditing and compliance in cloud security.
b) Write a note on Commercial and Business Considerations-A Cloud User's Viewpoint.
c) Explain Jurisdictional Issues Raised by Virtualization and Data Location in detail.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which of the following was one of the weaker aspects of early cloud computing service offerings?
a) Logging b) Integrity checking
c) Consistency checking d) None of the mentioned

2) Which one of the following statements is false?
a) Service Level Agreements (SLAs) is a small aspect of cloud computing.
b) Cloud computing does not have an impact on Software licensing.
c) Cloud computing present new opportunities to users and developers.
d) All of the mentioned

3) Which of the following model type is not trusted in terms of security?
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c) Hybrid d) None of the mentioned

4) CaaS stands for _____ as service.
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5) AWS stands for _____.
a) Amazon Wide Software b) Amazon Web Service
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6) Three service models are defined in cloud computing technology are _____.
a) SaaS, BaaS, PaaS b) SaaS, PaaS, IaaS
c) AaS, PaaS, LaaS d) None of the above

7) Which of the following is an example of a IaaS Cloud service?
a) DigitalOcean b) Linode
c) Rackspace d) All of the above

8) _____ where a VM can be moved from one physical machine to another even as it continues to execute.
a) Load balancing b) Migration
c) Live migration d) Server consolidation

9) _____ provides virtual machines, virtual storage, virtual infrastructure and other hardware assets.

a) IaaS
b) SaaS
c) PaaS
d) All of the mentioned

10) Which of the following is a more sophisticated load balancer?

a) Workspace managers
b) Rack server managers
c) Network server managers
d) Workload managers

11) IDaaS stands for?

a) ID-as-a-Service
b) Identity-as-a-Service
c) Intranet-as-a-Service
d) Interoperability-as-a-Service

12) Which are the three conceptual layers in CometCloud?

a) development, application, physical
b) infrastructure, dynamic, static
c) transport, network, programming
d) programming, service, infrastructure

13) Which of the following service provider provides the highest level of service?

a) SaaS
b) PaaS
c) IaaS
d) All of the mentioned

14) Which of the following are a common means for losing encrypted data?

a) lose the keys
b) lose the encryption standard
c) lose the account
d) all of the mentioned

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Three. **12**

a) Write note on desired features of a cloud.
b) What is VM Provisioning and Migration in Action?
c) With examples explain Infrastructure as a Service Providers.
d) What is an identity? Explain with example.

Q.3 Attempt Any Two **16**

a) Explain the concept of seven-step model of migration into a cloud.
b) Explain the Virtual Machines Provisioning and Manageability in detail.
c) Write a short note on:
i) IaaS workloads
ii) Pods
iii) Aggregation
iv) Silos

Section – II

Q.4 Attempt Any Three. **12**

a) Describe about the concept of Aneka cloud platform.
b) Explain the concept of Aneka hybrid cloud Architecture.
c) Describe about the Security mapping in cloud security.
d) What are the Data Privacy and Security Issues in cloud computing?

Q.5 Attempt Any Two. **16**

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b) Write a note on Commercial and Business Considerations-A Cloud User's Viewpoint.
c) Explain Jurisdictional Issues Raised by Virtualization and Data Location in detail.

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which of the following is a more sophisticated load balancer?
a) Workspace managers b) Rack server managers
c) Network server managers d) Workload managers

2) IDaaS stands for?
a) ID-as-a-Service b) Identity-as-a-Service
c) Intranet-as-a-Service d) Interoperability-as-a-Service

3) Which are the three conceptual layers in CometCloud?
a) development, application, physical
b) infrastructure, dynamic, static
c) transport, network, programming
d) programming, service, infrastructure

4) Which of the following service provider provides the highest level of service?
a) SaaS b) PaaS
c) IaaS d) All of the mentioned

5) Which of the following are a common means for losing encrypted data?
a) lose the keys b) lose the encryption standard
c) lose the account d) all of the mentioned

6) Which of the following was one of the weaker aspects of early cloud computing service offerings?
a) Logging b) Integrity checking
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7) Which one of the following statements is false?
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b) Cloud computing does not have an impact on Software licensing.
c) Cloud computing present new opportunities to users and developers.
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c) Hybrid d) None of the mentioned

9) CaaS stands for _____ as service.
a) Compliance b) Computer
c) Cold d) None of these

10) AWS stands for _____.
a) Amazon Wide Software b) Amazon Web Service
c) Amazon Web Site d) None of the above

11) Three service models are defined in cloud computing technology are _____.
a) SaaS, BaaS, PaaS b) SaaS, PaaS, IaaS
c) AaS, PaaS, LaaS d) None of the above

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c) Rackspace d) All of the above

13) _____ where a VM can be moved from one physical machine to another even as it continues to execute.
a) Load balancing b) Migration
c) Live migration d) Server consolidation

14) _____ provides virtual machines, virtual storage, virtual infrastructure and other hardware assets.
a) IaaS b) SaaS
c) PaaS d) All of the mentioned

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (BTN03606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Three. **12**

a) Write note on desired features of a cloud.
b) What is VM Provisioning and Migration in Action?
c) With examples explain Infrastructure as a Service Providers.
d) What is an identity? Explain with example.

Q.3 Attempt Any Two **16**

a) Explain the concept of seven-step model of migration into a cloud.
b) Explain the Virtual Machines Provisioning and Manageability in detail.
c) Write a short note on:
i) IaaS workloads
ii) Pods
iii) Aggregation
iv) Silos

Section – II

Q.4 Attempt Any Three. **12**

a) Describe about the concept of Aneka cloud platform.
b) Explain the concept of Aneka hybrid cloud Architecture.
c) Describe about the Security mapping in cloud security.
d) What are the Data Privacy and Security Issues in cloud computing?

Q.5 Attempt Any Two. **16**

a) Describe about Encryption Auditing and compliance in cloud security.
b) Write a note on Commercial and Business Considerations-A Cloud User's Viewpoint.
c) Explain Jurisdictional Issues Raised by Virtualization and Data Location in detail.

SLR-GF-266

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Network Security (BTN03608)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternative. **14**

1) In DES algorithm, if input of an s-box is 110011 then we look for _____ row of s-box to obtain output.
a) 0 b) 1
c) 2 d) 3

2) Which of the following(s) is (are) block cipher ____?
a) DES b) AES
c) RC5 d) All of above

3) What is the plaintext of the following ciphertext "I dp d erb" (using Caesar cipher decryption method k=3)?
a) i am a boy b) i am a toy
c) j is b bos d) j am b bos

4) Which of the following algorithm is not used for asymmetric key cryptography?
a) RSA b) Diffie - Hellman
c) Electronic code book algorithm d) None of mentioned

5) ITU-T Recommendation X-800 defines _____.
a) Security Attack b) Security Service
c) Security Mechanism d) All of Above

6) "It is easy to generate a code given a message, but virtually impossible to generate a message given a code" describes the _____ hash function property.
a) Collision resistance b) Strong Collision resistance
c) Preimage resistance d) Second preimage

7) gcd(11,-5) and gcd(-11,5) are ____ and _____ respectively.
a) 1, 1 b) 2, 3
c) 1, 5 d) 2, 5

8) Which of the following is the layer of IEEE 802.11 protocol stack?
a) Physical b) Medium Access Control
c) Logical Link Control d) All above

9) In IEEE 802.11i WLAN, the term WEP stands for _____.
a) Wifi Ethernet Protocol b) Wired Equivalent Privacy
c) Wired Ethernet Policy d) None of above

10) The term _____ refers to a digital signature scheme that involves only the communicating parties.
a) Digital Signature Standard b) Digital Signature
c) Direct Digital Signature d) Direct Digital Algorithm

11) The function of the message and a secret key that produces a fixed-length value that serves as the authenticator is known as _____.
a) MAC b) DSS
c) DDS d) None of above

12) S/MIME is a security enhancement to the MIME based on technology from _____ Data Security.
a) RSA b) DES
c) AES d) Triple DES

13) In IPsec ESP stands for _____.
a) Encapsulating Security Payload b) Enhanced Security Payload
c) Encapsulating Service Policy d) Enhanced Service Policy

14) The default automated key management protocol for IPsec is referred as ____.
a) ISAKMP b) ISKON
c) ISSKMP d) None of above

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Network Security (BTN03608)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**

a) Give the encryption and decryption function of Caesar cipher & Encrypt the Message with Caesar Cipher technique with key=3;
"defend the east wall of the castle"

b) Differentiate between conventional encryption and public key encryption.

c) Explain the two simple Hash Function with diagram.

d) Explain the term confusion and diffusion.

Q.3 Attempt Any Two. **16**

a) Perform encryption and decryption using RSA
i) P = 3, q = 11, e = 7, M = 5
ii) P = 5, q = 11, e = 3, M = 9

b) What are the strength of DES algorithm and explain in detail working of single round of DES with diagram?

c) Explain different types of security attack.

Section – II

Q.4 Attempt Any Three. **12**

a) Describe ESP of IPSec.

b) Write a note on: DKIM (Domain Keys Identified Mail).

c) Draw and explain DAA (Data Authentication Algorithm).

d) Describe the concept of Network Access Control.

Q.5 Attempt Any Two. **16**

a) What is S/MIME? Explain. Describe S/MIME functionality and Messages.

b) Describe in detail DSS (Digital Signature Standard).

c) Explain in detail IEEE 802.11i Wireless LAN Security.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Network Security (BTN03608)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternative. **14**

1) Which of the following is the layer of IEEE 802.11 protocol stack?
a) Physical b) Medium Access Control
c) Logical Link Control d) All above

2) In IEEE 802.11i WLAN, the term WEP stands for _____.
a) Wifi Ethernet Protocol b) Wired Equivalent Privacy
c) Wired Ethernet Policy d) None of above

3) The term _____ refers to a digital signature scheme that involves only the communicating parties.
a) Digital Signature Standard b) Digital Signature
c) Direct Digital Signature d) Direct Digital Algorithm

4) The function of the message and a secret key that produces a fixed-length value that serves as the authenticator is known as _____.
a) MAC b) DSS
c) DDS d) None of above

5) S/MIME is a security enhancement to the MIME based on technology from _____ Data Security.
a) RSA b) DES
c) AES d) Triple DES

6) In IPsec ESP stands for _____.
a) Encapsulating Security Payload b) Enhanced Security Payload
c) Encapsulating Service Policy d) Enhanced Service Policy

7) The default automated key management protocol for IPsec is referred as ____.
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8) In DES algorithm, if input of an s-box is 110011 then we look for _____ row of s-box to obtain output.
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9) Which of the following(s) is (are) block cipher ____?
a) DES b) AES
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10) What is the plaintext of the following ciphertext “I dp d erb" (using Caesar cipher decryption method k=3)?
a) i am a boy b) i am a toy
c) j is b bos d) j am b bos

11) Which of the following algorithm is not used for asymmetric key cryptography?
a) RSA b) Diffie - Hellman
c) Electronic code book algorithm d) None of mentioned

12) ITU-T Recommendation X-800 defines _____.
a) Security Attack b) Security Service
c) Security Mechanism d) All of Above

13) "It is easy to generate a code given a message, but virtually impossible to generate a message given a code" describes the _____ hash function property.
a) Collision resistance b) Strong Collision resistance
c) Preimage resistance d) Second preimage

14) gcd(11,-5) and gcd(-11,5) are ____ and _____ respectively.
a) 1, 1 b) 2, 3
c) 1, 5 d) 2, 5

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Network Security (BTN03608)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**

a) Give the encryption and decryption function of Caesar cipher & Encrypt the Message with Caesar Cipher technique with key=3;
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c) Explain the two simple Hash Function with diagram.

d) Explain the term confusion and diffusion.

Q.3 Attempt Any Two. **16**

a) Perform encryption and decryption using RSA
i) P = 3, q = 11, e = 7, M = 5
ii) P = 5, q = 11, e = 3, M = 9

b) What are the strength of DES algorithm and explain in detail working of single round of DES with diagram?

c) Explain different types of security attack.

Section – II

Q.4 Attempt Any Three. **12**

a) Describe ESP of IPSec.

b) Write a note on: DKIM (Domain Keys Identified Mail).

c) Draw and explain DAA (Data Authentication Algorithm).

d) Describe the concept of Network Access Control.

Q.5 Attempt Any Two. **16**

a) What is S/MIME? Explain. Describe S/MIME functionality and Messages.

b) Describe in detail DSS (Digital Signature Standard).

c) Explain in detail IEEE 802.11i Wireless LAN Security.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Network Security (BTN03608)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternative. **14**

1) The function of the message and a secret key that produces a fixed-length value that serves as the authenticator is known as _____.
a) MAC b) DSS
c) DDS d) None of above

2) S/MIME is a security enhancement to the MIME based on technology from _____ Data Security.
a) RSA b) DES
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3) In IPsec ESP stands for _____.
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b) Digital Signature
c) Direct Digital Signature
d) Direct Digital Algorithm

SLR-GF-266

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Network Security (BTN03608)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

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ii) P = 5, q = 11, e = 3, M = 9

b) What are the strength of DES algorithm and explain in detail working of single round of DES with diagram?

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Section – II

Q.4 Attempt Any Three. **12**

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c) Draw and explain DAA (Data Authentication Algorithm).

d) Describe the concept of Network Access Control.

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a) What is S/MIME? Explain. Describe S/MIME functionality and Messages.

b) Describe in detail DSS (Digital Signature Standard).

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Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Network Security (BTN03608)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternative. **14**

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2) gcd(11,-5) and gcd(-11,5) are ____ and _____ respectively.
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8) In IPsec ESP stands for _____.
a) Encapsulating Security Payload b) Enhanced Security Payload
c) Encapsulating Service Policy d) Enhanced Service Policy

9) The default automated key management protocol for IPsec is referred as ____.
a) ISAKMP b) ISKON
c) ISSKMP d) None of above

10) In DES algorithm, if input of an s-box is 110011 then we look for _____ row of s-box to obtain output.
a) 0 b) 1
c) 2 d) 3

11) Which of the following(s) is (are) block cipher ____?
a) DES b) AES
c) RC5 d) All of above

12) What is the plaintext of the following ciphertext “I dp d erb" (using Caesar cipher decryption method k=3)?
a) i am a boy b) i am a toy
c) j is b bos d) j am b bos

13) Which of the following algorithm is not used for asymmetric key cryptography?
a) RSA b) Diffie - Hellman
c) Electronic code book algorithm d) None of mentioned

14) ITU-T Recommendation X-800 defines _____.
a) Security Attack b) Security Service
c) Security Mechanism d) All of Above

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Network Security (BTN03608)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**

a) Give the encryption and decryption function of Caesar cipher & Encrypt the Message with Caesar Cipher technique with key=3;
"defend the east wall of the castle"

b) Differentiate between conventional encryption and public key encryption.

c) Explain the two simple Hash Function with diagram.

d) Explain the term confusion and diffusion.

Q.3 Attempt Any Two. **16**

a) Perform encryption and decryption using RSA
i) P = 3, q = 11, e = 7, M = 5
ii) P = 5, q = 11, e = 3, M = 9

b) What are the strength of DES algorithm and explain in detail working of single round of DES with diagram?

c) Explain different types of security attack.

Section – II

Q.4 Attempt Any Three. **12**

a) Describe ESP of IPSec.

b) Write a note on: DKIM (Domain Keys Identified Mail).

c) Draw and explain DAA (Data Authentication Algorithm).

d) Describe the concept of Network Access Control.

Q.5 Attempt Any Two. **16**

a) What is S/MIME? Explain. Describe S/MIME functionality and Messages.

b) Describe in detail DSS (Digital Signature Standard).

c) Explain in detail IEEE 802.11i Wireless LAN Security.

SLR-GF-267

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Multiple Choice Questions. **10**

1) Attention, calmness, focus faithfulness etc are values related to _____.
a) Truth b) Love
c) Peace d) Right-conduct

2) _____ refers to the description that describes what one ought to do under a specific circumstance.
a) Normative Inquiry b) Ethics
c) Morality d) Work Ethics

3) _____ covers comprehensively all areas of practice of a particular profession.
a) Self-Assertion b) Profession
c) Professional d) Professionalism

4) An engineer should focus on the good of the clients and the public at large, which means no harm should be done intentionally is called as _____.
a) Proficiency virtues b) Team work virtues
c) Public-Spirited Virtues d) None of the above

5) _____ consists of assigned tasks at the place of employment and achieving the objectives,
a) Moral responsibility b) Job responsibility
c) Casual responsibility d) Legal responsibility

6) _____ implies consciousness which means the sense of awareness.
a) Conscientiousness b) Informed Consent
c) Moral autonomy d) None of the above

7) Public has a right to exposure to safe systems, not to be injured, etc. is _____.
a) Rights and duty ethics b) Honesty
c) Courage d) Loyalty

8) Munasinghe's Approach to Sustainable Development is based on _____.
a) Social b) Economic
c) Environmental d) All of the above

9) _____ is a structured system of processes by which companies and corporations are directed and controlled.

a) Sustainable development
b) Corporate governance
c) Trustworthiness
d) None of the above

10) _____ is a field that identifies resource use, measures and communicates costs of a company's or national economic impact on the environment.

a) Environment
b) Sustainability
c) Environmental accounting
d) None of the above

Seat No.	

Set P

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Q.2 Answer any two. **10**

a) Define Moral Issues and its types.
b) Mention the scope and approaches of engineering ethics.
c) Explain what are Moral Dilemmas?

Q.3 Answer any two. **10**

a) Define following terms.
1) Team work virtue
2) Self-governance Virtue
b) List and explain important roles of codes of ethics.
c) Explain models of professional engineers.

Q.4 Answer any two. **10**

a) Explain the procedure for implementation of the Indian Water mission.
b) Why is solar energy used as an alternative source of energy in India?
c) Elaborate on Nuclear Power in India.

Q.5 Answer any two. **10**

a) Explain Importance of Environmental Accounting.
b) Explain the Core Principles of Good Corporate Governance.
c) Describe basis of economic sustainability.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

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Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Q.2 Answer any two. **10**

a) Define Moral Issues and its types.
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c) Explain what are Moral Dilemmas?

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a) Define following terms.
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b) List and explain important roles of codes of ethics.
c) Explain models of professional engineers.

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a) Explain the procedure for implementation of the Indian Water mission.
b) Why is solar energy used as an alternative source of energy in India?
c) Elaborate on Nuclear Power in India.

Q.5 Answer any two. **10**

a) Explain Importance of Environmental Accounting.
b) Explain the Core Principles of Good Corporate Governance.
c) Describe basis of economic sustainability.

Seat No.	

Set | R

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Multiple Choice Questions. **10**

1) _____ is a structured system of processes by which companies and corporations are directed and controlled.
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c) Trustworthiness d) None of the above

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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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c) Elaborate on Nuclear Power in India.

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c) Describe basis of economic sustainability.

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Seat No.		Set	S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

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b) Ethics
c) Morality
d) Work Ethics

SLR-GF-267

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Management (BTN03609)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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b) Explain the Core Principles of Good Corporate Governance.
c) Describe basis of economic sustainability.

SLR-GF-268

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Microeconomics deals with the study of _____ economic entities.
a) Aggregate b) Individual
c) Macro d) Socio

2) Resources have _____ uses.
a) Limited b) Unlimited
c) Alternative d) Particular

3) Who was the first Governor of RBI?
a) David Warner b) Sir Phillip Smith
c) James Watson d) Sir Osborne Smith

4) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

5) The branch of economics that deals with the allocation of resources is _____.
a) Econometrics b) Macroeconomics
c) Microeconomics d) None of the above

6) Production planning is essential for _____.
a) Inventory management b) Quality management
c) Supply management d) All of the above

7) _____ is the probability of a product operating efficiently within an estimated time frame.
a) Reliability b) Durability
c) Serviceability d) Performance

8) Highest order of Maslow Hierarchy of needs theory is _____.
a) Safety needs b) Esteem needs
c) Self- Actualization needs d) Physiological needs

9) When the size of an organization increases, the functions under production control should _____.
a) Get more decentralized b) Get more centralized
c) Stay the same d) None of the above

10) Who is empowered to control the expansion of bank credit?

a) Finance Minister
b) Home Minister
c) Reserve Bank of India
d) None of the above

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any 4 questions from No. 2. to 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Write difference between formal and informal Organization.
b) Law of Demand and Supply.

Q.3 Basic economic problems and Fiscal policy in Details. **10**

Q.4 Explain Planning, Organizing, Staffing, Directing, Controlling. **10**

Q.5 Explain concepts of marketing, demand forecasting and methods. **10**

Q.6 What is economics and explain Scope of economics. **10**

Q.7 **Write short notes.** **10**
a) Marginal cost, opportunity cost.
b) Departmentalization.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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5) Who is empowered to control the expansion of bank credit?
a) Finance Minister b) Home Minister
c) Reserve Bank of India d) None of the above

6) Microeconomics deals with the study of _____ economic entities.
a) Aggregate b) Individual
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8) Who was the first Governor of RBI?
a) David Warner b) Sir Phillip Smith
c) James Watson d) Sir Osborne Smith

9) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

10) The branch of economics that deals with the allocation of resources is _____.

a) Econometrics
b) Macroeconomics
c) Microeconomics
d) None of the above

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any 4 questions from No. 2. to 7.
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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any 4 questions from No. 2. to 7.
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Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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SLR-GF-268

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Engineering Economics and Management (BTN03610)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any 4 questions from No. 2. to 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Write difference between formal and informal Organization.
b) Law of Demand and Supply.

Q.3 Basic economic problems and Fiscal policy in Details. **10**

Q.4 Explain Planning, Organizing, Staffing, Directing, Controlling. **10**

Q.5 Explain concepts of marketing, demand forecasting and methods. **10**

Q.6 What is economics and explain Scope of economics. **10**

Q.7 **Write short notes.** **10**
a) Marginal cost, opportunity cost.
b) Departmentalization.

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) What are the consequences of disaster on a society?
a) Loss of life b) Damage to property
c) Environmental Damages d) All of the above

2) The primary result of earthquakes is _____.
a) Building and bridge collapsed
b) Rapture of water and gas pipelines
c) Change in course of river and creation of new islands
d) All of the above

3) Disaster management is aimed at _____.
a) Resettling people in the closest unaffected urban area
b) Collection of valuable data for future management objectives
c) Strengthening sewage and drinking water treatment facilities to resist the impact of a future disaster
d) Restoring a community's services, facilities and residences to pre-disaster levels

4) What type of disaster is most prominent in India?
a) Flood b) Draught
c) Cyclone d) Earthquake

5) Structural and Non-structural measures are elements of high category of Risk Reduction measures.
a) Socio-economic measures b) Physical measures
c) Environmental measures d) Post disaster measures

6) Disaster Management includes:
a) Mitigation b) Reconstruction
c) Rehabilitation d) All of the above

7) The primary goal of a disaster preparedness plan is:
a) To protect the population
b) To protect valuable resources
c) To keep communications lines open
d) To protect environmental health personnel

8) Disaster Management Team should include?

a) Awareness generation team b) First aid team
c) Search and Rescue team d) All of the above

9) Disasters can be categorized into various types on the basis of?

a) Its speed b) Its previous history
c) Loss of property they result d) Loss of human life they result

10) In disaster management, mitigation measures involve _____.

a) Governmental action and administration
b) Community action and administration
c) Military action and administration
d) None of the above

SLR-GF-269

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any four questions from Q.2, Q.3, Q.4, Q.5, Q.6 and Q.7.
2) Figures to the right indicate full marks.

Q.2	**a)**	Explain the concept disaster with example.	**05**
	b)	Explain the aim and principles of Disaster Management.	**05**
Q.3	**a)**	Explain the process of SWOT analysis.	**05**
	b)	Explain the scope and process of management system.	**05**
Q.4	**a)**	Explain structural and non-structural mitigation strategies.	**05**
	b)	Explain importance of information and communication in disaster mitigation.	**05**
Q.5	**a)**	Explain the principles of disaster preparedness.	**05**
	b)	What are the three A's of disaster preparedness? Explain.	**05**
Q.6	**a)**	Explain some the security issues in disaster response.	**05**
	b)	Explain the process of mobilization and restoration of essential services.	**05**
Q.7	**a)**	Explain medium- and long-term recovery aspects.	**05**
	b)	Explain reconstruction, rehabilitation, recovery and rebuilding works.	**05**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. **10**

1) Disaster Management includes:
a) Mitigation b) Reconstruction
c) Rehabilitation d) All of the above

2) The primary goal of a disaster preparedness plan is:
a) To protect the population
b) To protect valuable resources
c) To keep communications lines open
d) To protect environmental health personnel

3) Disaster Management Team should include?
a) Awareness generation team b) First aid team
c) Search and Rescue team d) All of the above

4) Disasters can be categorized into various types on the basis of?
a) Its speed b) Its previous history
c) Loss of property they result d) Loss of human life they result

5) In disaster management, mitigation measures involve _____.
a) Governmental action and administration
b) Community action and administration
c) Military action and administration
d) None of the above

6) What are the consequences of disaster on a society?
a) Loss of life b) Damage to property
c) Environmental Damages d) All of the above

7) The primary result of earthquakes is _____.
a) Building and bridge collapsed
b) Rapture of water and gas pipelines
c) Change in course of river and creation of new islands
d) All of the above

8) Disaster management is aimed at _____.
   a) Resettling people in the closest unaffected urban area
   b) Collection of valuable data for future management objectives
   c) Strengthening sewage and drinking water treatment facilities to resist the impact of a future disaster
   d) Restoring a community's services, facilities and residences to pre-disaster levels

9) What type of disaster is most prominent in India?
   a) Flood
   b) Draught
   c) Cyclone
   d) Earthquake

10) Structural and Non-structural measures are elements of high category of Risk Reduction measures.
   a) Socio-economic measures
   b) Physical measures
   c) Environmental measures
   d) Post disaster measures

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Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any four questions from Q.2, Q.3, Q.4, Q.5, Q.6 and Q.7.
2) Figures to the right indicate full marks.

Q.2	**a)**	Explain the concept disaster with example.	**05**
	b)	Explain the aim and principles of Disaster Management.	**05**
Q.3	**a)**	Explain the process of SWOT analysis.	**05**
	b)	Explain the scope and process of management system.	**05**
Q.4	**a)**	Explain structural and non-structural mitigation strategies.	**05**
	b)	Explain importance of information and communication in disaster mitigation.	**05**
Q.5	**a)**	Explain the principles of disaster preparedness.	**05**
	b)	What are the three A's of disaster preparedness? Explain.	**05**
Q.6	**a)**	Explain some the security issues in disaster response.	**05**
	b)	Explain the process of mobilization and restoration of essential services.	**05**
Q.7	**a)**	Explain medium- and long-term recovery aspects.	**05**
	b)	Explain reconstruction, rehabilitation, recovery and rebuilding works.	**05**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Disasters can be categorized into various types on the basis of?
a) Its speed b) Its previous history
c) Loss of property they result d) Loss of human life they result

2) In disaster management, mitigation measures involve _____.
a) Governmental action and administration
b) Community action and administration
c) Military action and administration
d) None of the above

3) What are the consequences of disaster on a society?
a) Loss of life b) Damage to property
c) Environmental Damages d) All of the above

4) The primary result of earthquakes is _____.
a) Building and bridge collapsed
b) Rapture of water and gas pipelines
c) Change in course of river and creation of new islands
d) All of the above

5) Disaster management is aimed at _____.
a) Resettling people in the closest unaffected urban area
b) Collection of valuable data for future management objectives
c) Strengthening sewage and drinking water treatment facilities to resist the impact of a future disaster
d) Restoring a community's services, facilities and residences to pre-disaster levels

6) What type of disaster is most prominent in India?
a) Flood b) Draught
c) Cyclone d) Earthquake

7) Structural and Non-structural measures are elements of high category of Risk Reduction measures.
a) Socio-economic measures b) Physical measures
c) Environmental measures d) Post disaster measures

8) Disaster Management includes:

a) Mitigation b) Reconstruction

c) Rehabilitation d) All of the above

9) The primary goal of a disaster preparedness plan is:

a) To protect the population

b) To protect valuable resources

c) To keep communications lines open

d) To protect environmental health personnel

10) Disaster Management Team should include?

a) Awareness generation team b) First aid team

c) Search and Rescue team d) All of the above

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Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any four questions from Q.2, Q.3, Q.4, Q.5, Q.6 and Q.7.
2) Figures to the right indicate full marks.

Q.2	**a)**	Explain the concept disaster with example.	**05**
	b)	Explain the aim and principles of Disaster Management.	**05**
Q.3	**a)**	Explain the process of SWOT analysis.	**05**
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	b)	Explain importance of information and communication in disaster mitigation.	**05**
Q.5	**a)**	Explain the principles of disaster preparedness.	**05**
	b)	What are the three A's of disaster preparedness? Explain.	**05**
Q.6	**a)**	Explain some the security issues in disaster response.	**05**
	b)	Explain the process of mobilization and restoration of essential services.	**05**
Q.7	**a)**	Explain medium- and long-term recovery aspects.	**05**
	b)	Explain reconstruction, rehabilitation, recovery and rebuilding works.	**05**

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Disaster management is aimed at _____.
a) Resettling people in the closest unaffected urban area
b) Collection of valuable data for future management objectives
c) Strengthening sewage and drinking water treatment facilities to resist the impact of a future disaster
d) Restoring a community's services, facilities and residences to pre-disaster levels

2) What type of disaster is most prominent in India?
a) Flood b) Draught
c) Cyclone d) Earthquake

3) Structural and Non-structural measures are elements of high category of Risk Reduction measures.
a) Socio-economic measures b) Physical measures
c) Environmental measures d) Post disaster measures

4) Disaster Management includes:
a) Mitigation b) Reconstruction
c) Rehabilitation d) All of the above

5) The primary goal of a disaster preparedness plan is:
a) To protect the population
b) To protect valuable resources
c) To keep communications lines open
d) To protect environmental health personnel

6) Disaster Management Team should include?
a) Awareness generation team b) First aid team
c) Search and Rescue team d) All of the above

7) Disasters can be categorized into various types on the basis of?
a) Its speed b) Its previous history
c) Loss of property they result d) Loss of human life they result

8) In disaster management, mitigation measures involve _____.
a) Governmental action and administration
b) Community action and administration
c) Military action and administration
d) None of the above

9) What are the consequences of disaster on a society?
a) Loss of life
b) Damage to property
c) Environmental Damages
d) All of the above

10) The primary result of earthquakes is _____.
a) Building and bridge collapsed
b) Rapture of water and gas pipelines
c) Change in course of river and creation of new islands
d) All of the above

SLR-GF-269

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Disaster Management (BTN03611)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any four questions from Q.2, Q.3, Q.4, Q.5, Q.6 and Q.7.
2) Figures to the right indicate full marks.

Q.2	**a)**	Explain the concept disaster with example.	**05**
	b)	Explain the aim and principles of Disaster Management.	**05**
Q.3	**a)**	Explain the process of SWOT analysis.	**05**
	b)	Explain the scope and process of management system.	**05**
Q.4	**a)**	Explain structural and non-structural mitigation strategies.	**05**
	b)	Explain importance of information and communication in disaster mitigation.	**05**
Q.5	**a)**	Explain the principles of disaster preparedness.	**05**
	b)	What are the three A's of disaster preparedness? Explain.	**05**
Q.6	**a)**	Explain some the security issues in disaster response.	**05**
	b)	Explain the process of mobilization and restoration of essential services.	**05**
Q.7	**a)**	Explain medium- and long-term recovery aspects.	**05**
	b)	Explain reconstruction, rehabilitation, recovery and rebuilding works.	**05**

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Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ is the ability to train computer to understand both human speech and written text.
a) Statistics b) Data Mining
c) Inference d) Natural Language Processing

2) The member-collection example of Tree Forest is a _____ kind of relation.
a) Meronymy b) Antonymy
c) Entailment d) Troponym

3) _____ is the process that assigns labels to words or phrases in a sentence that indicates their semantic role in the sentence, such as that of an agent, goal, or result.
a) POS tagging b) Semantic role labelling
c) Word sequencing labeling d) None of these

4) How to use Word-Net to measure semantic relatedness between words?
a) Measure the shortest path between two words on Word-Net
b) Count the number of shared parent nodes
c) Measure the difference between their depths in Word-Net
d) Measure the difference between the sizes of child nodes they have

5) _____ feedback attempts to automate the manual part of relevance feedback, retrieve an initial set of relevant documents and assume that top m ranked documents are relevant.
a) Relevance b) Indirect relevance
c) Pseudo relevance d) All of the above

6) _____ computation is an important operation in machine learning and other fields that allows us to select the most likely output given a specific input and probability distribution.
a) Arg-max b) Max
c) Arg-min d) None of these

7) The _____ of articulation refers to the location in the mouth where the sound is produced and _____ of articulation refers to how the sound is produced.

a) Manner, place b) Place, manner
c) Sound, manner d) Sound, place

8) Some common technique (s) used for word boundary detection is/are _____.

a) Rule based approach b) Statistical approach
c) Machine learning approach d) All of these

9) _____ is the study of the structure of words, it is a branch of linguistics that deals with the internal composition of words, how they are formed and their relationship to other words in the same language.

a) Morphology b) Phonology
c) WordNet d) None of these

10) _____ are the types of statistical model that can be used to predict the probability of an event occurring and are trained on a set of data that includes both the event and the features that are associated with the event and these models are learns to predict the probability of the event occurring given the features.

a) Entropy models b) Min-max entropy models
c) Maximum entropy models d) All of these

11) The Hidden Markov Model (HMM) composed of _____.

a) State transition matrix b) Initial state distribution
c) Observation probability matrix d) All of these

12) Which of the following are the machine translation tools?

a) GIZA++ b) Moses
c) Both a and b d) None of these

13) _____ is a sub-field of information retrieval, can meet the purpose of users to retrieve information in other languages which are different from the queries, thus greatly improving the ability of users to retrieve multi-language documents.

a) Multi-information retrieval
b) Cross-language information retrieval
c) Cross-compiler
d) None of these

14) _____ is using dynamic programming algorithms to compute the most likely parse(s) of a given sentence, given a statistical model of the syntactic structure of a language.

a) Probabilistic parsing b) Recursive descent parsing
c) Both a and b d) None of these

Seat No.	

Set | P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) What is NLP? Explain its various applications.
b) What is word sense disambiguation? Explain it with example.
c) Elaborate on the process of word boundary detection.
d) What is top-down parsing? Perform parsing using simple top-down parsing for the sentence “Sham ate an apple” using the grammar given below: (Draw parse tree or Parsing table)
S → NP VP
NP → PRN | ART N
VP → V NP |V
PRN → sham
V → ate
ART → an
N → apple

Q.3 Attempt any two. **08**

a) Elaborate on Resnick's work on Word-Net similarity.
b) What is probabilistic parsing? Explain why it is used in syntax analysis.
c) Explain Metaphors and co-references with example.

Q.4 Explain in detail with diagram the concept of automatic morphology learning. **08**

Section – II

Q.5 Attempt any three. **12**

a) Elaborate on the Machine translation tools Giza++ and Moses.
b) What is HMM? How HMM is used for speech recognition?
c) Explain the Viterbi algorithm with example.
d) Explain the universal networking language.

Q.6 Attempt any two. **08**

a) Explain part of speech tagging with example.
b) What is text entailment? Explain it with example.
c) What is the use of Baum Welch algorithm? Explain it in detail.

Q.7 Write note on the following term: **08**

a) Semantic role extraction
b) Sentimental analysis

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Some common technique (s) used for word boundary detection is/are _____.
a) Rule based approach b) Statistical approach
c) Machine learning approach d) All of these

2) _____ is the study of the structure of words, it is a branch of linguistics that deals with the internal composition of words, how they are formed and their relationship to other words in the same language.
a) Morphology b) Phonology
c) WordNet d) None of these

3) _____ are the types of statistical model that can be used to predict the probability of an event occurring and are trained on a set of data that includes both the event and the features that are associated with the event and these models are learns to predict the probability of the event occurring given the features.
a) Entropy models b) Min-max entropy models
c) Maximum entropy models d) All of these

4) The Hidden Markov Model (HMM) composed of _____.
a) State transition matrix b) Initial state distribution
c) Observation probability matrix d) All of these

5) Which of the following are the machine translation tools?
a) GIZA++ b) Moses
c) Both a and b d) None of these

6) _____ is a sub-field of information retrieval, can meet the purpose of users to retrieve information in other languages which are different from the queries, thus greatly improving the ability of users to retrieve multi-language documents.
a) Multi-information retrieval
b) Cross-language information retrieval
c) Cross-compiler
d) None of these

7) _____ is using dynamic programming algorithms to compute the most likely parse(s) of a given sentence, given a statistical model of the syntactic structure of a language.

a) Probabilistic parsing
b) Recursive descent parsing
c) Both a and b
d) None of these

8) _____ is the ability to train computer to understand both human speech and written text.

a) Statistics
b) Data Mining
c) Inference
d) Natural Language Processing

9) The member-collection example of Tree Forest is a _____ kind of relation.

a) Meronymy
b) Antonymy
c) Entailment
d) Troponym

10) _____ is the process that assigns labels to words or phrases in a sentence that indicates their semantic role in the sentence, such as that of an agent, goal, or result.

a) POS tagging
b) Semantic role labelling
c) Word sequencing labeling
d) None of these

11) How to use Word-Net to measure semantic relatedness between words?

a) Measure the shortest path between two words on Word-Net
b) Count the number of shared parent nodes
c) Measure the difference between their depths in Word-Net
d) Measure the difference between the sizes of child nodes they have

12) _____ feedback attempts to automate the manual part of relevance feedback, retrieve an initial set of relevant documents and assume that top m ranked documents are relevant.

a) Relevance
b) Indirect relevance
c) Pseudo relevance
d) All of the above

13) _____ computation is an important operation in machine learning and other fields that allows us to select the most likely output given a specific input and probability distribution.

a) Arg-max
b) Max
c) Arg-min
d) None of these

14) The _____ of articulation refers to the location in the mouth where the sound is produced and _____ of articulation refers to how the sound is produced.

a) Manner, place
b) Place, manner
c) Sound, manner
d) Sound, place

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) What is NLP? Explain its various applications.
b) What is word sense disambiguation? Explain it with example.
c) Elaborate on the process of word boundary detection.
d) What is top-down parsing? Perform parsing using simple top-down parsing for the sentence “Sham ate an apple” using the grammar given below: (Draw parse tree or Parsing table)
S → NP VP
NP → PRN | ART N
VP → V NP |V
PRN → sham
V → ate
ART → an
N → apple

Q.3 Attempt any two. **08**

a) Elaborate on Resnick's work on Word-Net similarity.
b) What is probabilistic parsing? Explain why it is used in syntax analysis.
c) Explain Metaphors and co-references with example.

Q.4 Explain in detail with diagram the concept of automatic morphology learning. **08**

Section – II

Q.5 Attempt any three. **12**

a) Elaborate on the Machine translation tools Giza++ and Moses.
b) What is HMM? How HMM is used for speech recognition?
c) Explain the Viterbi algorithm with example.
d) Explain the universal networking language.

Q.6 Attempt any two. **08**

a) Explain part of speech tagging with example.
b) What is text entailment? Explain it with example.
c) What is the use of Baum Welch algorithm? Explain it in detail.

Q.7 Write note on the following term: **08**

a) Semantic role extraction
b) Sentimental analysis

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The Hidden Markov Model (HMM) composed of _____.
a) State transition matrix b) Initial state distribution
c) Observation probability matrix d) All of these

2) Which of the following are the machine translation tools?
a) GIZA++ b) Moses
c) Both a and b d) None of these

3) _____ is a sub-field of information retrieval, can meet the purpose of users to retrieve information in other languages which are different from the queries, thus greatly improving the ability of users to retrieve multi-language documents.
a) Multi-information retrieval
b) Cross-language information retrieval
c) Cross-compiler
d) None of these

4) _____ is using dynamic programming algorithms to compute the most likely parse(s) of a given sentence, given a statistical model of the syntactic structure of a language.
a) Probabilistic parsing b) Recursive descent parsing
c) Both a and b d) None of these

5) _____ is the ability to train computer to understand both human speech and written text.
a) Statistics b) Data Mining
c) Inference d) Natural Language Processing

6) The member-collection example of Tree Forest is a _____ kind of relation.
a) Meronymy b) Antonymy
c) Entailment d) Troponym

7) _____ is the process that assigns labels to words or phrases in a sentence that indicates their semantic role in the sentence, such as that of an agent, goal, or result.
a) POS tagging b) Semantic role labelling
c) Word sequencing labeling d) None of these

8) How to use Word-Net to measure semantic relatedness between words?
a) Measure the shortest path between two words on Word-Net
b) Count the number of shared parent nodes
c) Measure the difference between their depths in Word-Net
d) Measure the difference between the sizes of child nodes they have

9) _____ feedback attempts to automate the manual part of relevance feedback, retrieve an initial set of relevant documents and assume that top m ranked documents are relevant.
a) Relevance
b) Indirect relevance
c) Pseudo relevance
d) All of the above

10) _____ computation is an important operation in machine learning and other fields that allows us to select the most likely output given a specific input and probability distribution.
a) Arg-max
b) Max
c) Arg-min
d) None of these

11) The _____ of articulation refers to the location in the mouth where the sound is produced and _____ of articulation refers to how the sound is produced.
a) Manner, place
b) Place, manner
c) Sound, manner
d) Sound, place

12) Some common technique (s) used for word boundary detection is/are _____.
a) Rule based approach
b) Statistical approach
c) Machine learning approach
d) All of these

13) _____ is the study of the structure of words, it is a branch of linguistics that deals with the internal composition of words, how they are formed and their relationship to other words in the same language.
a) Morphology
b) Phonology
c) WordNet
d) None of these

14) _____ are the types of statistical model that can be used to predict the probability of an event occurring and are trained on a set of data that includes both the event and the features that are associated with the event and these models are learns to predict the probability of the event occurring given the features.
a) Entropy models
b) Min-max entropy models
c) Maximum entropy models
d) All of these

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) What is NLP? Explain its various applications.
b) What is word sense disambiguation? Explain it with example.
c) Elaborate on the process of word boundary detection.
d) What is top-down parsing? Perform parsing using simple top-down parsing for the sentence “Sham ate an apple” using the grammar given below: (Draw parse tree or Parsing table)
S → NP VP
NP → PRN | ART N
VP → V NP |V
PRN → sham
V → ate
ART → an
N → apple

Q.3 Attempt any two. **08**

a) Elaborate on Resnick's work on Word-Net similarity.
b) What is probabilistic parsing? Explain why it is used in syntax analysis.
c) Explain Metaphors and co-references with example.

Q.4 Explain in detail with diagram the concept of automatic morphology learning. **08**

Section – II

Q.5 Attempt any three. **12**

a) Elaborate on the Machine translation tools Giza++ and Moses.
b) What is HMM? How HMM is used for speech recognition?
c) Explain the Viterbi algorithm with example.
d) Explain the universal networking language.

Q.6 Attempt any two. **08**

a) Explain part of speech tagging with example.
b) What is text entailment? Explain it with example.
c) What is the use of Baum Welch algorithm? Explain it in detail.

Q.7 Write note on the following term: **08**

a) Semantic role extraction
b) Sentimental analysis

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ computation is an important operation in machine learning and other fields that allows us to select the most likely output given a specific input and probability distribution.
a) Arg-max b) Max
c) Arg-min d) None of these

2) The _____ of articulation refers to the location in the mouth where the sound is produced and _____ of articulation refers to how the sound is produced.
a) Manner, place b) Place, manner
c) Sound, manner d) Sound, place

3) Some common technique (s) used for word boundary detection is/are _____.
a) Rule based approach b) Statistical approach
c) Machine learning approach d) All of these

4) _____ is the study of the structure of words, it is a branch of linguistics that deals with the internal composition of words, how they are formed and their relationship to other words in the same language.
a) Morphology b) Phonology
c) WordNet d) None of these

5) _____ are the types of statistical model that can be used to predict the probability of an event occurring and are trained on a set of data that includes both the event and the features that are associated with the event and these models are learns to predict the probability of the event occurring given the features.
a) Entropy models b) Min-max entropy models
c) Maximum entropy models d) All of these

6) The Hidden Markov Model (HMM) composed of _____.
a) State transition matrix b) Initial state distribution
c) Observation probability matrix d) All of these

7) Which of the following are the machine translation tools?
a) GIZA++ b) Moses
c) Both a and b d) None of these

8) _____ is a sub-field of information retrieval, can meet the purpose of users to retrieve information in other languages which are different from the queries, thus greatly improving the ability of users to retrieve multi-language documents.
a) Multi-information retrieval
b) Cross-language information retrieval
c) Cross-compiler
d) None of these

9) _____ is using dynamic programming algorithms to compute the most likely parse(s) of a given sentence, given a statistical model of the syntactic structure of a language.
a) Probabilistic parsing
b) Recursive descent parsing
c) Both a and b
d) None of these

10) _____ is the ability to train computer to understand both human speech and written text.
a) Statistics
b) Data Mining
c) Inference
d) Natural Language Processing

11) The member-collection example of Tree Forest is a _____ kind of relation.
a) Meronymy
b) Antonymy
c) Entailment
d) Troponym

12) _____ is the process that assigns labels to words or phrases in a sentence that indicates their semantic role in the sentence, such as that of an agent, goal, or result.
a) POS tagging
b) Semantic role labelling
c) Word sequencing labeling
d) None of these

13) How to use Word-Net to measure semantic relatedness between words?
a) Measure the shortest path between two words on Word-Net
b) Count the number of shared parent nodes
c) Measure the difference between their depths in Word-Net
d) Measure the difference between the sizes of child nodes they have

14) _____ feedback attempts to automate the manual part of relevance feedback, retrieve an initial set of relevant documents and assume that top m ranked documents are relevant.
a) Relevance
b) Indirect relevance
c) Pseudo relevance
d) All of the above

SLR-GF-270

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Natural Language Processing (BTN03612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) What is NLP? Explain its various applications.
b) What is word sense disambiguation? Explain it with example.
c) Elaborate on the process of word boundary detection.
d) What is top-down parsing? Perform parsing using simple top-down parsing for the sentence “Sham ate an apple” using the grammar given below: (Draw parse tree or Parsing table)
S → NP VP
NP → PRN | ART N
VP → V NP |V
PRN → sham
V → ate
ART → an
N → apple

Q.3 Attempt any two. **08**

a) Elaborate on Resnick's work on Word-Net similarity.
b) What is probabilistic parsing? Explain why it is used in syntax analysis.
c) Explain Metaphors and co-references with example.

Q.4 Explain in detail with diagram the concept of automatic morphology learning. **08**

Section – II

Q.5 Attempt any three. **12**

a) Elaborate on the Machine translation tools Giza++ and Moses.
b) What is HMM? How HMM is used for speech recognition?
c) Explain the Viterbi algorithm with example.
d) Explain the universal networking language.

Q.6 Attempt any two. **08**

a) Explain part of speech tagging with example.
b) What is text entailment? Explain it with example.
c) What is the use of Baum Welch algorithm? Explain it in detail.

Q.7 Write note on the following term: **08**

a) Semantic role extraction
b) Sentimental analysis

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Identify the type of learning in which labeled training data is used _____
a) Semi supervised Learning b) Supervised Learning
c) Reinforcement Learning d) Unsupervised Learning

2) What is machine learning?
a) The autonomous acquisition of knowledge through the use of manual programs
b) The selective acquisition of knowledge through the use of manual programs
c) The autonomous acquisition of knowledge through the use of computer programs
d) The selective acquisition of knowledge through the use of computer programs

3) Machine learning is subset of _____.
a) Data Learning b) Deep Learning
c) Artificial Intelligence d) None of the above

4) Which of the following techniques would perform better for reducing dimensions of a data set?
a) removing columns which have high variance in data
b) removing columns which have too many missing value
c) removing columns with dissimilar data trends
d) none of the above

5) You are given reviews of few Netflix series marked as positive, negative and neutral Classifying reviews of a new Netflix series is an example of _____.
a) unsupervised learning b) semi supervised learning
c) supervised learning d) reinforcement learning

6) To implement existing machine learning algorithms from scratch or you need to devise new ones, you require a profound knowledge of _____.
a) probability b) linear algebra
c) multivariable calculus d) all of the above

7) Probability is a study of _____.
a) randomness b) uncertainty
c) inferential statistics d) all of the given options

8) Which of the following cross validation versions may not be suitable for very large datasets with hundreds of thousands of samples?
a) k-fold cross-validation b) Leave-one-out cross-validation
c) Holdout method d) All of the above

9) Assume that A and B are two events. If P(A, B) increases while P(A) decreases, then which of the following must be true?
a) P(A|B) decreases b) P(B|A) increases
c) P(B) decreases d) P(A|B) increases

10) Which of the following is a disadvantage of decision trees?
a) Factor analysis
b) Decision trees are robust to outliers
c) Decision trees are prone to be overfit
d) None of the above

11) What is the purpose of cross-validation in machine learning?
a) To evaluate the performance of a model on a held-out test set
b) To evaluate the performance of a model on different subsets of the data
c) To compare the performance of different models
d) To tune the hyperparameters of a model

12) Which of the following is a common activation function used in deep learning?
a) Sigmoid b) Linear
c) Exponential d) Quadratic

13) Which of the following is a common approach to ensemble learning?
a) Bagging b) Boosting
c) Stacking d) All of the above

14) Which of the following is a common approach to reducing overfitting in deep learning?
a) Dropout b) Batch normalization
c) Early stopping d) All of the above

SLR-GF-271

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) Differentiate supervised and unsupervised machine learning.
b) How does Machine Learning differ from Deep Learning? What is over fitting and how can you avoid it?
c) Explain the model updating by Mini-Batch and Online.
d) Explain the term cost function and error curve.

Q.3 Attempt any two. **16**

a) What is probability? State and explain the naïve bayes theorem.
b) Differentiate Descriptive vs. Inferential Statistics.
c) List and explain the steps to executing a pilot project.

Section – II

Q.4 Attempt any three. **12**

a) Differentiate bias and variance problems.
b) Explain the working of stacking.
c) Write a note on Testing Multiple Models, Averaging Models.

Q.5 Attempt any two. **16**

a) What are the different types of sentiment analysis? Explain any two.
b) Explain the terms Training, Validating, and Testing.
c) What are the different types of cross-validation in machine learning? Explain any two of them.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following cross validation versions may not be suitable for very large datasets with hundreds of thousands of samples?
a) k-fold cross-validation b) Leave-one-out cross-validation
c) Holdout method d) All of the above

2) Assume that A and B are two events. If P(A, B) increases while P(A) decreases, then which of the following must be true?
a) P(A|B) decreases b) P(B|A) increases
c) P(B) decreases d) P(A|B) increases

3) Which of the following is a disadvantage of decision trees?
a) Factor analysis
b) Decision trees are robust to outliers
c) Decision trees are prone to be overfit
d) None of the above

4) What is the purpose of cross-validation in machine learning?
a) To evaluate the performance of a model on a held-out test set
b) To evaluate the performance of a model on different subsets of the data
c) To compare the performance of different models
d) To tune the hyperparameters of a model

5) Which of the following is a common activation function used in deep learning?
a) Sigmoid b) Linear
c) Exponential d) Quadratic

6) Which of the following is a common approach to ensemble learning?
a) Bagging b) Boosting
c) Stacking d) All of the above

7) Which of the following is a common approach to reducing overfitting in deep learning?
a) Dropout b) Batch normalization
c) Early stopping d) All of the above

8) Identify the type of learning in which labeled training data is used _____
a) Semi supervised Learning b) Supervised Learning
c) Reinforcement Learning d) Unsupervised Learning

9) What is machine learning?
- a) The autonomous acquisition of knowledge through the use of manual programs
- b) The selective acquisition of knowledge through the use of manual programs
- c) The autonomous acquisition of knowledge through the use of computer programs
- d) The selective acquisition of knowledge through the use of computer programs

10) Machine learning is subset of _____.
- a) Data Learning
- b) Deep Learning
- c) Artificial Intelligence
- d) None of the above

11) Which of the following techniques would perform better for reducing dimensions of a data set?
- a) removing columns which have high variance in data
- b) removing columns which have too many missing value
- c) removing columns with dissimilar data trends
- d) none of the above

12) You are given reviews of few Netflix series marked as positive, negative and neutral Classifying reviews of a new Netflix series is an example of _____.
- a) unsupervised learning
- b) semi supervised learning
- c) supervised learning
- d) reinforcement learning

13) To implement existing machine learning algorithms from scratch or you need to devise new ones, you require a profound knowledge of _____.
- a) probability
- b) linear algebra
- c) multivariable calculus
- d) all of the above

14) Probability is a study of _____.
- a) randomness
- b) uncertainty
- c) inferential statistics
- d) all of the given options

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**
- **a)** Differentiate supervised and unsupervised machine learning.
- **b)** How does Machine Learning differ from Deep Learning? What is over fitting and how can you avoid it?
- **c)** Explain the model updating by Mini-Batch and Online.
- **d)** Explain the term cost function and error curve.

Q.3 Attempt any two. **16**
- **a)** What is probability? State and explain the naïve bayes theorem.
- **b)** Differentiate Descriptive vs. Inferential Statistics.
- **c)** List and explain the steps to executing a pilot project.

Section – II

Q.4 Attempt any three. **12**
- **a)** Differentiate bias and variance problems.
- **b)** Explain the working of stacking.
- **c)** Write a note on Testing Multiple Models, Averaging Models.

Q.5 Attempt any two. **16**
- **a)** What are the different types of sentiment analysis? Explain any two.
- **b)** Explain the terms Training, Validating, and Testing.
- **c)** What are the different types of cross-validation in machine learning? Explain any two of them.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What is the purpose of cross-validation in machine learning?
a) To evaluate the performance of a model on a held-out test set
b) To evaluate the performance of a model on different subsets of the data
c) To compare the performance of different models
d) To tune the hyperparameters of a model

2) Which of the following is a common activation function used in deep learning?
a) Sigmoid b) Linear
c) Exponential d) Quadratic

3) Which of the following is a common approach to ensemble learning?
a) Bagging b) Boosting
c) Stacking d) All of the above

4) Which of the following is a common approach to reducing overfitting in deep learning?
a) Dropout b) Batch normalization
c) Early stopping d) All of the above

5) Identify the type of learning in which labeled training data is used _____
a) Semi supervised Learning b) Supervised Learning
c) Reinforcement Learning d) Unsupervised Learning

6) What is machine learning?
a) The autonomous acquisition of knowledge through the use of manual programs
b) The selective acquisition of knowledge through the use of manual programs
c) The autonomous acquisition of knowledge through the use of computer programs
d) The selective acquisition of knowledge through the use of computer programs

7) Machine learning is subset of _____.
a) Data Learning b) Deep Learning
c) Artificial Intelligence d) None of the above

8) Which of the following techniques would perform better for reducing dimensions of a data set?
a) removing columns which have high variance in data
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9) You are given reviews of few Netflix series marked as positive, negative and neutral Classifying reviews of a new Netflix series is an example of _____.
a) unsupervised learning b) semi supervised learning
c) supervised learning d) reinforcement learning

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a) probability b) linear algebra
c) multivariable calculus d) all of the above

11) Probability is a study of _____.
a) randomness b) uncertainty
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12) Which of the following cross validation versions may not be suitable for very large datasets with hundreds of thousands of samples?
a) k-fold cross-validation b) Leave-one-out cross-validation
c) Holdout method d) All of the above

13) Assume that A and B are two events. If P(A, B) increases while P(A) decreases, then which of the following must be true?
a) P(A|B) decreases b) P(B|A) increases
c) P(B) decreases d) P(A|B) increases

14) Which of the following is a disadvantage of decision trees?
a) Factor analysis
b) Decision trees are robust to outliers
c) Decision trees are prone to be overfit
d) None of the above

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**
- **a)** Differentiate supervised and unsupervised machine learning.
- **b)** How does Machine Learning differ from Deep Learning? What is over fitting and how can you avoid it?
- **c)** Explain the model updating by Mini-Batch and Online.
- **d)** Explain the term cost function and error curve.

Q.3 Attempt any two. **16**
- **a)** What is probability? State and explain the naïve bayes theorem.
- **b)** Differentiate Descriptive vs. Inferential Statistics.
- **c)** List and explain the steps to executing a pilot project.

Section – II

Q.4 Attempt any three. **12**
- **a)** Differentiate bias and variance problems.
- **b)** Explain the working of stacking.
- **c)** Write a note on Testing Multiple Models, Averaging Models.

Q.5 Attempt any two. **16**
- **a)** What are the different types of sentiment analysis? Explain any two.
- **b)** Explain the terms Training, Validating, and Testing.
- **c)** What are the different types of cross-validation in machine learning? Explain any two of them.

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) To implement existing machine learning algorithms from scratch or you need to devise new ones, you require a profound knowledge of _____.
a) probability b) linear algebra
c) multivariable calculus d) all of the above

2) Probability is a study of _____.
a) randomness b) uncertainty
c) inferential statistics d) all of the given options

3) Which of the following cross validation versions may not be suitable for very large datasets with hundreds of thousands of samples?
a) k-fold cross-validation b) Leave-one-out cross-validation
c) Holdout method d) All of the above

4) Assume that A and B are two events. If P(A, B) increases while P(A) decreases, then which of the following must be true?
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c) P(B) decreases d) P(A|B) increases

5) Which of the following is a disadvantage of decision trees?
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d) None of the above

6) What is the purpose of cross-validation in machine learning?
a) To evaluate the performance of a model on a held-out test set
b) To evaluate the performance of a model on different subsets of the data
c) To compare the performance of different models
d) To tune the hyperparameters of a model

7) Which of the following is a common activation function used in deep learning?
a) Sigmoid b) Linear
c) Exponential d) Quadratic

8) Which of the following is a common approach to ensemble learning?
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c) Stacking d) All of the above

9) Which of the following is a common approach to reducing overfitting in deep learning?

a) Dropout
b) Batch normalization
c) Early stopping
d) All of the above

10) Identify the type of learning in which labeled training data is used _____

a) Semi supervised Learning
b) Supervised Learning
c) Reinforcement Learning
d) Unsupervised Learning

11) What is machine learning?

a) The autonomous acquisition of knowledge through the use of manual programs
b) The selective acquisition of knowledge through the use of manual programs
c) The autonomous acquisition of knowledge through the use of computer programs
d) The selective acquisition of knowledge through the use of computer programs

12) Machine learning is subset of _____.

a) Data Learning
b) Deep Learning
c) Artificial Intelligence
d) None of the above

13) Which of the following techniques would perform better for reducing dimensions of a data set?

a) removing columns which have high variance in data
b) removing columns which have too many missing value
c) removing columns with dissimilar data trends
d) none of the above

14) You are given reviews of few Netflix series marked as positive, negative and neutral Classifying reviews of a new Netflix series is an example of _____.

a) unsupervised learning
b) semi supervised learning
c) supervised learning
d) reinforcement learning

SLR-GF-271

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov - 2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (BTN03613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**
- **a)** Differentiate supervised and unsupervised machine learning.
- **b)** How does Machine Learning differ from Deep Learning? What is over fitting and how can you avoid it?
- **c)** Explain the model updating by Mini-Batch and Online.
- **d)** Explain the term cost function and error curve.

Q.3 Attempt any two. **16**
- **a)** What is probability? State and explain the naïve bayes theorem.
- **b)** Differentiate Descriptive vs. Inferential Statistics.
- **c)** List and explain the steps to executing a pilot project.

Section – II

Q.4 Attempt any three. **12**
- **a)** Differentiate bias and variance problems.
- **b)** Explain the working of stacking.
- **c)** Write a note on Testing Multiple Models, Averaging Models.

Q.5 Attempt any two. **16**
- **a)** What are the different types of sentiment analysis? Explain any two.
- **b)** Explain the terms Training, Validating, and Testing.
- **c)** What are the different types of cross-validation in machine learning? Explain any two of them.

SLR-GF-272

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cyber forensic (BTN03614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 PM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What is cyberstalking?
a) Saying hello to your neighbours
b) Stalking someone through the internet
c) Peeking at someone through bushes
d) Playing an online game with someone

2) Many Cyber Crimes comes under Indian Penal Code Which one of the following is an example?
a) Sending Threatening message by Email
b) Forgery of Electronic Record
c) Bogus Website
d) All of above

3) In _____ attacks an attacker do not contact with authorizing party for stealing password.
a) passive online b) active online
c) Offline d) Non-electronic

4) ____ is time based SQL injection attack.
a) Quick detection b) Initial Exploitation
c) Blind SQL Injection d) Inline Comments

5) SQL injection is an attack in which _____ code is inserted into strings that are late passed to an instance of SQL Server.
a) Malicious b) Redundant
c) Clean d) non malicious

6) A _____ is a means of access to a program that bypasses security mechanism.
a) Proxy b) Backdoor
c) Virus d) Trojan

7) Which of the following is not an appropriate method of defacing web server?
a) Fetching credentials through MiTM
b) Brute-forcing Admin Password
c) IP address spoofing
d) DNS Attack through cache poisoning

8) Which of the following is the hacking approach where cyber-criminals design fake websites or pages for tricking or gaining additional traffic?
a) Website-Duplication b) Mimicking
c) Spamming d) Pharming

9) DoS is abbreviated as _____.
a) Denial of Service b) Distribution of Server
c) Distribution of Service d) Denial of Server

10) Identify among the following which is used to avoid browser-based hacking _____.
a) Adware remover in browser b) Incognito mode in the browser
c) Anti-malware in browser d) Remote browser access

11) Which of the below malware types permits the hackers to access administrative controls and do nearly everything he wants with the infected systems?
a) RATs b) Worms
c) Rootkits d) Botnets

12) _____ is a fraud involving another person's identity for an illicit purpose.
a) Software piracy b) Identity Theft
c) Computer Sabotage d) Hacking

13) Which of the following is NOT the focus of digital forensic analysis?
a) Authenticity b) Comparison
c) Proving d) Enhancement

14) Choose the term which describes Digital forensics.
a) Science of collecting and analyzing evidence
b) process of Chasing the criminal
c) Process of punishing the culprit
d) preservation filtering and organization of evidence

SLR-GF-272

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cyber forensic (BTN03614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 PM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any FOUR **16**

a) What is cybercrime? Who are cyber Criminals?
b) Explain how Cyber stalking work.
c) Write a note on Cyber Defamation.
d) What are the tips for safety and security while using computers in cybercafe?
e) What is proxy server? What are the purpose of proxy server?

Q.3 Attempt any TWO **12**

a) Explain Active and Passive Attack in details.
b) Explain in details Password Cracking.
c) Explain the term.
i) Spywares
ii) Virus
iii) Key loggers
iv) Backdoors

Section – II

Q.4 Attempt any FOUR. **16**

a) Explain Computer Forensic and Digital Forensic
b) Write a note on forensics analysis of email.
c) Explain different toolkits for hand held device forensic.
d) What are the security issues associated with social networking sites?
e) What is the need of computer forensic?

Q.5 Attempt any TWO. **12**

a) Write a note on phases in computer forensic.
b) Explain digital forensic life cycle in detail.
c) Explain relevance of OSI 7 layer model to computer forensic.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cyber forensic (BTN03614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 PM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of the following is the hacking approach where cyber-criminals design fake websites or pages for tricking or gaining additional traffic?
a) Website-Duplication b) Mimicking
c) Spamming d) Pharming

2) DoS is abbreviated as _____.
a) Denial of Service b) Distribution of Server
c) Distribution of Service d) Denial of Server

3) Identify among the following which is used to avoid browser-based hacking _____.
a) Adware remover in browser b) Incognito mode in the browser
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13) A _____ is a means of access to a program that bypasses security mechanism.
a) Proxy b) Backdoor
c) Virus d) Trojan

14) Which of the following is not an appropriate method of defacing web server?
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b) Brute-forcing Admin Password
c) IP address spoofing
d) DNS Attack through cache poisoning

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Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cyber forensic (BTN03614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 PM To 01:00 PM

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Section – I

Q.2 Attempt any FOUR **16**

a) What is cybercrime? Who are cyber Criminals?
b) Explain how Cyber stalking work.
c) Write a note on Cyber Defamation.
d) What are the tips for safety and security while using computers in cybercafe?
e) What is proxy server? What are the purpose of proxy server?

Q.3 Attempt any TWO **12**

a) Explain Active and Passive Attack in details.
b) Explain in details Password Cracking.
c) Explain the term.
i) Spywares
ii) Virus
iii) Key loggers
iv) Backdoors

Section – II

Q.4 Attempt any FOUR. **16**

a) Explain Computer Forensic and Digital Forensic
b) Write a note on forensics analysis of email.
c) Explain different toolkits for hand held device forensic.
d) What are the security issues associated with social networking sites?
e) What is the need of computer forensic?

Q.5 Attempt any TWO. **12**

a) Write a note on phases in computer forensic.
b) Explain digital forensic life cycle in detail.
c) Explain relevance of OSI 7 layer model to computer forensic.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cyber forensic (BTN03614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 PM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of the below malware types permits the hackers to access administrative controls and do nearly everything he wants with the infected systems?
a) RATs b) Worms
c) Rootkits d) Botnets

2) _____ is a fraud involving another person's identity for an illicit purpose.
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3) Which of the following is NOT the focus of digital forensic analysis?
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4) Choose the term which describes Digital forensics.
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c) Distribution of Service d) Denial of Server

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c) Anti-malware in browser d) Remote browser access

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Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cyber forensic (BTN03614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 PM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any FOUR **16**

a) What is cybercrime? Who are cyber Criminals?
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c) Write a note on Cyber Defamation.
d) What are the tips for safety and security while using computers in cybercafe?
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b) Explain in details Password Cracking.
c) Explain the term.
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ii) Virus
iii) Key loggers
iv) Backdoors

Section – II

Q.4 Attempt any FOUR. **16**

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c) Explain different toolkits for hand held device forensic.
d) What are the security issues associated with social networking sites?
e) What is the need of computer forensic?

Q.5 Attempt any TWO. **12**

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cyber forensic (BTN03614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 PM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) A _____ is a means of access to a program that bypasses security mechanism.
a) Proxy b) Backdoor
c) Virus d) Trojan

2) Which of the following is not an appropriate method of defacing web server?
a) Fetching credentials through MiTM
b) Brute-forcing Admin Password
c) IP address spoofing
d) DNS Attack through cache poisoning

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a) Quick detection b) Initial Exploitation
c) Blind SQL Injection d) Inline Comments

14) SQL injection is an attack in which _____ code is inserted into strings that are late passed to an instance of SQL Server.
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c) Clean d) non malicious

SLR-GF-272

Seat No.	

Set S

T. Y. (B. Tech) (Sem - II) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cyber forensic (BTN03614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 PM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any FOUR **16**

a) What is cybercrime? Who are cyber Criminals?
b) Explain how Cyber stalking work.
c) Write a note on Cyber Defamation.
d) What are the tips for safety and security while using computers in cybercafe?
e) What is proxy server? What are the purpose of proxy server?

Q.3 Attempt any TWO **12**

a) Explain Active and Passive Attack in details.
b) Explain in details Password Cracking.
c) Explain the term.
i) Spywares
ii) Virus
iii) Key loggers
iv) Backdoors

Section – II

Q.4 Attempt any FOUR. **16**

a) Explain Computer Forensic and Digital Forensic
b) Write a note on forensics analysis of email.
c) Explain different toolkits for hand held device forensic.
d) What are the security issues associated with social networking sites?
e) What is the need of computer forensic?

Q.5 Attempt any TWO. **12**

a) Write a note on phases in computer forensic.
b) Explain digital forensic life cycle in detail.
c) Explain relevance of OSI 7 layer model to computer forensic.

SLR-GF-273

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (197043601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) A compiler for a high-level language that runs on one machine and produce code for different machine is called _____.
a) Optimizing compiler b) One pass compiler
c) Cross compiler d) Multi-pass compiler

2) Task of the lexical analysis is _____.
a) To scan the source program and generate the basic elements or tokens of the language
b) To support macro call
c) To report errors in source program
d) All of these

3) In operator precedence parsing, precedence relations are defined _____.
a) For all pair of non-terminals b) For all pair of terminals
c) To delimit the handle d) All of these

4) Which concept of grammar is used in the compiler?
a) Parser b) Lexical analysis
c) Code generation d) Code optimization

5) Synthesized attribute can be easily simulated by a _____.
a) LL grammar b) LR grammar
c) Ambiguous grammar d) Operator grammar

6) Which of the following is not a feature of compiler?
a) Scan the entire program first and translate into machine code
b) To remove syntax errors
c) Slow for debugging
d) Execution time is more

7) A programmer by mistakes writes a program to multiply two numbers instead of dividing them, how can this error be detected?
a) Compiler
b) Interpreter
c) Compiler or interpreter
d) None of the mentioned

8) Running time of a program depends on _____.
a) Addressing mode
b) Order of computations
c) The usage of machine idioms
d) All of the mentioned

9) Peep Hole optimization is _____.
a) Loop Optimization
b) Local Optimization
c) Constant folding
d) Data Flow analysis

10) The graph that shows basic blocks and their successor relationship is called _____.
a) Dag
b) Flow Graph
c) Control Graph
d) Hamilton Graph

11) The specific task storage manager performs _____.
a) Allocation/ deal location of programs
b) Protection of storage area assigned to the program
c) Allocation/ deal location of programs & protection of storage area assigned to the program
d) None of the mentioned

12) An intermediate code form is ____.
a) Postfix notation
b) Syntax trees
c) Three address code
d) All of these

13) Reduction in strength means _____.
a) Replacing run time computation by compile time computation
b) Removing loop invariant computation
c) Removing common sub expression
d) Replacing a costly operation by a relatively cheaper one

14) The optimization which avoids test at every iteration is _____.
a) Loop jamming
b) Loop unrolling
c) Constant folding
d) All of these

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (197043601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) Explain the terms with example
i) Tokens
ii) Lexeme

b) What are compiler construction tools? Explain.

c) Explain types of derivation with example.

d) Explain L attributed definition of SDD with example.

Q.3 Attempt any one. **08**

a) Explain SLR parser in detail with example.

b) What is input buffering? Explain in detail with double buffer and sentinel concept.

Q.4 Attempt any one. **08**

a) Explain bottom up evaluation of S- attributed definition with example.

b) Explain process of compilation with various phases in detail.

Section – II

Q.5 Attempt any three. **12**

a) Explain Activation record with its fields.

b) Explain the terms with example
i) Triple
ii) Quadruple

c) What is DAG? Explain with example

d) Explain common sub expression elimination.

Q.6 Attempt any one. **08**

a) Write an algorithm for partitioning into basic blocks by considering following program code.

prod = 0;
$i = 1$;
do
{
prod=prod+$a[i] * b[i]$;
$i = i + 1$;
}while($i <= 10$);

b) Explain translation of switch-case statement in 3 address code.

Q.7 Attempt any one. **08**

a) Explain storage allocation strategies in detail.

b) What is optimization? Explain peephole optimization techniques in detail.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (197043601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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c) Compiler or interpreter d) None of the mentioned

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (197043601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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Section – II

Q.5 Attempt any three. **12**

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}while($i <= 10$);

b) Explain translation of switch-case statement in 3 address code.

Q.7 Attempt any one. **08**

a) Explain storage allocation strategies in detail.

b) What is optimization? Explain peephole optimization techniques in detail.

SLR-GF-273

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (197043601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The specific task storage manager performs _____.
a) Allocation/ deal location of programs
b) Protection of storage area assigned to the program
c) Allocation/ deal location of programs & protection of storage area assigned to the program
d) None of the mentioned

2) An intermediate code form is ____.
a) Postfix notation b) Syntax trees
c) Three address code d) All of these

3) Reduction in strength means _____.
a) Replacing run time computation by compile time computation
b) Removing loop invariant computation
c) Removing common sub expression
d) Replacing a costly operation by a relatively cheaper one

4) The optimization which avoids test at every iteration is _____.
a) Loop jamming b) Loop unrolling
c) Constant folding d) All of these

5) A compiler for a high-level language that runs on one machine and produce code for different machine is called _____.
a) Optimizing compiler b) One pass compiler
c) Cross compiler d) Multi-pass compiler

6) Task of the lexical analysis is _____.
a) To scan the source program and generate the basic elements or tokens of the language
b) To support macro call
c) To report errors in source program
d) All of these

7) In operator precedence parsing, precedence relations are defined _____.
a) For all pair of non-terminals b) For all pair of terminals
c) To delimit the handle d) All of these

8) Which concept of grammar is used in the compiler?
a) Parser b) Lexical analysis
c) Code generation d) Code optimization

9) Synthesized attribute can be easily simulated by a _____.
a) LL grammar b) LR grammar
c) Ambiguous grammar d) Operator grammar

10) Which of the following is not a feature of compiler?
a) Scan the entire program first and translate into machine code
b) To remove syntax errors
c) Slow for debugging
d) Execution time is more

11) A programmer by mistakes writes a program to multiply two numbers instead of dividing them, how can this error be detected?
a) Compiler b) Interpreter
c) Compiler or interpreter d) None of the mentioned

12) Running time of a program depends on _____.
a) Addressing mode b) Order of computations
c) The usage of machine idioms d) All of the mentioned

13) Peep Hole optimization is _____.
a) Loop Optimization b) Local Optimization
c) Constant folding d) Data Flow analysis

14) The graph that shows basic blocks and their successor relationship is called _____.
a) Dag b) Flow Graph
c) Control Graph d) Hamilton Graph

SLR-GF-273

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (197043601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) Explain the terms with example
i) Tokens
ii) Lexeme

b) What are compiler construction tools? Explain.

c) Explain types of derivation with example.

d) Explain L attributed definition of SDD with example.

Q.3 Attempt any one. **08**

a) Explain SLR parser in detail with example.

b) What is input buffering? Explain in detail with double buffer and sentinel concept.

Q.4 Attempt any one. **08**

a) Explain bottom up evaluation of S- attributed definition with example.

b) Explain process of compilation with various phases in detail.

Section – II

Q.5 Attempt any three. **12**

a) Explain Activation record with its fields.

b) Explain the terms with example
i) Triple
ii) Quadruple

c) What is DAG? Explain with example

d) Explain common sub expression elimination.

Q.6 Attempt any one. **08**

a) Write an algorithm for partitioning into basic blocks by considering following program code.

prod = 0;
$i = 1$;
do
{
prod=prod+$a[i] * b[i]$;
$i = i + 1$;
}while($i <= 10$);

b) Explain translation of switch-case statement in 3 address code.

Q.7 Attempt any one. **08**

a) Explain storage allocation strategies in detail.

b) What is optimization? Explain peephole optimization techniques in detail.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (197043601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following is not a feature of compiler?
a) Scan the entire program first and translate into machine code
b) To remove syntax errors
c) Slow for debugging
d) Execution time is more

2) A programmer by mistakes writes a program to multiply two numbers instead of dividing them, how can this error be detected?
a) Compiler b) Interpreter
c) Compiler or interpreter d) None of the mentioned

3) Running time of a program depends on _____.
a) Addressing mode b) Order of computations
c) The usage of machine idioms d) All of the mentioned

4) Peep Hole optimization is _____.
a) Loop Optimization b) Local Optimization
c) Constant folding d) Data Flow analysis

5) The graph that shows basic blocks and their successor relationship is called _____.
a) Dag b) Flow Graph
c) Control Graph d) Hamilton Graph

6) The specific task storage manager performs _____.
a) Allocation/ deal location of programs
b) Protection of storage area assigned to the program
c) Allocation/ deal location of programs & protection of storage area assigned to the program
d) None of the mentioned

7) An intermediate code form is ____.
a) Postfix notation b) Syntax trees
c) Three address code d) All of these

8) Reduction in strength means _____.
a) Replacing run time computation by compile time computation
b) Removing loop invariant computation
c) Removing common sub expression
d) Replacing a costly operation by a relatively cheaper one

9) The optimization which avoids test at every iteration is _____.
a) Loop jamming
b) Loop unrolling
c) Constant folding
d) All of these

10) A compiler for a high-level language that runs on one machine and produce code for different machine is called _____.
a) Optimizing compiler
b) One pass compiler
c) Cross compiler
d) Multi-pass compiler

11) Task of the lexical analysis is _____.
a) To scan the source program and generate the basic elements or tokens of the language
b) To support macro call
c) To report errors in source program
d) All of these

12) In operator precedence parsing, precedence relations are defined _____.
a) For all pair of non-terminals
b) For all pair of terminals
c) To delimit the handle
d) All of these

13) Which concept of grammar is used in the compiler?
a) Parser
b) Lexical analysis
c) Code generation
d) Code optimization

14) Synthesized attribute can be easily simulated by a _____.
a) LL grammar
b) LR grammar
c) Ambiguous grammar
d) Operator grammar

SLR-GF-273

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (197043601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) Explain the terms with example
i) Tokens
ii) Lexeme

b) What are compiler construction tools? Explain.

c) Explain types of derivation with example.

d) Explain L attributed definition of SDD with example.

Q.3 Attempt any one. **08**

a) Explain SLR parser in detail with example.

b) What is input buffering? Explain in detail with double buffer and sentinel concept.

Q.4 Attempt any one. **08**

a) Explain bottom up evaluation of S- attributed definition with example.

b) Explain process of compilation with various phases in detail.

Section – II

Q.5 Attempt any three. **12**

a) Explain Activation record with its fields.

b) Explain the terms with example
i) Triple
ii) Quadruple

c) What is DAG? Explain with example

d) Explain common sub expression elimination.

Q.6 Attempt any one. **08**

a) Write an algorithm for partitioning into basic blocks by considering following program code.

prod = 0;
$i = 1$;
do
{
prod=prod+$a[i] * b[i]$;
$i = i + 1$;
}while($i <= 10$);

b) Explain translation of switch-case statement in 3 address code.

Q.7 Attempt any one. **08**

a) Explain storage allocation strategies in detail.

b) What is optimization? Explain peephole optimization techniques in detail.

SLR-GF-274

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Unix Operating System (197043602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The _____ subsystem is responsible for process synchronization, inter process communication, memory management and process scheduling.
a) process table b) buffer
c) process control d) hardware control

2) The name of the file is given by a _____ that describes how to locate the file in the file system hierarchy.
a) link b) pathname
c) node d) duplicate name

3) In third scenario, it found the buffer marked as "delayed write", so the kernel starts _____ write to disk and tries to allocate another buffer.
a) synchronous b) asynchronous
c) delayed d) modified

4) In a file system layout, the _____ block describes the state of a file system such as how large it is, how many files it can store, where to find free space etc.
a) super b) boot
c) data d) inode

5) The kernel cannot find the block on the hash queue, so it allocates a buffer from the free list indicates _____ scenario.
a) fifth b) third
c) fourth d) second

6) Every process has an entry in the kernel process table, and each process is allocated a _____ that contains private data manipulated only by the kernel.
a) process table b) u area
c) region d) None of above

7) Which of the following algorithm is used for allocation of in-core inode?
a) iget b) ialloc
c) alloc d) iput

8) A process can synchronize its execution with the termination of child process by executing the _____ system call.
a) exit b) wait
c) signal d) fork

9) The _____ system call invokes another program.
a) exit b) exec
c) wait d) signal

10) In demand paging, the _____ table describes each page of physical memory and is indexed by page number.
a) swap use b) page table
c) block descriptor d) pfdata

11) The _____ bit indicate how long a page has been a member of the working set of a process.
a) reference b) copy on write
c) modify d) age

12) Which of the following is a data structure used by demand paging?
a) page table entries b) disk block descriptor
c) swap use table d) all

13) When a process needs a page, that is not part of the working set, it incurs a _____ page fault.
a) validity b) overflow
c) underflow d) none of above

14) _____ is the only process that swaps processes into main memory from the swap device.
a) process 0 b) process 1
c) init d) compiler

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Unix Operating System (197043602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt any Three. **12**

a) Describe Data Structures used by File Subsystem.
b) Write and Explain an algorithm - breada.
c) Describe read and write system calls.
d) Write and explain namei algorithm.

Q.3 Attempt any two. **16**

a) Explain getblk algorithm for allocation of buffers with help of different scenarios.
b) Describe iget and iput algorithms in detail.
c) Explain following system calls with the help of its syntax
i) chmod
ii) chdir
iii) chown
iv) chroot

Section – II

Q.4 Attempt any Three. **12**

a) List and explain different process states.
b) List and explain system calls for time and clock.
c) Explain expr command of Shell programming.
d) Write and explain malloc algorithm.

Q.5 Attempt any two. **16**

a) What is demand paging? Explain the data structures used for demand paging.
b) What is context of a process? List and explain all the fields of process context.
c) Explain following process control system calls with the help of syntax and algorithm.
i) exit
ii) wait

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Unix Operating System (197043602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) A process can synchronize its execution with the termination of child process by executing the _____ system call.
a) exit b) wait
c) signal d) fork

2) The _____ system call invokes another program.
a) exit b) exec
c) wait d) signal

3) In demand paging, the _____ table describes each page of physical memory and is indexed by page number.
a) swap use b) page table
c) block descriptor d) pfdata

4) The _____ bit indicate how long a page has been a member of the working set of a process.
a) reference b) copy on write
c) modify d) age

5) Which of the following is a data structure used by demand paging?
a) page table entries b) disk block descriptor
c) swap use table d) all

6) When a process needs a page, that is not part of the working set, it incurs a _____ page fault.
a) validity b) overflow
c) underflow d) none of above

7) _____ is the only process that swaps processes into main memory from the swap device.
a) process 0 b) process 1
c) init d) compiler

8) The _____ subsystem is responsible for process synchronization, inter process communication, memory management and process scheduling.
a) process table b) buffer
c) process control d) hardware control

9) The name of the file is given by a _____ that describes how to locate the file in the file system hierarchy.

a) link b) pathname
c) node d) duplicate name

10) In third scenario, it found the buffer marked as "delayed write", so the kernel starts _____ write to disk and tries to allocate another buffer.

a) synchronous b) asynchronous
c) delayed d) modified

11) In a file system layout, the _____ block describes the state of a file system such as how large it is, how many files it can store, where to find free space etc.

a) super b) boot
c) data d) inode

12) The kernel cannot find the block on the hash queue, so it allocates a buffer from the free list indicates _____ scenario.

a) fifth b) third
c) fourth d) second

13) Every process has an entry in the kernel process table, and each process is allocated a _____ that contains private data manipulated only by the kernel.

a) process table b) u area
c) region d) None of above

14) Which of the following algorithm is used for allocation of in-core inode?

a) iget b) ialloc
c) alloc d) iput

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Unix Operating System (197043602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt any Three. **12**

a) Describe Data Structures used by File Subsystem.
b) Write and Explain an algorithm - breada.
c) Describe read and write system calls.
d) Write and explain namei algorithm.

Q.3 Attempt any two. **16**

a) Explain getblk algorithm for allocation of buffers with help of different scenarios.
b) Describe iget and iput algorithms in detail.
c) Explain following system calls with the help of its syntax
i) chmod
ii) chdir
iii) chown
iv) chroot

Section – II

Q.4 Attempt any Three. **12**

a) List and explain different process states.
b) List and explain system calls for time and clock.
c) Explain expr command of Shell programming.
d) Write and explain malloc algorithm.

Q.5 Attempt any two. **16**

a) What is demand paging? Explain the data structures used for demand paging.
b) What is context of a process? List and explain all the fields of process context.
c) Explain following process control system calls with the help of syntax and algorithm.
i) exit
ii) wait

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Unix Operating System (197043602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The _____ bit indicate how long a page has been a member of the working set of a process.
a) reference b) copy on write
c) modify d) age

2) Which of the following is a data structure used by demand paging?
a) page table entries b) disk block descriptor
c) swap use table d) all

3) When a process needs a page, that is not part of the working set, it incurs a _____ page fault.
a) validity b) overflow
c) underflow d) none of above

4) _____ is the only process that swaps processes into main memory from the swap device.
a) process 0 b) process 1
c) init d) compiler

5) The _____ subsystem is responsible for process synchronization, inter process communication, memory management and process scheduling.
a) process table b) buffer
c) process control d) hardware control

6) The name of the file is given by a _____ that describes how to locate the file in the file system hierarchy.
a) link b) pathname
c) node d) duplicate name

7) In third scenario, it found the buffer marked as "delayed write", so the kernel starts _____ write to disk and tries to allocate another buffer.
a) synchronous b) asynchronous
c) delayed d) modified

8) In a file system layout, the _____ block describes the state of a file system such as how large it is, how many files it can store, where to find free space etc.

a) super b) boot
c) data d) inode

9) The kernel cannot find the block on the hash queue, so it allocates a buffer from the free list indicates _____ scenario.

a) fifth b) third
c) fourth d) second

10) Every process has an entry in the kernel process table, and each process is allocated a _____ that contains private data manipulated only by the kernel.

a) process table b) u area
c) region d) None of above

11) Which of the following algorithm is used for allocation of in-core inode?

a) iget b) ialloc
c) alloc d) iput

12) A process can synchronize its execution with the termination of child process by executing the _____ system call.

a) exit b) wait
c) signal d) fork

13) The _____ system call invokes another program.

a) exit b) exec
c) wait d) signal

14) In demand paging, the _____ table describes each page of physical memory and is indexed by page number.

a) swap use b) page table
c) block descriptor d) pfdata

Seat No.	

Set | R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Unix Operating System (197043602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt any Three. **12**

a) Describe Data Structures used by File Subsystem.
b) Write and Explain an algorithm - breada.
c) Describe read and write system calls.
d) Write and explain namei algorithm.

Q.3 Attempt any two. **16**

a) Explain getblk algorithm for allocation of buffers with help of different scenarios.
b) Describe iget and iput algorithms in detail.
c) Explain following system calls with the help of its syntax
i) chmod
ii) chdir
iii) chown
iv) chroot

Section – II

Q.4 Attempt any Three. **12**

a) List and explain different process states.
b) List and explain system calls for time and clock.
c) Explain expr command of Shell programming.
d) Write and explain malloc algorithm.

Q.5 Attempt any two. **16**

a) What is demand paging? Explain the data structures used for demand paging.
b) What is context of a process? List and explain all the fields of process context.
c) Explain following process control system calls with the help of syntax and algorithm.
i) exit
ii) wait

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Unix Operating System (197043602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Every process has an entry in the kernel process table, and each process is allocated a _____ that contains private data manipulated only by the kernel.
a) process table b) u area
c) region d) None of above

2) Which of the following algorithm is used for allocation of in-core inode?
a) iget b) ialloc
c) alloc d) iput

3) A process can synchronize its execution with the termination of child process by executing the _____ system call.
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c) block descriptor d) pfdata

6) The _____ bit indicate how long a page has been a member of the working set of a process.
a) reference b) copy on write
c) modify d) age

7) Which of the following is a data structure used by demand paging?
a) page table entries b) disk block descriptor
c) swap use table d) all

8) When a process needs a page, that is not part of the working set, it incurs a _____ page fault.
a) validity b) overflow
c) underflow d) none of above

9) _____ is the only process that swaps processes into main memory from the swap device.

a) process 0 b) process 1
c) init d) compiler

10) The _____ subsystem is responsible for process synchronization, inter process communication, memory management and process scheduling.

a) process table b) buffer
c) process control d) hardware control

11) The name of the file is given by a _____ that describes how to locate the file in the file system hierarchy.

a) link b) pathname
c) node d) duplicate name

12) In third scenario, it found the buffer marked as "delayed write", so the kernel starts _____ write to disk and tries to allocate another buffer.

a) synchronous b) asynchronous
c) delayed d) modified

13) In a file system layout, the _____ block describes the state of a file system such as how large it is, how many files it can store, where to find free space etc.

a) super b) boot
c) data d) inode

14) The kernel cannot find the block on the hash queue, so it allocates a buffer from the free list indicates _____ scenario.

a) fifth b) third
c) fourth d) second

SLR-GF-274

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Unix Operating System (197043602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt any Three. **12**

a) Describe Data Structures used by File Subsystem.
b) Write and Explain an algorithm - breada.
c) Describe read and write system calls.
d) Write and explain namei algorithm.

Q.3 Attempt any two. **16**

a) Explain getblk algorithm for allocation of buffers with help of different scenarios.
b) Describe iget and iput algorithms in detail.
c) Explain following system calls with the help of its syntax
i) chmod
ii) chdir
iii) chown
iv) chroot

Section – II

Q.4 Attempt any Three. **12**

a) List and explain different process states.
b) List and explain system calls for time and clock.
c) Explain expr command of Shell programming.
d) Write and explain malloc algorithm.

Q.5 Attempt any two. **16**

a) What is demand paging? Explain the data structures used for demand paging.
b) What is context of a process? List and explain all the fields of process context.
c) Explain following process control system calls with the help of syntax and algorithm.
i) exit
ii) wait

SLR-GF-275

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (197043603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The third generation of computers used _____ as active elements.
a) Vacuum Tubes b) Transistors
c) Integrated Circuits d) Tunnel Diodes

2) When the result of an arithmetic operation is outside the range then it termed as _____.
a) Arithmetic overflow b) Arithmetic underflow
c) Garbage flow d) None of these

3) _____ Memory is placed in between the CPU and the main memory.
a) Magnetic b) ROM
c) Optical Storage d) Cache

4) _____ arise from the pipelining of branches and other instructions that change the PC.
a) Control hazards b) Structural hazards
c) Instruction hazards d) Data hazards

5) Software pipelining _____.
a) Replicating loop by compiler b) Rearranging loops by compiler
c) Both a and b d) None of these

6) _____ is a component of computer which coordinates functional units of computer.
a) Control unit b) Output unit
c) Memory unit d) Processor unit

7) Virtual memory is implemented through _____.
a) Paging b) Demand paging
c) Segmentation d) Fragmentation

8) The largest unit of storage is ____.
a) TB b) KB
c) MB d) GB

9) The _____ is used to coordinate the operation of the multiplier.
a) Controller b) Coordinator
c) Control sequencer d) None of the mentioned

10) The multiplicand and the control signals are passed through to the n-bit adder via _____.
a) DEMUX b) MUX
c) Encoder d) Decoder

11) The method which offers higher speeds of I/O transfers is _____.
a) Interrupts b) Memory mapping
c) Program-controlled I/O d) DMA

12) In memory-mapped I/O _____.
a) The I/O devices have a separate address space
b) The I/O devices and the memory share the same address space
c) A part of the memory is specifically set aside for the I/O operation
d) The memory and I/O devices have an associated address space

13) When multiple-instructions are overlapped during the execution of the program, then function performed is called _____.
a) Multitasking b) Multiprogramming
c) hardwired control d) Pipelining

14) Which of the following refers to the capability to allow multiple tasks make progress on a single processor system?
a) concurrency b) parallelism
c) data parallelism d) task parallelism

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (197043603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Compare the salient features of five generations of computers.
b) What is a RISC? Explain ARC RISC Computer in detail.
c) Explain the trends in technology in Computer design.
d) Explain the Instruction format of ARC - RISC Computer.

Q.3 Attempt any two. **16**

a) Short note on Followings.
i) Memory Hierarchy
ii) Cache Memory
b) How the performance of a processor is represented and what factors that influence the performance?
c) Describe the Quantitative principles of computer design & Explain Amdahl's Law.

Section – II

Q.4 Attempt the following. **12**

a) Explain the concept of pipelining and state major hurdles of pipelining.
b) Describe concept of instruction level parallelism & explain its challenges.
c) Explain the basic compiler techniques for exposing ILP.

Q.5 Attempt any two. **16**

a) Explain the Symmetric shared memory architecture with suitable diagram.
b) Explain the Distributed shared memory with diagram.
c) short note on followings.
i) Directory based coherence
ii) ILP Dynamic scheduling issues

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (197043603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The largest unit of storage is ____.
a) TB b) KB
c) MB d) GB

2) The _____ is used to coordinate the operation of the multiplier.
a) Controller b) Coordinator
c) Control sequencer d) None of the mentioned

3) The multiplicand and the control signals are passed through to the n-bit adder via _____.
a) DEMUX b) MUX
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4) The method which offers higher speeds of I/O transfers is _____.
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7) Which of the following refers to the capability to allow multiple tasks make progress on a single processor system?
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9) When the result of an arithmetic operation is outside the range then it termed as _____.

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10) _____ Memory is placed in between the CPU and the main memory.

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c) Memory unit d) Processor unit

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Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (197043603)

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Section – I

Q.2 Attempt any Three. **12**

a) Compare the salient features of five generations of computers.
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ii) Cache Memory
b) How the performance of a processor is represented and what factors that influence the performance?
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Section – II

Q.4 Attempt the following. **12**

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c) Explain the basic compiler techniques for exposing ILP.

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c) short note on followings.
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ii) ILP Dynamic scheduling issues

Seat No.	

Set | R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (197043603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

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c) Encoder d) Decoder

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Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (197043603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

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d) Explain the Instruction format of ARC - RISC Computer.

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b) How the performance of a processor is represented and what factors that influence the performance?
c) Describe the Quantitative principles of computer design & Explain Amdahl's Law.

Section – II

Q.4 Attempt the following. **12**

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b) Describe concept of instruction level parallelism & explain its challenges.
c) Explain the basic compiler techniques for exposing ILP.

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ii) ILP Dynamic scheduling issues

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (197043603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) _____ is a component of computer which coordinates functional units of computer.
a) Control unit b) Output unit
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a) Control hazards b) Structural hazards
c) Instruction hazards d) Data hazards

14) Software pipelining _____.

a) Replicating loop by compiler b) Rearranging loops by compiler
c) Both a and b d) None of these

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Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (197043603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Compare the salient features of five generations of computers.
b) What is a RISC? Explain ARC RISC Computer in detail.
c) Explain the trends in technology in Computer design.
d) Explain the Instruction format of ARC - RISC Computer.

Q.3 Attempt any two. **16**

a) Short note on Followings.
i) Memory Hierarchy
ii) Cache Memory
b) How the performance of a processor is represented and what factors that influence the performance?
c) Describe the Quantitative principles of computer design & Explain Amdahl's Law.

Section – II

Q.4 Attempt the following. **12**

a) Explain the concept of pipelining and state major hurdles of pipelining.
b) Describe concept of instruction level parallelism & explain its challenges.
c) Explain the basic compiler techniques for exposing ILP.

Q.5 Attempt any two. **16**

a) Explain the Symmetric shared memory architecture with suitable diagram.
b) Explain the Distributed shared memory with diagram.
c) short note on followings.
i) Directory based coherence
ii) ILP Dynamic scheduling issues

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (197043604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which agent deals with the happy and unhappy state?
a) Utility-based agent b) Model-based agent
c) Goal-based Agent d) Learning Agent

2) Ways to achieve AI in real-life are _____.
a) Machine Learning b) Deep Learning
c) Both a & b d) None of the above

3) A hybrid Bayesian Network consist _____.
a) Discrete variables only
b) Discontinuous Variable
c) Both Discrete and Continuous variables
d) Continuous Variable only

4) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihood d) All of the above

5) Which of the given element improve the performance of AI agent so that it can make better decisions?
a) Changing Element b) Performance Element
c) Learning Element d) None of the above

6) The Set of actions for a problem in a state space is formulated by a _____.
a) Intermediate states
b) Initial state
c) Successor function, which takes current action and returns next immediate state
d) None of the mentioned

7) For propositional Logic, which statement is false?
a) The sentences of Propositional logic can have answers other than True or False.
b) Each sentence is a declarative sentence.
c) Propositional logic is a knowledge representation technique in AI.
d) None of the above

8) General games involve _____.
a) Single-agent
b) Multi-agent
c) Neither Single-agent nor Multi-agent
d) Only Single-agent and Multi-agent

9) Which is true for Decision theory?
a) Decision Theory = Probability theory + utility theory
b) Decision Theory = Inference theory + utility theory
c) Decision Theory = Uncertainty + utility theory
d) Decision Theory = Probability theory + preference

10) How the entries in the full joint probability distribution can be calculated?
a) Using variables
b) Using information
c) Both Using variables & information
d) None of the mentioned

11) How many terms are required for building a bayes model?
a) 1 b) 2
c) 3 d) 4

12) Knowledge may be _____.
I) Declarative
II) Procedural
III) Non-procedural
a) Only (I) b) Only (II)
c) Only (III) d) Both (I) and (II)

13) Among the following option identify the one which is not a type of learning?
a) Semi unsupervised learning b) Supervised learning
c) Reinforcement learning d) Unsupervised learning

14) Identify the model which is trained with data in only a single batch.
a) Offline learning b) Batch learning
c) Both a and b d) none

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (197043604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**
- **a)** What are different area where AI can be used?
- **b)** Explain forward and backward chaining.
- **c)** Explain BFS algorithm with example.
- **d)** Define agent. Explain Goal-based agents in AI.
- **e)** Define knowledge, what are different types of it? explain any one.

Q.3 Attempt Any One. **08**
- **a)** Explain:
  - i) Model-based reflex agent
  - ii) Utility-based agents
- **b)** Write a short note on First order logic.

Q.4 Explain mini-max algorithm in detail with example in detail. **08**

Section – II

Q.5 Attempt Any Three: **12**
- **a)** What is Q learning form.
- **b)** How machine learning is related to AI.
- **c)** Explain elementary game theory.
- **d)** Explain use of probability in AI.
- **e)** Explain Statistical learning form of machine.

Q.6 Attempt Any one **08**
- **a)** Explain:
  - i) Unsupervised learning form of machine
  - ii) Semi-supervised learning form of machine
- **b)** Explain scope of AI as present and future.

Q.7 Explain Bayesian networks in detail. **08**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (197043604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) General games involve _____.
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b) Multi-agent
c) Neither Single-agent nor Multi-agent
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2) Which is true for Decision theory?
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3) How the entries in the full joint probability distribution can be calculated?
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4) How many terms are required for building a bayes model?
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5) Knowledge may be _____.
I) Declarative
II) Procedural
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a) Only (I) b) Only (II)
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6) Among the following option identify the one which is not a type of learning?
a) Semi unsupervised learning b) Supervised learning
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8) Which agent deals with the happy and unhappy state?
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b) Initial state
c) Successor function, which takes current action and returns next immediate state
d) None of the mentioned

14) For propositional Logic, which statement is false?
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b) Each sentence is a declarative sentence.
c) Propositional logic is a knowledge representation technique in AI.
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Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (197043604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt Any Three. **12**

a) What are different area where AI can be used?
b) Explain forward and backward chaining.
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e) Define knowledge, what are different types of it? explain any one.

Q.3 Attempt Any One. **08**

a) Explain:
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b) Write a short note on First order logic.

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Section – II

Q.5 Attempt Any Three: **12**

a) What is Q learning form.
b) How machine learning is related to AI.
c) Explain elementary game theory.
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Q.6 Attempt Any one **08**

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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (197043604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) How many terms are required for building a bayes model?
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c) 3 d) 4

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III) Non-procedural
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d) Only Single-agent and Multi-agent

13) Which is true for Decision theory?

a) Decision Theory = Probability theory + utility theory
b) Decision Theory = Inference theory + utility theory
c) Decision Theory = Uncertainty + utility theory
d) Decision Theory = Probability theory + preference

14) How the entries in the full joint probability distribution can be calculated?

a) Using variables
b) Using information
c) Both Using variables & information
d) None of the mentioned

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (197043604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**
- **a)** What are different area where AI can be used?
- **b)** Explain forward and backward chaining.
- **c)** Explain BFS algorithm with example.
- **d)** Define agent. Explain Goal-based agents in AI.
- **e)** Define knowledge, what are different types of it? explain any one.

Q.3 Attempt Any One. **08**
- **a)** Explain:
  - i) Model-based reflex agent
  - ii) Utility-based agents
- **b)** Write a short note on First order logic.

Q.4 Explain mini-max algorithm in detail with example in detail. **08**

Section – II

Q.5 Attempt Any Three: **12**
- **a)** What is Q learning form.
- **b)** How machine learning is related to AI.
- **c)** Explain elementary game theory.
- **d)** Explain use of probability in AI.
- **e)** Explain Statistical learning form of machine.

Q.6 Attempt Any one **08**
- **a)** Explain:
  - i) Unsupervised learning form of machine
  - ii) Semi-supervised learning form of machine
- **b)** Explain scope of AI as present and future.

Q.7 Explain Bayesian networks in detail. **08**

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (197043604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The Set of actions for a problem in a state space is formulated by a _____.
a) Intermediate states
b) Initial state
c) Successor function, which takes current action and returns next immediate state
d) None of the mentioned

2) For propositional Logic, which statement is false?
a) The sentences of Propositional logic can have answers other than True or False.
b) Each sentence is a declarative sentence.
c) Propositional logic is a knowledge representation technique in AI.
d) None of the above

3) General games involve _____.
a) Single-agent
b) Multi-agent
c) Neither Single-agent nor Multi-agent
d) Only Single-agent and Multi-agent

4) Which is true for Decision theory?
a) Decision Theory = Probability theory + utility theory
b) Decision Theory = Inference theory + utility theory
c) Decision Theory = Uncertainty + utility theory
d) Decision Theory = Probability theory + preference

5) How the entries in the full joint probability distribution can be calculated?
a) Using variables
b) Using information
c) Both Using variables & information
d) None of the mentioned

6) How many terms are required for building a bayes model?
a) 1 b) 2
c) 3 d) 4

7) Knowledge may be _____.
I) Declarative
II) Procedural
III) Non-procedural
a) Only (I) b) Only (II)
c) Only (III) d) Both (I) and (II)

8) Among the following option identify the one which is not a type of learning?
a) Semi unsupervised learning b) Supervised learning
c) Reinforcement learning d) Unsupervised learning

9) Identify the model which is trained with data in only a single batch.
a) Offline learning b) Batch learning
c) Both a and b d) none

10) Which agent deals with the happy and unhappy state?
a) Utility-based agent b) Model-based agent
c) Goal-based Agent d) Learning Agent

11) Ways to achieve AI in real-life are _____.
a) Machine Learning b) Deep Learning
c) Both a & b d) None of the above

12) A hybrid Bayesian Network consist _____.
a) Discrete variables only
b) Discontinuous Variable
c) Both Discrete and Continuous variables
d) Continuous Variable only

13) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihood d) All of the above

14) Which of the given element improve the performance of AI agent so that it can make better decisions?
a) Changing Element b) Performance Element
c) Learning Element d) None of the above

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Artificial Intelligence (197043604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt Any Three. **12**
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Section – II

Q.5 Attempt Any Three: **12**
- **a)** What is Q learning form.
- **b)** How machine learning is related to AI.
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- **a)** Explain:
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Q.7 Explain Bayesian networks in detail. **08**

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Object Oriented Modeling & Design (197043607)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume the suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ are called interaction diagram.
a) Sequence diagram b) Collaboration Diagram
c) Both a & b d) None of the above

2) A use case diagram is a diagram that shows _____.
a) A set of use cases b) Actors
c) Their relationship d) All of the above

3) _____ is an event caused by the occurrence of an absolute time or the elapse of a time interval.
a) Signal event b) Time event
c) Change event d) State

4) _____ means that the same operation may behave differently for different classes.
a) Inheritance b) Classification
c) Polymorphism d) Identity

5) A qualified association relates two _____.
a) object, classes and qualifier b) a role and qualifier
c) roll names d) object classes

6) I) A state has duration.
II) An event has no duration.
a) only II is true b) only I is true
c) both I and II are true d) both I and II are false

7) Which of the following is not a part of DFD?
a) process b) data flow
c) event d) actor

8) Class model gives _____ structure of project.
a) static b) dynamic
c) static and dynamic d) none of these

9) Which of the following is correct representation?
a) “stereotype name” b) <stereotype name>
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c) port d) protocol

13) In the UML you specify that a class is abstract by writing its name in _____.
a) Bold b) Underline
c) Italics d) None of the above

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Seat No.	

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Object Oriented Modeling & Design (197043607)

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Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Answer the following (Any Three) **12**

a) Explain Generalization & Inheritance.
b) Write note on Event.
c) Explain OO themes.
d) Explain feature of object oriented language.

Q.3 Answer the following (Any Two) **16**

a) Draw Data flow Diagram for Library Management System (Level 0, Level 1, Level 2).
b) Explain Objects & classes. And Draw class diagram for Banking system.
c) Explain State diagram with all notations? Draw state diagram for Phone line?

Section – II

Q.4 Answer the following (Any Three) **12**

a) Explain different components of Sequence diagram.
b) Write a note on Visibility in structural modeling.
c) Explain concept of Realization with example.
d) Describe Components in UML?

Q.5 Answer the following (Any Two) **16**

a) Explain Use case diagram And Draw Use case diagram for Online Shopping System.
b) Explain Deployment diagram with example.
c) Explain the concept of Interface & package with examples.

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
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Object Oriented Modeling & Design (197043607)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) event d) actor

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Object Oriented Modeling & Design (197043607)

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Section – I

Q.2 Answer the following (Any Three) **12**

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Section – II

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Seat No.		Set	R

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Object Oriented Modeling & Design (197043607)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ shows a set of objects and their relationships.
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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Object Oriented Modeling & Design (197043607)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Answer the following (Any Three) **12**

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Section – II

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Object Oriented Modeling & Design (197043607)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.		Set	S

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COMPUTER SCIENCE AND ENGINEERING
Object Oriented Modeling & Design (197043607)

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Section – I

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- **c)** Explain State diagram with all notations? Draw state diagram for Phone line?

Section – II

Q.4 Answer the following (Any Three) **12**
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- **c)** Explain concept of Realization with example.
- **d)** Describe Components in UML?

Q.5 Answer the following (Any Two) **16**
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- **b)** Explain Deployment diagram with example.
- **c)** Explain the concept of Interface & package with examples.

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Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Science (197043609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Data science is the process of diverse set of data through?
a) organizing data b) processing data
c) analysing data d) All of the above

2) Choose the primary characteristics of big data among the following:
a) Volume b) Variety
c) Velocity d) All of the above

3) Which library offers many functions and tools to produce quality output in variety of formats such as plot, Charts, Graph etc.
a) NumPy b) Scikit-learn
c) NLTK d) MatplotLib

4) Which of the following is an invalid mode of file opening?
a) read only mode b) write only mode
c) read and write mode d) write and append mode

5) The square root of the variance is called the _____ deviation.
a) empirical b) mean
c) continuous d) standard

6) Point out the wrong statement _____.
a) A percentile is simply a quantile with expressed as a percent
b) There are two types of random variable
c) R cannot approximate quantiles for you for common distributions
d) None of the mentioned

7) The binomial Distribution is based on _____ trial.
a) Einstein b) Bernoulli
c) Bohr d) Kepler

8) What is Machine Learning (ML)?
- a) The autonomous acquisition of knowledge through the use of manual programs
- b) The selective acquisition of knowledge through the use of computer programs
- c) The selective acquisition of knowledge through the use of manual programs
- d) The autonomous acquisition of knowledge through the use of computer programs

9) Father of Machine Learning (ML).
- a) Geoffrey Chaucer
- b) Geoffrey Hill
- c) Geoffrey Everest Hinton
- d) None of these

10) Identify the type of learning in which labeled training data is used.
- a) Supervised Learning
- b) Unsupervised Learning
- c) Semi- Supervised Learning
- d) Reinforcement Learning

11) Which of the following machine learning algorithm is based upon the idea of bagging?
- a) Decision Tree
- b) Random Forest
- c) Classification
- d) Regression

12) Choose a disadvantage of decision trees among the following.
- a) Decision trees are robust to outliers
- b) Factor analysis
- c) Decision trees are prone to overfit
- d) All of the above

13) The prediction of weather over the next 3 to 5 working days is called _____.
- a) weather forecast
- b) climate forecast
- c) weather update
- d) warning of weather

14) Which provides a framework for studying object recognition?
- a) Learning
- b) Unsupervised learning
- c) Supervised learning
- d) None of these

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Science (197043609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any three. **12**

a) What is Data Science process? Explain.
b) Explain about reading data from files with python program.
c) What do you understand by the term Normal Distribution?
d) What is the difference between Point Estimates and Confidence Interval?

Q.3 Solve any one. **08**

a) Explain the concept of Big Data? What are different Vs of Big Data? Explain with example.
b) Explain the concept of Data Visualization. Explain the different types of graphs, plots, charts used for data visualization.

Q.4 Attempt any one. **08**

a) Explain the concept of Simpson's Paradox, with example and appropriate formulas.
b) Differentiate between analysis and reporting with appropriate examples.

Section – II

Q.5 Attempt any three. **12**

a) What is Machine Learning?
b) What is Linear Regression?
c) Explain Support Vector Machine algorithm in detail.
d) Explain how data science is used Stock market prediction in detail.

Q.6 Attempt any one. **08**

a) Explain types of Machine Learning. Differentiate between supervised and unsupervised learning.
b) What is K-Nearest Neighbor algorithm? Explain the steps for classification, regression using KNN.

Q.7 Attempt any one. **08**

a) Write a note on.
i) Object recognition,
ii) Real Time Sentiment Analysis
b) Explain what "Naïve" in Naïve Bayes is. Explain the Naïve Bayes algorithm with appropriate example and figures.

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Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Science (197043609)

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Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) What is Machine Learning (ML)?
a) The autonomous acquisition of knowledge through the use of manual programs
b) The selective acquisition of knowledge through the use of computer programs
c) The selective acquisition of knowledge through the use of manual programs
d) The autonomous acquisition of knowledge through the use of computer programs

2) Father of Machine Learning (ML).
a) Geoffrey Chaucer b) Geoffrey Hill
c) Geoffrey Everest Hinton d) None of these

3) Identify the type of learning in which labeled training data is used.
a) Supervised Learning b) Unsupervised Learning
c) Semi- Supervised Learning d) Reinforcement Learning

4) Which of the following machine learning algorithm is based upon the idea of bagging?
a) Decision Tree b) Random Forest
c) Classification d) Regression

5) Choose a disadvantage of decision trees among the following.
a) Decision trees are robust to outliers
b) Factor analysis
c) Decision trees are prone to overfit
d) All of the above

6) The prediction of weather over the next 3 to 5 working days is called _____.
a) weather forecast b) climate forecast
c) weather update d) warning of weather

7) Which provides a framework for studying object recognition?
a) Learning b) Unsupervised learning
c) Supervised learning d) None of these

8) Data science is the process of diverse set of data through?
a) organizing data b) processing data
c) analysing data d) All of the above

9) Choose the primary characteristics of big data among the following:
a) Volume b) Variety
c) Velocity d) All of the above

10) Which library offers many functions and tools to produce quality output in variety of formats such as plot, Charts, Graph etc.
a) NumPy b) Scikit-learn
c) NLTK d) MatplotLib

11) Which of the following is an invalid mode of file opening?
a) read only mode b) write only mode
c) read and write mode d) write and append mode

12) The square root of the variance is called the _____ deviation.
a) empirical b) mean
c) continuous d) standard

13) Point out the wrong statement _____.
a) A percentile is simply a quantile with expressed as a percent
b) There are two types of random variable
c) R cannot approximate quantiles for you for common distributions
d) None of the mentioned

14) The binomial Distribution is based on _____ trial.
a) Einstein b) Bernoulli
c) Bohr d) Kepler

SLR-GF-279

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Science (197043609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**
- **a)** What is Data Science process? Explain.
- **b)** Explain about reading data from files with python program.
- **c)** What do you understand by the term Normal Distribution?
- **d)** What is the difference between Point Estimates and Confidence Interval?

Q.3 Solve any one. **08**
- **a)** Explain the concept of Big Data? What are different Vs of Big Data? Explain with example.
- **b)** Explain the concept of Data Visualization. Explain the different types of graphs, plots, charts used for data visualization.

Q.4 Attempt any one. **08**
- **a)** Explain the concept of Simpson's Paradox, with example and appropriate formulas.
- **b)** Differentiate between analysis and reporting with appropriate examples.

Section – II

Q.5 Attempt any three. **12**
- **a)** What is Machine Learning?
- **b)** What is Linear Regression?
- **c)** Explain Support Vector Machine algorithm in detail.
- **d)** Explain how data science is used Stock market prediction in detail.

Q.6 Attempt any one. **08**
- **a)** Explain types of Machine Learning. Differentiate between supervised and unsupervised learning.
- **b)** What is K-Nearest Neighbor algorithm? Explain the steps for classification, regression using KNN.

Q.7 Attempt any one. **08**
- **a)** Write a note on.
  - i) Object recognition,
  - ii) Real Time Sentiment Analysis
- **b)** Explain what "Naïve" in Naïve Bayes is. Explain the Naïve Bayes algorithm with appropriate example and figures.

SLR-GF-279

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Science (197043609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Which of the following machine learning algorithm is based upon the idea of bagging?
a) Decision Tree b) Random Forest
c) Classification d) Regression

2) Choose a disadvantage of decision trees among the following.
a) Decision trees are robust to outliers
b) Factor analysis
c) Decision trees are prone to overfit
d) All of the above

3) The prediction of weather over the next 3 to 5 working days is called _____.
a) weather forecast b) climate forecast
c) weather update d) warning of weather

4) Which provides a framework for studying object recognition?
a) Learning b) Unsupervised learning
c) Supervised learning d) None of these

5) Data science is the process of diverse set of data through?
a) organizing data b) processing data
c) analysing data d) All of the above

6) Choose the primary characteristics of big data among the following:
a) Volume b) Variety
c) Velocity d) All of the above

7) Which library offers many functions and tools to produce quality output in variety of formats such as plot, Charts, Graph etc.
a) NumPy b) Scikit-learn
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8) Which of the following is an invalid mode of file opening?
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a) empirical b) mean
c) continuous d) standard

10) Point out the wrong statement _____.
a) A percentile is simply a quantile with expressed as a percent
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12) What is Machine Learning (ML)?
a) The autonomous acquisition of knowledge through the use of manual programs
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c) The selective acquisition of knowledge through the use of manual programs
d) The autonomous acquisition of knowledge through the use of computer programs

13) Father of Machine Learning (ML).
a) Geoffrey Chaucer b) Geoffrey Hill
c) Geoffrey Everest Hinton d) None of these

14) Identify the type of learning in which labeled training data is used.
a) Supervised Learning b) Unsupervised Learning
c) Semi- Supervised Learning d) Reinforcement Learning

SLR-GF-279

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Science (197043609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**
- **a)** What is Data Science process? Explain.
- **b)** Explain about reading data from files with python program.
- **c)** What do you understand by the term Normal Distribution?
- **d)** What is the difference between Point Estimates and Confidence Interval?

Q.3 Solve any one. **08**
- **a)** Explain the concept of Big Data? What are different Vs of Big Data? Explain with example.
- **b)** Explain the concept of Data Visualization. Explain the different types of graphs, plots, charts used for data visualization.

Q.4 Attempt any one. **08**
- **a)** Explain the concept of Simpson's Paradox, with example and appropriate formulas.
- **b)** Differentiate between analysis and reporting with appropriate examples.

Section – II

Q.5 Attempt any three. **12**
- **a)** What is Machine Learning?
- **b)** What is Linear Regression?
- **c)** Explain Support Vector Machine algorithm in detail.
- **d)** Explain how data science is used Stock market prediction in detail.

Q.6 Attempt any one. **08**
- **a)** Explain types of Machine Learning. Differentiate between supervised and unsupervised learning.
- **b)** What is K-Nearest Neighbor algorithm? Explain the steps for classification, regression using KNN.

Q.7 Attempt any one. **08**
- **a)** Write a note on.
  - i) Object recognition,
  - ii) Real Time Sentiment Analysis
- **b)** Explain what "Naïve" in Naïve Bayes is. Explain the Naïve Bayes algorithm with appropriate example and figures.

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Science (197043609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Point out the wrong statement _____.
a) A percentile is simply a quantile with expressed as a percent
b) There are two types of random variable
c) R cannot approximate quantiles for you for common distributions
d) None of the mentioned

2) The binomial Distribution is based on _____ trial.
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3) What is Machine Learning (ML)?
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d) The autonomous acquisition of knowledge through the use of computer programs

4) Father of Machine Learning (ML).
a) Geoffrey Chaucer b) Geoffrey Hill
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5) Identify the type of learning in which labeled training data is used.
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c) Semi- Supervised Learning d) Reinforcement Learning

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a) Decision Tree b) Random Forest
c) Classification d) Regression

7) Choose a disadvantage of decision trees among the following.
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b) Factor analysis
c) Decision trees are prone to overfit
d) All of the above

8) The prediction of weather over the next 3 to 5 working days is called _____.
a) weather forecast b) climate forecast
c) weather update d) warning of weather

9) Which provides a framework for studying object recognition?
a) Learning b) Unsupervised learning
c) Supervised learning d) None of these

10) Data science is the process of diverse set of data through?
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12) Which library offers many functions and tools to produce quality output in variety of formats such as plot, Charts, Graph etc.
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c) NLTK d) MatplotLib

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c) read and write mode d) write and append mode

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a) empirical b) mean
c) continuous d) standard

SLR-GF-279

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Science (197043609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three. **12**
- **a)** What is Data Science process? Explain.
- **b)** Explain about reading data from files with python program.
- **c)** What do you understand by the term Normal Distribution?
- **d)** What is the difference between Point Estimates and Confidence Interval?

Q.3 Solve any one. **08**
- **a)** Explain the concept of Big Data? What are different Vs of Big Data? Explain with example.
- **b)** Explain the concept of Data Visualization. Explain the different types of graphs, plots, charts used for data visualization.

Q.4 Attempt any one. **08**
- **a)** Explain the concept of Simpson's Paradox, with example and appropriate formulas.
- **b)** Differentiate between analysis and reporting with appropriate examples.

Section – II

Q.5 Attempt any three. **12**
- **a)** What is Machine Learning?
- **b)** What is Linear Regression?
- **c)** Explain Support Vector Machine algorithm in detail.
- **d)** Explain how data science is used Stock market prediction in detail.

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- **a)** Explain types of Machine Learning. Differentiate between supervised and unsupervised learning.
- **b)** What is K-Nearest Neighbor algorithm? Explain the steps for classification, regression using KNN.

Q.7 Attempt any one. **08**
- **a)** Write a note on.
  - i) Object recognition,
  - ii) Real Time Sentiment Analysis
- **b)** Explain what "Naïve" in Naïve Bayes is. Explain the Naïve Bayes algorithm with appropriate example and figures.

SLR-GF-280

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (197043610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Which of the following is a new input attributes introduced by html5?
a) text b) date
c) submit button d) checkbox controls

2) Which of the following is not semantic element for text in HTML5?
a) <wbr> b) <time>
c) <mark> d) <article>

3) Which HTML tag is used to declare internal CSS?
a) <link> b) <style>
c) <inline> d) <script>

4) Which of the following jQuery method can be used to deal with the name conflicts?
a) The conflict() method b) The nameConflict() method
c) The noConflict() method d) None of the above

5) Which of the following class in Bootstrap is used to provide a responsive fixed width container?
a) .container-fixed b) .container-fluid
c) .container d) All of the above

6) Which of the following class in bootstrap is used to create a big box for calling extra attention?
a) box b) .container
c) .container-fluid d) .jumbotron

7) The plugin used to create a cycle through elements as a slideshow is _____.
a) slideshow b) scrollspy
c) carousel d) none of the above

8) JSON stands for _____.
a) JavaScript Object Notation
b) Java Object Notation
c) JavaScript Object Normalization
d) JavaScript Object-Oriented Notation

9) Which of the following jQuery method is used to hide the selected elements?

a) The hidden() method
b) The hide() method
c) The visible(false) method
d) The display(none) method

10) Arrays in JavaScript are defined by which of the following statements?

a) It is an ordered list of values
b) It is an ordered list of objects
c) It is an ordered list of string
d) It is an ordered list of functions

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (197043610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any four Question from Q.2
2) Figures to the right indicate full marks.

Answer any four. **40**

a) Explain the features of HTML5.
b) What is CSS? Explain different types of selectors with example.
c) Create a form for student information. Write a JavaScript code to find total, average, result & grade.
d) How to convert PSD into HTML?
e) Write a short note on jQuery DOM manipulation.
f) Explain why to use bootstrap for building websites? Explain Bootstrap layout components.
g) Write a short note on Event Handling in JavaScript.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (197043610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Which of the following class in bootstrap is used to create a big box for calling extra attention?
a) box b) .container
c) .container-fluid d) .jumbotron

2) The plugin used to create a cycle through elements as a slideshow is _____.
a) slideshow b) scrollspy
c) carousel d) none of the above

3) JSON stands for _____.
a) JavaScript Object Notation
b) Java Object Notation
c) JavaScript Object Normalization
d) JavaScript Object-Oriented Notation

4) Which of the following jQuery method is used to hide the selected elements?
a) The hidden() method b) The hide() method
c) The visible(false) method d) The display(none) method

5) Arrays in JavaScript are defined by which of the following statements?
a) It is an ordered list of values b) It is an ordered list of objects
c) It is an ordered list of string d) It is an ordered list of functions

6) Which of the following is a new input attributes introduced by html5?
a) text b) date
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a) The conflict() method
b) The nameConflict() method
c) The noConflict() method
d) None of the above

10) Which of the following class in Bootstrap is used to provide a responsive fixed width container?

a) .container-fixed
b) .container-fluid
c) .container
d) All of the above

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (197043610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any four Question from Q.2
2) Figures to the right indicate full marks.

Answer any four. **40**

a) Explain the features of HTML5.
b) What is CSS? Explain different types of selectors with example.
c) Create a form for student information. Write a JavaScript code to find total, average, result & grade.
d) How to convert PSD into HTML?
e) Write a short note on jQuery DOM manipulation.
f) Explain why to use bootstrap for building websites? Explain Bootstrap layout components.
g) Write a short note on Event Handling in JavaScript.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (197043610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Which of the following jQuery method is used to hide the selected elements?
a) The hidden() method b) The hide() method
c) The visible(false) method d) The display(none) method

2) Arrays in JavaScript are defined by which of the following statements?
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8) Which of the following class in bootstrap is used to create a big box for calling extra attention?
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9) The plugin used to create a cycle through elements as a slideshow is _____.
a) slideshow b) scrollspy
c) carousel d) none of the above

10) JSON stands for _____.

a) JavaScript Object Notation
b) Java Object Notation
c) JavaScript Object Normalization
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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (197043610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any four Question from Q.2
2) Figures to the right indicate full marks.

Answer any four. **40**

a) Explain the features of HTML5.
b) What is CSS? Explain different types of selectors with example.
c) Create a form for student information. Write a JavaScript code to find total, average, result & grade.
d) How to convert PSD into HTML?
e) Write a short note on jQuery DOM manipulation.
f) Explain why to use bootstrap for building websites? Explain Bootstrap layout components.
g) Write a short note on Event Handling in JavaScript.

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (197043610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Which HTML tag is used to declare internal CSS?
a) <link> b) <style>
c) <inline> d) <script>

2) Which of the following jQuery method can be used to deal with the name conflicts?
a) The conflict() method b) The nameConflict() method
c) The noConflict() method d) None of the above

3) Which of the following class in Bootstrap is used to provide a responsive fixed width container?
a) .container-fixed b) .container-fluid
c) .container d) All of the above

4) Which of the following class in bootstrap is used to create a big box for calling extra attention?
a) box b) .container
c) .container-fluid d) .jumbotron

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9) Which of the following is a new input attributes introduced by html5?

a) text b) date

c) submit button d) checkbox controls

10) Which of the following is not semantic element for text in HTML5?

a) <wbr> b) <time>

c) <mark> d) <article>

Seat No.	

Set | S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
UI/UX Technology (197043610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any four Question from Q.2
2) Figures to the right indicate full marks.

Answer any four. **40**

a) Explain the features of HTML5.
b) What is CSS? Explain different types of selectors with example.
c) Create a form for student information. Write a JavaScript code to find total, average, result & grade.
d) How to convert PSD into HTML?
e) Write a short note on jQuery DOM manipulation.
f) Explain why to use bootstrap for building websites? Explain Bootstrap layout components.
g) Write a short note on Event Handling in JavaScript.

SLR-GF-281

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Software Licenses and Practices (197043611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Public domain software is usually _____.
a) System supported b) Source supported
c) Community supported d) Programmer supported

2) Choose the correct option in terms of Issues related to professional responsibility _____.
a) Confidentiality
b) Intellectual property rights
c) Both Confidentiality & Intellectual property rights
d) Managing Client Relationships

3) A voluntary arrangement between two or more parties that is enforceable by law as a binding legal agreement is known as _____.
a) job b) loan
c) contract d) mutual fund

4) Which is not a type of intellectual property?
a) Trade secrets b) Trade marks
c) Home loans d) Copyrights

5) Richard Stallman from MIT, established a special license, the _____ license.
a) GNU b) Free
c) Package d) Commercial

6) Which of the following identifies as a trademark?
a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

7) They normally interact with the system via user interface provided by the application software _____.
a) Programmers b) Developers
c) Users d) Testers

8) How are final contracts signed in modem business?
a) e-Signatures b) Document scanning
c) Thump impression d) Shaking hands

9) _____ contract is one that has automatic renewals until one party requests termination.

a) Uniform
b) Evergreen
c) Moderate
d) On-demand

10) Efficiency in a software product does not include _____.

a) responsiveness
b) licensing
c) memory utilization
d) processing time

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Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Software Licenses and Practices (197043611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any four Question from Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 State and explain basic principles of copyright law. **10**

Q.3 Explain in brief: **10**
a) Classic Proprietary License
b) Sun Community Source License

Q.4 Explain Compatible and Incompatible Licensing. **10**

Q.5 Discuss with Open Source and Free Software Licensing. **10**

Q.6 **Write a short note on:** **10**
a) Patent
b) BSD Licenses

Q.7 List and explain different issues with copyright and patent. **10**

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Software Licenses and Practices (197043611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Which of the following identifies as a trademark?
a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

2) They normally interact with the system via user interface provided by the application software _____.
a) Programmers b) Developers
c) Users d) Testers

3) How are final contracts signed in modem business?
a) e-Signatures b) Document scanning
c) Thump impression d) Shaking hands

4) _____ contract is one that has automatic renewals until one party requests termination.
a) Uniform b) Evergreen
c) Moderate d) On-demand

5) Efficiency in a software product does not include _____.
a) responsiveness b) licensing
c) memory utilization d) processing time

6) Public domain software is usually _____.
a) System supported b) Source supported
c) Community supported d) Programmer supported

7) Choose the correct option in terms of Issues related to professional responsibility _____.
a) Confidentiality
b) Intellectual property rights
c) Both Confidentiality & Intellectual property rights
d) Managing Client Relationships

8) A voluntary arrangement between two or more parties that is enforceable by law as a binding legal agreement is known as _____.
a) job b) loan
c) contract d) mutual fund

9) Which is not a type of intellectual property?

a) Trade secrets b) Trade marks

c) Home loans d) Copyrights

10) Richard Stallman from MIT, established a special license, the _____ license.

a) GNU b) Free

c) Package d) Commercial

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Seat No.		Set	Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Software Licenses and Practices (197043611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any four Question from Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 State and explain basic principles of copyright law. **10**

Q.3 Explain in brief: **10**
a) Classic Proprietary License
b) Sun Community Source License

Q.4 Explain Compatible and Incompatible Licensing. **10**

Q.5 Discuss with Open Source and Free Software Licensing. **10**

Q.6 **Write a short note on:** **10**
a) Patent
b) BSD Licenses

Q.7 List and explain different issues with copyright and patent. **10**

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Software Licenses and Practices (197043611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) _____ contract is one that has automatic renewals until one party requests termination.
a) Uniform b) Evergreen
c) Moderate d) On-demand

2) Efficiency in a software product does not include _____.
a) responsiveness b) licensing
c) memory utilization d) processing time

3) Public domain software is usually _____.
a) System supported b) Source supported
c) Community supported d) Programmer supported

4) Choose the correct option in terms of Issues related to professional responsibility _____.
a) Confidentiality
b) Intellectual property rights
c) Both Confidentiality & Intellectual property rights
d) Managing Client Relationships

5) A voluntary arrangement between two or more parties that is enforceable by law as a binding legal agreement is known as _____.
a) job b) loan
c) contract d) mutual fund

6) Which is not a type of intellectual property?
a) Trade secrets b) Trade marks
c) Home loans d) Copyrights

7) Richard Stallman from MIT, established a special license, the _____ license.
a) GNU b) Free
c) Package d) Commercial

8) Which of the following identifies as a trademark?
a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

9) They normally interact with the system via user interface provided by the application software _____.

a) Programmers b) Developers
c) Users d) Testers

10) How are final contracts signed in modem business?

a) e-Signatures b) Document scanning
c) Thump impression d) Shaking hands

SLR-GF-281

Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Software Licenses and Practices (197043611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any four Question from Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 State and explain basic principles of copyright law. **10**

Q.3 Explain in brief: **10**
a) Classic Proprietary License
b) Sun Community Source License

Q.4 Explain Compatible and Incompatible Licensing. **10**

Q.5 Discuss with Open Source and Free Software Licensing. **10**

Q.6 **Write a short note on:** **10**
a) Patent
b) BSD Licenses

Q.7 List and explain different issues with copyright and patent. **10**

Seat No.	

Set **S**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Software Licenses and Practices (197043611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) A voluntary arrangement between two or more parties that is enforceable by law as a binding legal agreement is known as _____.
a) job b) loan
c) contract d) mutual fund

2) Which is not a type of intellectual property?
a) Trade secrets b) Trade marks
c) Home loans d) Copyrights

3) Richard Stallman from MIT, established a special license, the _____ license.
a) GNU b) Free
c) Package d) Commercial

4) Which of the following identifies as a trademark?
a) Name, symbol b) Symbol, logo
c) Logo, name d) Name, symbol, logo

5) They normally interact with the system via user interface provided by the application software _____.
a) Programmers b) Developers
c) Users d) Testers

6) How are final contracts signed in modem business?
a) e-Signatures b) Document scanning
c) Thump impression d) Shaking hands

7) _____ contract is one that has automatic renewals until one party requests termination.
a) Uniform b) Evergreen
c) Moderate d) On-demand

8) Efficiency in a software product does not include _____.
a) responsiveness b) licensing
c) memory utilization d) processing time

9) Public domain software is usually _____.
a) System supported b) Source supported
c) Community supported d) Programmer supported

10) Choose the correct option in terms of Issues related to professional responsibility _____.

a) Confidentiality
b) Intellectual property rights
c) Both Confidentiality & Intellectual property rights
d) Managing Client Relationships

SLR-GF-281

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Software Licenses and Practices (197043611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any four Question from Q.2 to Q.7.
2) Figures to the right indicate full marks.

Q.2 State and explain basic principles of copyright law. **10**

Q.3 Explain in brief: **10**
a) Classic Proprietary License
b) Sun Community Source License

Q.4 Explain Compatible and Incompatible Licensing. **10**

Q.5 Discuss with Open Source and Free Software Licensing. **10**

Q.6 **Write a short note on:** **10**
a) Patent
b) BSD Licenses

Q.7 List and explain different issues with copyright and patent. **10**

Seat No.	

Set **P**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) This money is considered as an investment by the organisation in doing quality work _____.
a) Blue Money b) White Money
c) Green Money d) Red Money

2) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation b) Quality Assurance
c) Verification d) None of these

3) Sandwich and Big bang approaches are the _____ testing techniques.
a) Unit Testing b) Control flow
c) Domain d) System integration

4) _____ coverage involves tracking a piece of data completely through the software.
a) Data flow b) Process flow
c) Information flow d) None of these

5) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
a) Test Planning b) Test Strategy
c) Test Design d) Equivalence Partitioning

6) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

7) _____ quality characteristics of ISO 9126 quality standards.
a) Functionality b) Stability
c) Security d) Accuracy

8) Reasons for not fixing all the bugs _____.
a) Too risky to fix
b) Not enough time
c) Inefficient bug reporting
d) All of these

9) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design
b) Test Procedures
c) Test Phases
d) Test Planning

10) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All of these

11) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as: _____.
a) Software Quality
b) Quality Control
c) Software Availability
d) All of these

12) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software product.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

13) A _____ analyzer is an example of a viewing tool.
a) Data Flow
b) Code coverage
c) Information flow
d) All of these

14) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors
b) Drivers
c) Stubs
d) Stress and Load Tools

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Answer any four questions. **16**

a) Explain Testing Process in detail.
b) Compare the term mistake, error and defect in detail.
c) Difference between Black Box Testing v/s White Box Testing
d) Write note on Equivalence partitioning.
e) Explain the term Integration Testing in brief.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain Verification and Validation model.
c) Explain Acceptance testing in detail.

Section – II

Q.4 Answer any four questions. **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Bugs Life Cycle with diagram.
b) Explain ISO 9000 and CMM Quality standards.
c) Explain in detail the Selenium testing tool.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All of these

2) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

3) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All of these

4) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as: _____.
a) Software Quality b) Quality Control
c) Software Availability d) All of these

5) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software product.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

6) A _____ analyzer is an example of a viewing tool.
a) Data Flow b) Code coverage
c) Information flow d) All of these

7) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.

a) Viewers and Monitors b) Drivers
c) Stubs d) Stress and Load Tools

8) This money is considered as an investment by the organisation in doing quality work _____.

a) Blue Money b) White Money
c) Green Money d) Red Money

9) It is an activity where we check the work products with reference to standards, guidelines and procedures.

a) Validation b) Quality Assurance
c) Verification d) None of these

10) Sandwich and Big bang approaches are the _____ testing techniques.

a) Unit Testing b) Control flow
c) Domain d) System integration

11) _____ coverage involves tracking a piece of data completely through the software.

a) Data flow b) Process flow
c) Information flow d) None of these

12) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.

a) Test Planning b) Test Strategy
c) Test Design d) Equivalence Partitioning

13) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.

a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

14) _____ quality characteristics of ISO 9126 quality standards.

a) Functionality b) Stability
c) Security d) Accuracy

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Answer any four questions. **16**
- **a)** Explain Testing Process in detail.
- **b)** Compare the term mistake, error and defect in detail.
- **c)** Difference between Black Box Testing v/s White Box Testing
- **d)** Write note on Equivalence partitioning.
- **e)** Explain the term Integration Testing in brief.

Q.3 Answer any two questions. **12**
- **a)** Explain Defect Management Process.
- **b)** Explain Verification and Validation model.
- **c)** Explain Acceptance testing in detail.

Section – II

Q.4 Answer any four questions. **16**
- **a)** What are the four reasons for Test Case Planning?
- **b)** Why it is not possible to fix all the bugs?
- **c)** Explain the elements of Software Quality Assurance.
- **d)** Explain five views of quality.
- **e)** Explain Random Testing in automation.

Q.5 Answer any two questions. **12**
- **a)** Explain Bugs Life Cycle with diagram.
- **b)** Explain ISO 9000 and CMM Quality standards.
- **c)** Explain in detail the Selenium testing tool.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as: _____.
a) Software Quality b) Quality Control
c) Software Availability d) All of these

2) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software product.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

3) A _____ analyzer is an example of a viewing tool.
a) Data Flow b) Code coverage
c) Information flow d) All of these

4) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors b) Drivers
c) Stubs d) Stress and Load Tools

5) This money is considered as an investment by the organisation in doing quality work _____.
a) Blue Money b) White Money
c) Green Money d) Red Money

6) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation b) Quality Assurance
c) Verification d) None of these

7) Sandwich and Big bang approaches are the _____ testing techniques.
a) Unit Testing b) Control flow
c) Domain d) System integration

8) _____ coverage involves tracking a piece of data completely through the software.
a) Data flow b) Process flow
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9) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
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c) Test Design d) Equivalence Partitioning

10) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

11) _____ quality characteristics of ISO 9126 quality standards.
a) Functionality b) Stability
c) Security d) Accuracy

12) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All of these

13) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

14) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All of these

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Answer any four questions. **16**
- **a)** Explain Testing Process in detail.
- **b)** Compare the term mistake, error and defect in detail.
- **c)** Difference between Black Box Testing v/s White Box Testing
- **d)** Write note on Equivalence partitioning.
- **e)** Explain the term Integration Testing in brief.

Q.3 Answer any two questions. **12**
- **a)** Explain Defect Management Process.
- **b)** Explain Verification and Validation model.
- **c)** Explain Acceptance testing in detail.

Section – II

Q.4 Answer any four questions. **16**
- **a)** What are the four reasons for Test Case Planning?
- **b)** Why it is not possible to fix all the bugs?
- **c)** Explain the elements of Software Quality Assurance.
- **d)** Explain five views of quality.
- **e)** Explain Random Testing in automation.

Q.5 Answer any two questions. **12**
- **a)** Explain Bugs Life Cycle with diagram.
- **b)** Explain ISO 9000 and CMM Quality standards.
- **c)** Explain in detail the Selenium testing tool.

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

2) _____ quality characteristics of ISO 9126 quality standards.
a) Functionality b) Stability
c) Security d) Accuracy

3) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All of these

4) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

5) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All of these

6) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as: _____.
a) Software Quality b) Quality Control
c) Software Availability d) All of these

7) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software product.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

8) A _____ analyzer is an example of a viewing tool.
a) Data Flow
b) Code coverage
c) Information flow
d) All of these

9) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors
b) Drivers
c) Stubs
d) Stress and Load Tools

10) This money is considered as an investment by the organisation in doing quality work _____.
a) Blue Money
b) White Money
c) Green Money
d) Red Money

11) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation
b) Quality Assurance
c) Verification
d) None of these

12) Sandwich and Big bang approaches are the _____ testing techniques.
a) Unit Testing
b) Control flow
c) Domain
d) System integration

13) _____ coverage involves tracking a piece of data completely through the software.
a) Data flow
b) Process flow
c) Information flow
d) None of these

14) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
a) Test Planning
b) Test Strategy
c) Test Design
d) Equivalence Partitioning

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Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (BTN03701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Answer any four questions. **16**

a) Explain Testing Process in detail.
b) Compare the term mistake, error and defect in detail.
c) Difference between Black Box Testing v/s White Box Testing
d) Write note on Equivalence partitioning.
e) Explain the term Integration Testing in brief.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain Verification and Validation model.
c) Explain Acceptance testing in detail.

Section – II

Q.4 Answer any four questions. **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Bugs Life Cycle with diagram.
b) Explain ISO 9000 and CMM Quality standards.
c) Explain in detail the Selenium testing tool.

SLR-GF-283

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In the expression, position = initial + rate * 60, how many tokens will get generated?
a) 4 b) 5
c) 6 d) 7

2) For recognition of tokens _____ can be used.
a) stack b) regular expression
c) finite automata d) queue

3) The role of lexical analyzer can be stated as _____.
a) Generate tokens b) Generate parse tree
c) Separate out blacks d) both a and c

4) _____ is the most powerful bottom up parser.
a) SLR b) LALR
c) Canonical LR d) All of these

5) Consider the given grammar $G: S -> aBCd, B -> b, C -> c$ Then FIRST (S) will contain _____.
a) a b) b
c) c d) d

6) In L attributed definition, the node can get the attributes from its _____.
a) Parent node b) left sibling
c) right sibling d) both a and b
e) all of these

7) The bottom up evaluation of expression is done using _____.
a) array b) linked list
c) stack d) queue

8) In the activation record, the details of hardware components like register are stored in _____ field.
a) temporaries b) control link
c) access link d) machine status

9) Collecting all free memory towards one end of memory block is called _____.
a) Allocation b) De allocation
c) Compaction d) Conservation

10) The 3-address code has _____ addresses in one instruction.
a) Exactly 3 b) At least 3
c) At most 3 d) all of these

11) Filling up the blank spaces after 3 address code generation in conditional statements is called _____.
a) Forwarding b) Back patching
c) Loop unrolling d) none of these

12) The target code generation is based on various issues like _____.
a) Register allocation b) Instruction cost
c) Code generation from DAGs d) both a and b

13) Code optimization can achieve _____.
a) Faster execution of code b) Less memory requirement
c) Compact source code d) All of these

14) Loop optimization can be done in which of the following ways?
a) Code motion b) Induction variable elimination
c) Loop unrolling d) All of these

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Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**
- **a)** Explain input buffering with example.
- **b)** Explain LEX as a lexical analyzer generator.
- **c)** Explain Left recursion with example.
- **d)** Explain Dependency graph and generation of syntax tree with example.
- **e)** Explain Top down translation of inherited attributes.

Q.3 Attempt the following questions. **12**
- **a)** Write a short note on compiler construction tools.
- **b)** Explain how to calculate FIRST and FOLLOW for the grammar with example.

Section – II

Q.4 Attempt any four. **16**
- **a)** Explain storage organization and allocation strategies.
- **b)** Explain a simple code generator in detail.
- **c)** Explain implicit deallocation with diagram.
- **d)** Explain 3 address code generation for assignment statement.
- **e)** Explain peephole optimization with example.

Q.5 Attempt the following questions. **12**
- **a)** Explain quadruple, triple and indirect triple with example.
- **b)** Explain Activation record in detail.

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In the activation record, the details of hardware components like register are stored in _____ field.
a) temporaries b) control link
c) access link d) machine status

2) Collecting all free memory towards one end of memory block is called _____.
a) Allocation b) De allocation
c) Compaction d) Conservation

3) The 3-address code has _____ addresses in one instruction.
a) Exactly 3 b) At least 3
c) At most 3 d) all of these

4) Filling up the blank spaces after 3 address code generation in conditional statements is called _____.
a) Forwarding b) Back patching
c) Loop unrolling d) none of these

5) The target code generation is based on various issues like _____.
a) Register allocation b) Instruction cost
c) Code generation from DAGs d) both a and b

6) Code optimization can achieve _____.
a) Faster execution of code b) Less memory requirement
c) Compact source code d) All of these

7) Loop optimization can be done in which of the following ways?
a) Code motion b) Induction variable elimination
c) Loop unrolling d) All of these

8) In the expression, position = initial + rate * 60, how many tokens will get generated?
a) 4 b) 5
c) 6 d) 7

9) For recognition of tokens _____ can be used.
a) stack b) regular expression
c) finite automata d) queue

10) The role of lexical analyzer can be stated as _____.

a) Generate tokens
b) Generate parse tree
c) Separate out blacks
d) both a and c

11) _____ is the most powerful bottom up parser.

a) SLR
b) LALR
c) Canonical LR
d) All of these

12) Consider the given grammar $G: S -> aBCd, B -> b, C -> c$ Then FIRST (S) will contain _____.

a) a
b) b
c) c
d) d

13) In L attributed definition, the node can get the attributes from its _____.

a) Parent node
b) left sibling
c) right sibling
d) both a and b
e) all of these

14) The bottom up evaluation of expression is done using _____.

a) array
b) linked list
c) stack
d) queue

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Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**
- **a)** Explain input buffering with example.
- **b)** Explain LEX as a lexical analyzer generator.
- **c)** Explain Left recursion with example.
- **d)** Explain Dependency graph and generation of syntax tree with example.
- **e)** Explain Top down translation of inherited attributes.

Q.3 Attempt the following questions. **12**
- **a)** Write a short note on compiler construction tools.
- **b)** Explain how to calculate FIRST and FOLLOW for the grammar with example.

Section – II

Q.4 Attempt any four. **16**
- **a)** Explain storage organization and allocation strategies.
- **b)** Explain a simple code generator in detail.
- **c)** Explain implicit deallocation with diagram.
- **d)** Explain 3 address code generation for assignment statement.
- **e)** Explain peephole optimization with example.

Q.5 Attempt the following questions. **12**
- **a)** Explain quadruple, triple and indirect triple with example.
- **b)** Explain Activation record in detail.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Filling up the blank spaces after 3 address code generation in conditional statements is called _____.
a) Forwarding b) Back patching
c) Loop unrolling d) none of these

2) The target code generation is based on various issues like _____.
a) Register allocation b) Instruction cost
c) Code generation from DAGs d) both a and b

3) Code optimization can achieve _____.
a) Faster execution of code b) Less memory requirement
c) Compact source code d) All of these

4) Loop optimization can be done in which of the following ways?
a) Code motion b) Induction variable elimination
c) Loop unrolling d) All of these

5) In the expression, position = initial + rate * 60, how many tokens will get generated?
a) 4 b) 5
c) 6 d) 7

6) For recognition of tokens _____ can be used.
a) stack b) regular expression
c) finite automata d) queue

7) The role of lexical analyzer can be stated as _____.
a) Generate tokens b) Generate parse tree
c) Separate out blacks d) both a and c

8) _____ is the most powerful bottom up parser.
a) SLR b) LALR
c) Canonical LR d) All of these

9) Consider the given grammar $G: S -> aBCd, B -> b, C -> c$ Then FIRST (S) will contain _____.
a) a b) b
c) c d) d

10) In L attributed definition, the node can get the attributes from its _____.
a) Parent node b) left sibling
c) right sibling d) both a and b
e) all of these

11) The bottom up evaluation of expression is done using _____.
a) array b) linked list
c) stack d) queue

12) In the activation record, the details of hardware components like register are stored in _____ field.
a) temporaries b) control link
c) access link d) machine status

13) Collecting all free memory towards one end of memory block is called _____.
a) Allocation b) De allocation
c) Compaction d) Conservation

14) The 3-address code has _____ addresses in one instruction.
a) Exactly 3 b) At least 3
c) At most 3 d) all of these

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Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**
- **a)** Explain input buffering with example.
- **b)** Explain LEX as a lexical analyzer generator.
- **c)** Explain Left recursion with example.
- **d)** Explain Dependency graph and generation of syntax tree with example.
- **e)** Explain Top down translation of inherited attributes.

Q.3 Attempt the following questions. **12**
- **a)** Write a short note on compiler construction tools.
- **b)** Explain how to calculate FIRST and FOLLOW for the grammar with example.

Section – II

Q.4 Attempt any four. **16**
- **a)** Explain storage organization and allocation strategies.
- **b)** Explain a simple code generator in detail.
- **c)** Explain implicit deallocation with diagram.
- **d)** Explain 3 address code generation for assignment statement.
- **e)** Explain peephole optimization with example.

Q.5 Attempt the following questions. **12**
- **a)** Explain quadruple, triple and indirect triple with example.
- **b)** Explain Activation record in detail.

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In L attributed definition, the node can get the attributes from its _____.
a) Parent node b) left sibling
c) right sibling d) both a and b
e) all of these

2) The bottom up evaluation of expression is done using _____.
a) array b) linked list
c) stack d) queue

3) In the activation record, the details of hardware components like register are stored in _____ field.
a) temporaries b) control link
c) access link d) machine status

4) Collecting all free memory towards one end of memory block is called _____.
a) Allocation b) De allocation
c) Compaction d) Conservation

5) The 3-address code has _____ addresses in one instruction.
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a) Forwarding b) Back patching
c) Loop unrolling d) none of these

7) The target code generation is based on various issues like _____.
a) Register allocation b) Instruction cost
c) Code generation from DAGs d) both a and b

8) Code optimization can achieve _____.
a) Faster execution of code b) Less memory requirement
c) Compact source code d) All of these

9) Loop optimization can be done in which of the following ways?
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c) Loop unrolling d) All of these

10) In the expression, position = initial + rate * 60, how many tokens will get generated?

a) 4 b) 5
c) 6 d) 7

11) For recognition of tokens _____ can be used.

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c) finite automata d) queue

12) The role of lexical analyzer can be stated as _____.

a) Generate tokens b) Generate parse tree
c) Separate out blacks d) both a and c

13) _____ is the most powerful bottom up parser.

a) SLR b) LALR
c) Canonical LR d) All of these

14) Consider the given grammar $G: S -> aBCd, B -> b, C -> c$ Then FIRST (S) will contain _____.

a) a b) b
c) c d) d

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Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Compiler Construction (BTN03702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**
- **a)** Explain input buffering with example.
- **b)** Explain LEX as a lexical analyzer generator.
- **c)** Explain Left recursion with example.
- **d)** Explain Dependency graph and generation of syntax tree with example.
- **e)** Explain Top down translation of inherited attributes.

Q.3 Attempt the following questions. **12**
- **a)** Write a short note on compiler construction tools.
- **b)** Explain how to calculate FIRST and FOLLOW for the grammar with example.

Section – II

Q.4 Attempt any four. **16**
- **a)** Explain storage organization and allocation strategies.
- **b)** Explain a simple code generator in detail.
- **c)** Explain implicit deallocation with diagram.
- **d)** Explain 3 address code generation for assignment statement.
- **e)** Explain peephole optimization with example.

Q.5 Attempt the following questions. **12**
- **a)** Explain quadruple, triple and indirect triple with example.
- **b)** Explain Activation record in detail.

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Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Business Intelligence (BTN03706)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What is true about data mining?
a) Data Mining is defined as the procedure of extracting information from huge sets of data
b) Data mining doesn't involve other processes such as Data Cleaning, Data Integration, Data Transformation
c) Data mining is not the procedure of mining knowledge from data
d) None of the above

2) The problem of finding hidden structure in unlabeled data is called _____.
a) Supervised Learning b) Unsupervised Learning
c) Reinforcement Learning d) All of the above

3) Business intelligence (BI) is a broad category of application programs which includes _____.
a) Decision support b) Data Mining
c) OLAP d) All of the above

4) Business intelligence equips enterprises to gain business advantage from data _____.
a) TRUE b) FALSE
c) Can be true or false d) Cannot say

5) The quality of input data may prove unsatisfactory due to _____.
a) incompleteness b) noise
c) inconsistency d) All the above

6) To partially correct incomplete data one may adopt _____.
a) Elimination
b) Elimination, Inspection
c) Identification, Inspection
d) Elimination, Inspection, Identification and Substitution

7) DSS stands for _____.
a) Definite Support System b) Decision Support System
c) Defining Support System d) Derived Support System

8) Match the sequence of DSS development _____.
a) Requirements, Analysis, Planning, Design, Implementation, Delivery
b) Analysis, Requirements, Planning, Design, Implementation, Delivery
c) Requirements, Planning, Analysis, Design, Implementation, Delivery
d) Requirements, Planning, Design, Analysis, Implementation, Delivery

9) OLAP-
a) Online analytical processing
b) Online automotive processing
c) Online analysis processing
d) Online Automatic processing

10) A goal of data mining includes which of the following?
a) To explain some observed event or condition
b) To confirm that data exists
c) To analyze data for expected relationships
d) To create a new data warehouse

11) The most learning models benefit is from a preventive standardization of the data also called as _____.
a) Normalization
b) Extraction
c) Sampling
d) transformation

12) Criteria's to determine whether a data reduction technique should be used:
a) efficiency, Accuracy and Simplicity
b) Accuracy
c) Efficiency
d) None from Above

13) Which is the last Phases of mathematical models for decision making _____.
a) Problem Identification
b) Implementation and Testing
c) Model Formation
d) Development of Algorithm

14) The purpose of a data mining process is some-times to provide a simple and concise representation of the information stored in a _____.
a) small dataset
b) large dataset
c) numeric dataset
d) Stored dataset

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Business Intelligence (BTN03706)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three of the following **12**
- **a)** Explain Data Warehouse architecture with diagram.
- **b)** How Data mining process provide useful knowledge to decision makers? Explain with neat diagram.
- **c)** Explain Data Reduction with example.
- **d)** Explain how effective and timely decisions works for Business with real time example.

Q.3 Attempt any one of the following. **08**
- **a)** Compare Univariate and Bivariate Analysis with example.
- **b)** Explain Business Intelligence architecture and mention ethics on BI.

Q.4 Explain Definition and development of Decision Support System with example. **08**

Section – II

Q.5 Attempt any four of the following. **16**
- **a)** Explain Simple and Multiple regression with example.
- **b)** Explain evolution of classification models.
- **c)** Why Autoregressive models are used?
- **d)** Explain Relational marketing model with real time example.
- **e)** Explain structure of Association rules.

Q.6 Attempt any one of the following **06**
- **a)** Define Time series. How evaluation and analysis of time series take place?
- **b)** Explain Bayesian Classification with real time example.

Q.7 Explain with a real time example for Business case studies which will cover supply chain optimization, optimization models for logistics planning, revenue management system of that business. **06**

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Business Intelligence (BTN03706)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Match the sequence of DSS development _____.
a) Requirements, Analysis, Planning, Design, Implementation, Delivery
b) Analysis, Requirements, Planning, Design, Implementation, Delivery
c) Requirements, Planning, Analysis, Design, Implementation, Delivery
d) Requirements, Planning, Design, Analysis, Implementation, Delivery

2) OLAP-
a) Online analytical processing b) Online automotive processing
c) Online analysis processing d) Online Automatic processing

3) A goal of data mining includes which of the following?
a) To explain some observed event or condition
b) To confirm that data exists
c) To analyze data for expected relationships
d) To create a new data warehouse

4) The most learning models benefit is from a preventive standardization of the data also called as _____.
a) Normalization b) Extraction
c) Sampling d) transformation

5) Criteria's to determine whether a data reduction technique should be used:
a) efficiency, Accuracy and Simplicity
b) Accuracy
c) Efficiency
d) None from Above

6) Which is the last Phases of mathematical models for decision making _____.
a) Problem Identification
b) Implementation and Testing
c) Model Formation
d) Development of Algorithm

7) The purpose of a data mining process is some-times to provide a simple and concise representation of the information stored in a _____.
a) small dataset b) large dataset
c) numeric dataset d) Stored dataset

8) What is true about data mining?
   a) Data Mining is defined as the procedure of extracting information from huge sets of data
   b) Data mining doesn't involve other processes such as Data Cleaning, Data Integration, Data Transformation
   c) Data mining is not the procedure of mining knowledge from data
   d) None of the above

9) The problem of finding hidden structure in unlabeled data is called _____.
   a) Supervised Learning b) Unsupervised Learning
   c) Reinforcement Learning d) All of the above

10) Business intelligence (BI) is a broad category of application programs which includes _____.
   a) Decision support b) Data Mining
   c) OLAP d) All of the above

11) Business intelligence equips enterprises to gain business advantage from data _____.
   a) TRUE b) FALSE
   c) Can be true or false d) Cannot say

12) The quality of input data may prove unsatisfactory due to _____.
   a) incompleteness b) noise
   c) inconsistency d) All the above

13) To partially correct incomplete data one may adopt _____.
   a) Elimination
   b) Elimination, Inspection
   c) Identification, Inspection
   d) Elimination, Inspection, Identification and Substitution

14) DSS stands for _____.
   a) Definite Support System b) Decision Support System
   c) Defining Support System d) Derived Support System

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Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Business Intelligence (BTN03706)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three of the following **12**
- **a)** Explain Data Warehouse architecture with diagram.
- **b)** How Data mining process provide useful knowledge to decision makers? Explain with neat diagram.
- **c)** Explain Data Reduction with example.
- **d)** Explain how effective and timely decisions works for Business with real time example.

Q.3 Attempt any one of the following. **08**
- **a)** Compare Univariate and Bivariate Analysis with example.
- **b)** Explain Business Intelligence architecture and mention ethics on BI.

Q.4 Explain Definition and development of Decision Support System with example. **08**

Section – II

Q.5 Attempt any four of the following. **16**
- **a)** Explain Simple and Multiple regression with example.
- **b)** Explain evolution of classification models.
- **c)** Why Autoregressive models are used?
- **d)** Explain Relational marketing model with real time example.
- **e)** Explain structure of Association rules.

Q.6 Attempt any one of the following **06**
- **a)** Define Time series. How evaluation and analysis of time series take place?
- **b)** Explain Bayesian Classification with real time example.

Q.7 Explain with a real time example for Business case studies which will cover supply chain optimization, optimization models for logistics planning, revenue management system of that business. **06**

SLR-GF-284

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Business Intelligence (BTN03706)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The most learning models benefit is from a preventive standardization of the data also called as _____.
a) Normalization b) Extraction
c) Sampling d) transformation

2) Criteria's to determine whether a data reduction technique should be used:
a) efficiency, Accuracy and Simplicity
b) Accuracy
c) Efficiency
d) None from Above

3) Which is the last Phases of mathematical models for decision making _____.
a) Problem Identification
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4) The purpose of a data mining process is some-times to provide a simple and concise representation of the information stored in a _____.
a) small dataset b) large dataset
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5) What is true about data mining?
a) Data Mining is defined as the procedure of extracting information from huge sets of data
b) Data mining doesn't involve other processes such as Data Cleaning, Data Integration, Data Transformation
c) Data mining is not the procedure of mining knowledge from data
d) None of the above

6) The problem of finding hidden structure in unlabeled data is called _____.
a) Supervised Learning b) Unsupervised Learning
c) Reinforcement Learning d) All of the above

7) Business intelligence (BI) is a broad category of application programs which includes _____.
a) Decision support b) Data Mining
c) OLAP d) All of the above

8) Business intelligence equips enterprises to gain business advantage from data _____.
a) TRUE b) FALSE
c) Can be true or false d) Cannot say

9) The quality of input data may prove unsatisfactory due to _____.
a) incompleteness b) noise
c) inconsistency d) All the above

10) To partially correct incomplete data one may adopt _____.
a) Elimination
b) Elimination, Inspection
c) Identification, Inspection
d) Elimination, Inspection, Identification and Substitution

11) DSS stands for _____.
a) Definite Support System b) Decision Support System
c) Defining Support System d) Derived Support System

12) Match the sequence of DSS development _____.
a) Requirements, Analysis, Planning, Design, Implementation, Delivery
b) Analysis, Requirements, Planning, Design, Implementation, Delivery
c) Requirements, Planning, Analysis, Design, Implementation, Delivery
d) Requirements, Planning, Design, Analysis, Implementation, Delivery

13) OLAP-
a) Online analytical processing b) Online automotive processing
c) Online analysis processing d) Online Automatic processing

14) A goal of data mining includes which of the following?
a) To explain some observed event or condition
b) To confirm that data exists
c) To analyze data for expected relationships
d) To create a new data warehouse

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Business Intelligence (BTN03706)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three of the following **12**
- **a)** Explain Data Warehouse architecture with diagram.
- **b)** How Data mining process provide useful knowledge to decision makers? Explain with neat diagram.
- **c)** Explain Data Reduction with example.
- **d)** Explain how effective and timely decisions works for Business with real time example.

Q.3 Attempt any one of the following. **08**
- **a)** Compare Univariate and Bivariate Analysis with example.
- **b)** Explain Business Intelligence architecture and mention ethics on BI.

Q.4 Explain Definition and development of Decision Support System with example. **08**

Section – II

Q.5 Attempt any four of the following. **16**
- **a)** Explain Simple and Multiple regression with example.
- **b)** Explain evolution of classification models.
- **c)** Why Autoregressive models are used?
- **d)** Explain Relational marketing model with real time example.
- **e)** Explain structure of Association rules.

Q.6 Attempt any one of the following **06**
- **a)** Define Time series. How evaluation and analysis of time series take place?
- **b)** Explain Bayesian Classification with real time example.

Q.7 Explain with a real time example for Business case studies which will cover supply chain optimization, optimization models for logistics planning, revenue management system of that business. **06**

Seat No.	

Set **S**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Business Intelligence (BTN03706)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) To partially correct incomplete data one may adopt _____.
a) Elimination
b) Elimination, Inspection
c) Identification, Inspection
d) Elimination, Inspection, Identification and Substitution

2) DSS stands for _____.
a) Definite Support System b) Decision Support System
c) Defining Support System d) Derived Support System

3) Match the sequence of DSS development _____.
a) Requirements, Analysis, Planning, Design, Implementation, Delivery
b) Analysis, Requirements, Planning, Design, Implementation, Delivery
c) Requirements, Planning, Analysis, Design, Implementation, Delivery
d) Requirements, Planning, Design, Analysis, Implementation, Delivery

4) OLAP-
a) Online analytical processing b) Online automotive processing
c) Online analysis processing d) Online Automatic processing

5) A goal of data mining includes which of the following?
a) To explain some observed event or condition
b) To confirm that data exists
c) To analyze data for expected relationships
d) To create a new data warehouse

6) The most learning models benefit is from a preventive standardization of the data also called as _____.
a) Normalization b) Extraction
c) Sampling d) transformation

7) Criteria's to determine whether a data reduction technique should be used:
a) efficiency, Accuracy and Simplicity
b) Accuracy
c) Efficiency
d) None from Above

8) Which is the last Phases of mathematical models for decision making _____.
a) Problem Identification
b) Implementation and Testing
c) Model Formation
d) Development of Algorithm

9) The purpose of a data mining process is some-times to provide a simple and concise representation of the information stored in a _____.
a) small dataset
b) large dataset
c) numeric dataset
d) Stored dataset

10) What is true about data mining?
a) Data Mining is defined as the procedure of extracting information from huge sets of data
b) Data mining doesn't involve other processes such as Data Cleaning, Data Integration, Data Transformation
c) Data mining is not the procedure of mining knowledge from data
d) None of the above

11) The problem of finding hidden structure in unlabeled data is called _____.
a) Supervised Learning
b) Unsupervised Learning
c) Reinforcement Learning
d) All of the above

12) Business intelligence (BI) is a broad category of application programs which includes _____.
a) Decision support
b) Data Mining
c) OLAP
d) All of the above

13) Business intelligence equips enterprises to gain business advantage from data _____.
a) TRUE
b) FALSE
c) Can be true or false
d) Cannot say

14) The quality of input data may prove unsatisfactory due to _____.
a) incompleteness
b) noise
c) inconsistency
d) All the above

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Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Business Intelligence (BTN03706)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three of the following **12**
- **a)** Explain Data Warehouse architecture with diagram.
- **b)** How Data mining process provide useful knowledge to decision makers? Explain with neat diagram.
- **c)** Explain Data Reduction with example.
- **d)** Explain how effective and timely decisions works for Business with real time example.

Q.3 Attempt any one of the following. **08**
- **a)** Compare Univariate and Bivariate Analysis with example.
- **b)** Explain Business Intelligence architecture and mention ethics on BI.

Q.4 Explain Definition and development of Decision Support System with example. **08**

Section – II

Q.5 Attempt any four of the following. **16**
- **a)** Explain Simple and Multiple regression with example.
- **b)** Explain evolution of classification models.
- **c)** Why Autoregressive models are used?
- **d)** Explain Relational marketing model with real time example.
- **e)** Explain structure of Association rules.

Q.6 Attempt any one of the following **06**
- **a)** Define Time series. How evaluation and analysis of time series take place?
- **b)** Explain Bayesian Classification with real time example.

Q.7 Explain with a real time example for Business case studies which will cover supply chain optimization, optimization models for logistics planning, revenue management system of that business. **06**

SLR-GF-285

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Mining (BTN03707)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternative(s) **14**

1) The problem of finding hidden structure in unlabeled data is called _____
a) Supervised learning b) Unsupervised learning
c) Reinforcement learning d) None of the above

2) Some telecommunication company wants to segment their customer into distinct groups in order to send appropriate subscription offer, this is an example of _____
a) Supervised learning b) Data extraction
c) Serration d) Unsupervised learning

3) Self-organizing maps are example of _____
a) Unsupervised learning b) Supervised learning
c) Reinforcement learning d) Missing data imputation

4) Assume you want to perform supervised learning and to predict number of newborns according to size of strokes population _____
a) Classification b) Regression
c) Clustering d) Grouping

5) Classification is _____
a) a subdivision of set of examples into number of classes
b) a measure of accuracy, of the classification of a concept that is given by a certain theory
c) a task of assigning a classification to a set of examples
d) All of above

6) Cluster is _____
a) Group of similar objects that differ significantly from other object
b) Operation on database to transform or simplify data in order to prepare it for machine learning algorithms
c) Symbolic representation of facts or ideas from which information can potentially be extracted
d) all of above

7) Discrimination between spam and ham emails is a classification task.
a) True b) False

8) It may be better to avoid the metric of ROC curve as it can suffer from accuracy paradox.
a) True b) False

9) Data mining can also applied to other forms such as _____
i) Data streams ii) Sequence data iii) Networked data iv) Text data
v) Spatial data
a) i, ii, iii and v only
b) ii, iii, iv and v only
c) i, iii, iv and v only
d) All i, ii, iii, iv and v

10) _____ is the process of finding a model that describes and distinguishes data classes or concepts.
a) Data Characterization b) Data Classification
c) Data discrimination d) Data selection

11) The output of KDD is _____
a) Data b) Information
c) Query d) Useful information

12) Strategic value of data mining is _____
a) cost-sensitive b) work-sensitive
c) time-sensitive d) technical-sensitive

13) What does Apriori algorithm do?
a) It mines all frequent patterns through pruning rules with lesser support
b) It mines all frequent patterns through pruning rules with higher support
c) Both a and b
d) None of the above

14) What does FP growth algorithm do?
a) It mines all frequent patterns through pruning rules with lesser support
b) It mines all frequent patterns through pruning rules with higher support
c) It mines all frequent patterns by construction a FP tree
d) All of the Above

SLR-GF-285

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Mining (BTN03707)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Three **12**

a) What is data mining?
b) Explain classic problems in machine learning that are highly related to data mining.
c) What are different forms of data preprocessing?
d) What are the issues in classification? Explain with example.

Q.3 Solve Any Two **16**

a) Define each of the following data mining functionalities: characterization, discrimination, association and correlation analysis, classification, regression, clustering, and outlier analysis.
Give examples of each data mining functionality, using a real-life database that you are familiar with.
b) Explain with an example Bayesian classification.
c) Why data need to be Preprocess?

Section – II

Q.4 Solve Any Three (4 Marks each) **12**

a) What is cluster analysis?
b) What are the issues in classification? Explain with example.
c) Explain Text mining hierarchy in detail.
d) Discuss challenges of outlier detection.

Q.5 Solve Any Two **16**

a) Give an example for Apriori with transaction and explain Apriori-gen-algorithm.
b) Explain sampling algorithm with an example.
c) What do you mean by BIRCH?

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Mining (BTN03707)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternative(s) **14**

1) It may be better to avoid the metric of ROC curve as it can suffer from accuracy paradox.
a) True b) False

2) Data mining can also applied to other forms such as _____
i) Data streams ii) Sequence data iii) Networked data iv) Text data
v) Spatial data
a) i, ii, iii and v only
b) ii, iii, iv and v only
c) i, iii, iv and v only
d) All i, ii, iii, iv and v

3) _____ is the process of finding a model that describes and distinguishes data classes or concepts.
a) Data Characterization b) Data Classification
c) Data discrimination d) Data selection

4) The output of KDD is _____
a) Data b) Information
c) Query d) Useful information

5) Strategic value of data mining is _____
a) cost-sensitive b) work-sensitive
c) time-sensitive d) technical-sensitive

6) What does Apriori algorithm do?
a) It mines all frequent patterns through pruning rules with lesser support
b) It mines all frequent patterns through pruning rules with higher support
c) Both a and b
d) None of the above

7) What does FP growth algorithm do?
a) It mines all frequent patterns through pruning rules with lesser support
b) It mines all frequent patterns through pruning rules with higher support
c) It mines all frequent patterns by construction a FP tree
d) All of the Above

8) The problem of finding hidden structure in unlabeled data is called _____
a) Supervised learning b) Unsupervised learning
c) Reinforcement learning d) None of the above

9) Some telecommunication company wants to segment their customer into distinct groups in order to send appropriate subscription offer, this is an example of _____
a) Supervised learning b) Data extraction
c) Serration d) Unsupervised learning

10) Self-organizing maps are example of _____
a) Unsupervised learning b) Supervised learning
c) Reinforcement learning d) Missing data imputation

11) Assume you want to perform supervised learning and to predict number of newborns according to size of strokes population _____
a) Classification b) Regression
c) Clustering d) Grouping

12) Classification is _____
a) a subdivision of set of examples into number of classes
b) a measure of accuracy, of the classification of a concept that is given by a certain theory
c) a task of assigning a classification to a set of examples
d) All of above

13) Cluster is _____
a) Group of similar objects that differ significantly from other object
b) Operation on database to transform or simplify data in order to prepare it for machine learning algorithms
c) Symbolic representation of facts or ideas from which information can potentially be extracted
d) all of above

14) Discrimination between spam and ham emails is a classification task.
a) True b) False

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Mining (BTN03707)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Three **12**

a) What is data mining?
b) Explain classic problems in machine learning that are highly related to data mining.
c) What are different forms of data preprocessing?
d) What are the issues in classification? Explain with example.

Q.3 Solve Any Two **16**

a) Define each of the following data mining functionalities: characterization, discrimination, association and correlation analysis, classification, regression, clustering, and outlier analysis.
Give examples of each data mining functionality, using a real-life database that you are familiar with.
b) Explain with an example Bayesian classification.
c) Why data need to be Preprocess?

Section – II

Q.4 Solve Any Three (4 Marks each) **12**

a) What is cluster analysis?
b) What are the issues in classification? Explain with example.
c) Explain Text mining hierarchy in detail.
d) Discuss challenges of outlier detection.

Q.5 Solve Any Two **16**

a) Give an example for Apriori with transaction and explain Apriori-gen-algorithm.
b) Explain sampling algorithm with an example.
c) What do you mean by BIRCH?

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Mining (BTN03707)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternative(s) **14**

1) The output of KDD is _____
a) Data b) Information
c) Query d) Useful information

2) Strategic value of data mining is _____
a) cost-sensitive b) work-sensitive
c) time-sensitive d) technical-sensitive

3) What does Apriori algorithm do?
a) It mines all frequent patterns through pruning rules with lesser support
b) It mines all frequent patterns through pruning rules with higher support
c) Both a and b
d) None of the above

4) What does FP growth algorithm do?
a) It mines all frequent patterns through pruning rules with lesser support
b) It mines all frequent patterns through pruning rules with higher support
c) It mines all frequent patterns by construction a FP tree
d) All of the Above

5) The problem of finding hidden structure in unlabeled data is called _____
a) Supervised learning b) Unsupervised learning
c) Reinforcement learning d) None of the above

6) Some telecommunication company wants to segment their customer into distinct groups in order to send appropriate subscription offer, this is an example of _____
a) Supervised learning b) Data extraction
c) Serration d) Unsupervised learning

7) Self-organizing maps are example of _____
a) Unsupervised learning b) Supervised learning
c) Reinforcement learning d) Missing data imputation

8) Assume you want to perform supervised learning and to predict number of newborns according to size of strokes population _____

a) Classification b) Regression
c) Clustering d) Grouping

9) Classification is _____

a) a subdivision of set of examples into number of classes
b) a measure of accuracy, of the classification of a concept that is given by a certain theory
c) a task of assigning a classification to a set of examples
d) All of above

10) Cluster is _____

a) Group of similar objects that differ significantly from other object
b) Operation on database to transform or simplify data in order to prepare it for machine learning algorithms
c) Symbolic representation of facts or ideas from which information can potentially be extracted
d) all of above

11) Discrimination between spam and ham emails is a classification task.

a) True b) False

12) It may be better to avoid the metric of ROC curve as it can suffer from accuracy paradox.

a) True b) False

13) Data mining can also applied to other forms such as _____

i) Data streams ii) Sequence data iii) Networked data iv) Text data
v) Spatial data

a) i, ii, iii and v only
b) ii, iii, iv and v only
c) i, iii, iv and v only
d) All i, ii, iii, iv and v

14) _____ is the process of finding a model that describes and distinguishes data classes or concepts.

a) Data Characterization b) Data Classification
c) Data discrimination d) Data selection

SLR-GF-285

Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Mining (BTN03707)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Three **12**

a) What is data mining?
b) Explain classic problems in machine learning that are highly related to data mining.
c) What are different forms of data preprocessing?
d) What are the issues in classification? Explain with example.

Q.3 Solve Any Two **16**

a) Define each of the following data mining functionalities: characterization, discrimination, association and correlation analysis, classification, regression, clustering, and outlier analysis.
Give examples of each data mining functionality, using a real-life database that you are familiar with.
b) Explain with an example Bayesian classification.
c) Why data need to be Preprocess?

Section – II

Q.4 Solve Any Three (4 Marks each) **12**

a) What is cluster analysis?
b) What are the issues in classification? Explain with example.
c) Explain Text mining hierarchy in detail.
d) Discuss challenges of outlier detection.

Q.5 Solve Any Two **16**

a) Give an example for Apriori with transaction and explain Apriori-gen-algorithm.
b) Explain sampling algorithm with an example.
c) What do you mean by BIRCH?

SLR-GF-285

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Mining (BTN03707)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternative(s) **14**

1) Cluster is _____
a) Group of similar objects that differ significantly from other object
b) Operation on database to transform or simplify data in order to prepare it for machine learning algorithms
c) Symbolic representation of facts or ideas from which information can potentially be extracted
d) all of above

2) Discrimination between spam and ham emails is a classification task.
a) True b) False

3) It may be better to avoid the metric of ROC curve as it can suffer from accuracy paradox.
a) True b) False

4) Data mining can also applied to other forms such as _____
i) Data streams ii) Sequence data iii) Networked data iv) Text data
v) Spatial data
a) i, ii, iii and v only
b) ii, iii, iv and v only
c) i, iii, iv and v only
d) All i, ii, iii, iv and v

5) _____ is the process of finding a model that describes and distinguishes data classes or concepts.
a) Data Characterization b) Data Classification
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a) cost-sensitive b) work-sensitive
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8) What does Apriori algorithm do?
a) It mines all frequent patterns through pruning rules with lesser support
b) It mines all frequent patterns through pruning rules with higher support
c) Both a and b
d) None of the above

9) What does FP growth algorithm do?
a) It mines all frequent patterns through pruning rules with lesser support
b) It mines all frequent patterns through pruning rules with higher support
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d) All of the Above

10) The problem of finding hidden structure in unlabeled data is called _____
a) Supervised learning
b) Unsupervised learning
c) Reinforcement learning
d) None of the above

11) Some telecommunication company wants to segment their customer into distinct groups in order to send appropriate subscription offer, this is an example of _____
a) Supervised learning
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c) Serration
d) Unsupervised learning

12) Self-organizing maps are example of _____
a) Unsupervised learning
b) Supervised learning
c) Reinforcement learning
d) Missing data imputation

13) Assume you want to perform supervised learning and to predict number of newborns according to size of strokes population _____
a) Classification
b) Regression
c) Clustering
d) Grouping

14) Classification is _____
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b) a measure of accuracy, of the classification of a concept that is given by a certain theory
c) a task of assigning a classification to a set of examples
d) All of above

SLR-GF-285

Seat No.	

Set S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Mining (BTN03707)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Three **12**

a) What is data mining?
b) Explain classic problems in machine learning that are highly related to data mining.
c) What are different forms of data preprocessing?
d) What are the issues in classification? Explain with example.

Q.3 Solve Any Two **16**

a) Define each of the following data mining functionalities: characterization, discrimination, association and correlation analysis, classification, regression, clustering, and outlier analysis.
Give examples of each data mining functionality, using a real-life database that you are familiar with.
b) Explain with an example Bayesian classification.
c) Why data need to be Preprocess?

Section – II

Q.4 Solve Any Three (4 Marks each) **12**

a) What is cluster analysis?
b) What are the issues in classification? Explain with example.
c) Explain Text mining hierarchy in detail.
d) Discuss challenges of outlier detection.

Q.5 Solve Any Two **16**

a) Give an example for Apriori with transaction and explain Apriori-gen-algorithm.
b) Explain sampling algorithm with an example.
c) What do you mean by BIRCH?

SLR-GF-286

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) What among the following holds true about distributed systems?
i) It has a single system image
ii) The degree of autonomy is high
iii) Fault tolerance is low
iv) It is loosely coupled system

a) All (i, ii, iii & iv) b) i & ii
c) i & iv d) ii & iii

2) Resource sharing mechanisms should have 4 Properties: - event ordering, mutual exclusion, no starvation and no-deadlock for _____ transparency.
a) Failure transparency b) Location transparency
c) Concurrency transparency d) Performance transparency

3) Distributed computing environment (DCE) uses the concepts of cells.
a) True b) False

4) The strongest and the desirable call semantics in RPC is _____.
a) Exactly-once call semantics b) Last-one call semantics
c) Last-of-Many call semantics d) At-least-Once call semantics

5) In ____ semantics, the sending process continues its execution as soon as the message has been copied to senders buffer.
a) Blocking send b) Blocking receive
c) Non-blocking send d) Non-blocking receive

6) The null buffer strategy is suitable for asynchronous communication.
a) True b) False

7) The process migrates during its execution on source node. This is called _____.
a) Process allocation
b) Non pre-emptive process migration
c) Pre-emptive process migration
d) None of the mentioned

8) Which of the following is an example of a distributed computing framework commonly used for big data processing?
a) Microsoft Excel
b) Apache Hadoop
c) Microsoft Word
d) Adobe Photoshop

9) What is the CAP theorem in distributed systems?
a) It describes the characteristics of message passing in distributed environment.
b) It states that a distributed system cannot simultaneously guarantee Consistency, Availability, and Partition tolerance
c) It is a theorem about the behavior of distributed systems under high load
d) It is a theorem about cryptography in distributed systems

10) The _____ algorithm creates $2(N-1)$ messages per critical section execution.
a) Lamport
b) Ricart Agrawala
c) Suzuki-Kasam
d) All of these

11) In _____ model of constructing server process, there is support for parallelism but no blocking system calls.
a) Single thread
b) Finite state machine
c) Group of threads
d) All the mentioned

12) DSM systems are cheaper to build in comparison with tightly-coupled multiprocessor systems.
a) True
b) False

13) Which condition is not satisfied by Happened-before relation?
a) If a is the event of sending a message and b is the event of receiving a message, then a->b
b) If a->b. b->c, then a->c
c) a->a
d) None of the mentioned

14) Suzuki-Kasami is a _____ algorithm.
a) Distributed Mutual Exclusion
b) Deadlock avoidance
c) Centralized Mutual Exclusion
d) Concurrency control

SLR-GF-286

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**

a) What is a distributed system? List its advantages.
b) Explain the blocking and non-blocking semantics of send () and receive primitives used in message passing.
c) Why Transparency is the major issue in remote procedure call (RPC)?
d) What are the four major activities in process migration?

Q.3 Attempt Any One. **08**

a) Explain Berkley' s algorithm for clock synchronization with example.
b) How does message passing differ from shared memory in distributed systems? Explain in detail.

Q.4 Explain the working of RPC mechanism. What are stubs? How stubs are generated? **08**

Section – II

Q.5 Attempt Any Three: **12**

a) Explain the four parameters used to measure the performance of mutual exclusion algorithms.
b) List the advantages of Distributed Shared Memory (DSM).
c) What is the difference between centralized and distributed deadlock detection?
d) What are the key challenges in designing and implementing a Distributed File System?

Q.6 Attempt Any one **08**

a) Explain the design issues in distributed shared memory.
b) Explain the four basic algorithms used for implementing DSM.

Q.7 Explain the Lamport's Mutual Exclusion algorithm with example. Also mention the drawbacks of this algorithm. **08**

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) Which of the following is an example of a distributed computing framework commonly used for big data processing?
a) Microsoft Excel
b) Apache Hadoop
c) Microsoft Word
d) Adobe Photoshop

2) What is the CAP theorem in distributed systems?
a) It describes the characteristics of message passing in distributed environment.
b) It states that a distributed system cannot simultaneously guarantee Consistency, Availability, and Partition tolerance
c) It is a theorem about the behavior of distributed systems under high load
d) It is a theorem about cryptography in distributed systems

3) The _____ algorithm creates $2(N-1)$ messages per critical section execution.
a) Lamport b) Ricart Agrawala
c) Suzuki-Kasam d) All of these

4) In _____ model of constructing server process, there is support for parallelism but no blocking system calls.
a) Single thread b) Finite state machine
c) Group of threads d) All the mentioned

5) DSM systems are cheaper to build in comparison with tightly-coupled multiprocessor systems.
a) True b) False

6) Which condition is not satisfied by Happened-before relation?
a) If a is the event of sending a message and b is the event of receiving a message, then a->b
b) If a->b. b->c, then a->c
c) a->a
d) None of the mentioned

7) Suzuki-Kasami is a _____ algorithm.
a) Distributed Mutual Exclusion b) Deadlock avoidance
c) Centralized Mutual Exclusion d) Concurrency control

8) What among the following holds true about distributed systems?
i) It has a single system image
ii) The degree of autonomy is high
iii) Fault tolerance is low
iv) It is loosely coupled system
a) All (i, ii, iii & iv) b) i & ii
c) i & iv d) ii & iii

9) Resource sharing mechanisms should have 4 Properties: - event ordering, mutual exclusion, no starvation and no-deadlock for _____ transparency.
a) Failure transparency b) Location transparency
c) Concurrency transparency d) Performance transparency

10) Distributed computing environment (DCE) uses the concepts of cells.
a) True b) False

11) The strongest and the desirable call semantics in RPC is _____.
a) Exactly-once call semantics b) Last-one call semantics
c) Last-of-Many call semantics d) At-least-Once call semantics

12) In ____ semantics, the sending process continues its execution as soon as the message has been copied to senders buffer.
a) Blocking send b) Blocking receive
c) Non-blocking send d) Non-blocking receive

13) The null buffer strategy is suitable for asynchronous communication.
a) True b) False

14) The process migrates during its execution on source node. This is called _____.
a) Process allocation
b) Non pre-emptive process migration
c) Pre-emptive process migration
d) None of the mentioned

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**

a) What is a distributed system? List its advantages.
b) Explain the blocking and non-blocking semantics of send () and receive primitives used in message passing.
c) Why Transparency is the major issue in remote procedure call (RPC)?
d) What are the four major activities in process migration?

Q.3 Attempt Any One. **08**

a) Explain Berkley' s algorithm for clock synchronization with example.
b) How does message passing differ from shared memory in distributed systems? Explain in detail.

Q.4 Explain the working of RPC mechanism. What are stubs? How stubs are generated? **08**

Section – II

Q.5 Attempt Any Three: **12**

a) Explain the four parameters used to measure the performance of mutual exclusion algorithms.
b) List the advantages of Distributed Shared Memory (DSM).
c) What is the difference between centralized and distributed deadlock detection?
d) What are the key challenges in designing and implementing a Distributed File System?

Q.6 Attempt Any one **08**

a) Explain the design issues in distributed shared memory.
b) Explain the four basic algorithms used for implementing DSM.

Q.7 Explain the Lamport's Mutual Exclusion algorithm with example. Also mention the drawbacks of this algorithm. **08**

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) In _____ model of constructing server process, there is support for parallelism but no blocking system calls.
a) Single thread b) Finite state machine
c) Group of threads d) All the mentioned

2) DSM systems are cheaper to build in comparison with tightly-coupled multiprocessor systems.
a) True b) False

3) Which condition is not satisfied by Happened-before relation?
a) If a is the event of sending a message and b is the event of receiving a message, then a->b
b) If a->b. b->c, then a->c
c) a->a
d) None of the mentioned

4) Suzuki-Kasami is a _____ algorithm.
a) Distributed Mutual Exclusion b) Deadlock avoidance
c) Centralized Mutual Exclusion d) Concurrency control

5) What among the following holds true about distributed systems?
i) It has a single system image
ii) The degree of autonomy is high
iii) Fault tolerance is low
iv) It is loosely coupled system
a) All (i, ii, iii & iv) b) i & ii
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6) Resource sharing mechanisms should have 4 Properties: - event ordering, mutual exclusion, no starvation and no-deadlock for _____ transparency.
a) Failure transparency b) Location transparency
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7) Distributed computing environment (DCE) uses the concepts of cells.
a) True b) False

8) The strongest and the desirable call semantics in RPC is _____.
a) Exactly-once call semantics b) Last-one call semantics
c) Last-of-Many call semantics d) At-least-Once call semantics

9) In ____ semantics, the sending process continues its execution as soon as the message has been copied to senders buffer.
a) Blocking send b) Blocking receive
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10) The null buffer strategy is suitable for asynchronous communication.
a) True b) False

11) The process migrates during its execution on source node. This is called _____.
a) Process allocation
b) Non pre-emptive process migration
c) Pre-emptive process migration
d) None of the mentioned

12) Which of the following is an example of a distributed computing framework commonly used for big data processing?
a) Microsoft Excel
b) Apache Hadoop
c) Microsoft Word
d) Adobe Photoshop

13) What is the CAP theorem in distributed systems?
a) It describes the characteristics of message passing in distributed environment.
b) It states that a distributed system cannot simultaneously guarantee Consistency, Availability, and Partition tolerance
c) It is a theorem about the behavior of distributed systems under high load
d) It is a theorem about cryptography in distributed systems

14) The _____ algorithm creates $2(N-1)$ messages per critical section execution.
a) Lamport b) Ricart Agrawala
c) Suzuki-Kasam d) All of these

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**

a) What is a distributed system? List its advantages.
b) Explain the blocking and non-blocking semantics of send () and receive primitives used in message passing.
c) Why Transparency is the major issue in remote procedure call (RPC)?
d) What are the four major activities in process migration?

Q.3 Attempt Any One. **08**

a) Explain Berkley' s algorithm for clock synchronization with example.
b) How does message passing differ from shared memory in distributed systems? Explain in detail.

Q.4 Explain the working of RPC mechanism. What are stubs? How stubs are generated? **08**

Section – II

Q.5 Attempt Any Three: **12**

a) Explain the four parameters used to measure the performance of mutual exclusion algorithms.
b) List the advantages of Distributed Shared Memory (DSM).
c) What is the difference between centralized and distributed deadlock detection?
d) What are the key challenges in designing and implementing a Distributed File System?

Q.6 Attempt Any one **08**

a) Explain the design issues in distributed shared memory.
b) Explain the four basic algorithms used for implementing DSM.

Q.7 Explain the Lamport's Mutual Exclusion algorithm with example. Also mention the drawbacks of this algorithm. **08**

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The null buffer strategy is suitable for asynchronous communication.
a) True b) False

2) The process migrates during its execution on source node. This is called _____.
a) Process allocation
b) Non pre-emptive process migration
c) Pre-emptive process migration
d) None of the mentioned

3) Which of the following is an example of a distributed computing framework commonly used for big data processing?
a) Microsoft Excel
b) Apache Hadoop
c) Microsoft Word
d) Adobe Photoshop

4) What is the CAP theorem in distributed systems?
a) It describes the characteristics of message passing in distributed environment.
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c) It is a theorem about the behavior of distributed systems under high load
d) It is a theorem about cryptography in distributed systems

5) The _____ algorithm creates $2(N-1)$ messages per critical section execution.
a) Lamport b) Ricart Agrawala
c) Suzuki-Kasam d) All of these

6) In _____ model of constructing server process, there is support for parallelism but no blocking system calls.
a) Single thread b) Finite state machine
c) Group of threads d) All the mentioned

7) DSM systems are cheaper to build in comparison with tightly-coupled multiprocessor systems.

a) True b) False

8) Which condition is not satisfied by Happened-before relation?

a) If a is the event of sending a message and b is the event of receiving a message, then a->b
b) If a->b. b->c, then a->c
c) a->a
d) None of the mentioned

9) Suzuki-Kasami is a _____ algorithm.

a) Distributed Mutual Exclusion b) Deadlock avoidance
c) Centralized Mutual Exclusion d) Concurrency control

10) What among the following holds true about distributed systems?

i) It has a single system image
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iii) Fault tolerance is low
iv) It is loosely coupled system

a) All (i, ii, iii & iv) b) i & ii
c) i & iv d) ii & iii

11) Resource sharing mechanisms should have 4 Properties: - event ordering, mutual exclusion, no starvation and no-deadlock for _____ transparency.

a) Failure transparency b) Location transparency
c) Concurrency transparency d) Performance transparency

12) Distributed computing environment (DCE) uses the concepts of cells.

a) True b) False

13) The strongest and the desirable call semantics in RPC is _____.

a) Exactly-once call semantics b) Last-one call semantics
c) Last-of-Many call semantics d) At-least-Once call semantics

14) In ____ semantics, the sending process continues its execution as soon as the message has been copied to senders buffer.

a) Blocking send b) Blocking receive
c) Non-blocking send d) Non-blocking receive

SLR-GF-286

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Distributed Systems (BTN03708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**

a) What is a distributed system? List its advantages.
b) Explain the blocking and non-blocking semantics of send () and receive primitives used in message passing.
c) Why Transparency is the major issue in remote procedure call (RPC)?
d) What are the four major activities in process migration?

Q.3 Attempt Any One. **08**

a) Explain Berkley' s algorithm for clock synchronization with example.
b) How does message passing differ from shared memory in distributed systems? Explain in detail.

Q.4 Explain the working of RPC mechanism. What are stubs? How stubs are generated? **08**

Section – II

Q.5 Attempt Any Three: **12**

a) Explain the four parameters used to measure the performance of mutual exclusion algorithms.
b) List the advantages of Distributed Shared Memory (DSM).
c) What is the difference between centralized and distributed deadlock detection?
d) What are the key challenges in designing and implementing a Distributed File System?

Q.6 Attempt Any one **08**

a) Explain the design issues in distributed shared memory.
b) Explain the four basic algorithms used for implementing DSM.

Q.7 Explain the Lamport's Mutual Exclusion algorithm with example. Also mention the drawbacks of this algorithm. **08**

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Management Information System (BTN03709)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct options. **14**

1) MIS is normally found in _____ sector.
a) Service b) Education
c) Manufacturing d) Marketing

2) The Management Information System receives input from the _____.
a) SSL b) GPS
c) TPS d) LMS

3) A Decision Support System (DSS) is an application for information systems that helps in _____.
a) System Design b) System Analysis
c) Decision making d) All of the mentioned above

4) A TPS is a set of information which processes the _____ in database system.
a) Information management b) Data transaction
c) Scheduling d) None of the mentioned above

5) Information System that monitors elementary activities & transaction of organization are _____.
a) Management level System b) Operational level System
c) Knowledge level System d) None of these

6) Projections& responses to queries are Information output characteristics associated with _____.
a) ESS b) MIS
c) DSS d) TPS

7) IT infrastructure consists of only those physical computing devices & software required to operate the enterprise.
a) True b) False

8) Which of the following areas are affected by BI?
a) Revenue b) CRM
c) Sales d) All of the mentioned

9) "A process of defining the security controls in order to protect the information assets". This is the definition of: _____
a) Information management
b) Information security management
c) Information security management protocol
d) Information technology management

10) An enterprise is a group of people with _____.
a) common goal
b) separate goal for each department
c) multiple goals
d) two or more goal

11) The traditional business system is called as _____.
a) modern method
b) advanced method
c) effective method
d) legacy method

12) _____ is not a major type of electronic commerce.
a) Consumer to Business
b) Business to Consumer
c) Business to Business
d) Consumer to Consumer

13) Among the alternate models of B2B e-commerce _____ is the best means to obtain a competitive advantage in the Market Place.
a) Process based
b) Strategic relationship based
c) Transaction based
d) None of these

14) _____ is basically a concept of online marketing and distributing of products and services over the internet.
a) B2G
b) B2E
c) B2C
d) B2B

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Management Information System (BTN03709)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any FOUR. **16**

a) What is Management Information System? Explain its characteristics.
b) Explain in detail Contemporary Software Platform Trends.
c) Explain the concept of Strategic Information System.
d) What are major problem areas in Information System?
e) How MIS supports to the management in Organization?

Q.3 Attempt Any Two. **12**

a) What is Organization and explain its features?
b) Explain in detail Tools & technologies for collaboration and social business.
c) What are different applications of MIS in various functional areas?

Section – II

Q.4 Attempt Any FOUR. **16**

a) Define Security & explain its needs.
b) Define DOS attack.
c) Explain tools of Security Management.
d) Explain M-Commerce in details.
e) List and describe problem of traditional file environment.

Q.5 Attempt Any Two. **12**

a) Explain in detail Contemporary Hardware Platform trends.
b) Explain E-commerce business Model.
c) What are the principles technologies and standards for wireless networking & Internet access?

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Management Information System (BTN03709)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct options. **14**

1) Which of the following areas are affected by BI?
a) Revenue b) CRM
c) Sales d) All of the mentioned

2) "A process of defining the security controls in order to protect the information assets". This is the definition of: _____
a) Information management
b) Information security management
c) Information security management protocol
d) Information technology management

3) An enterprise is a group of people with _____.
a) common goal
b) separate goal for each department
c) multiple goals
d) two or more goal

4) The traditional business system is called as _____.
a) modern method b) advanced method
c) effective method d) legacy method

5) _____ is not a major type of electronic commerce.
a) Consumer to Business b) Business to Consumer
c) Business to Business d) Consumer to Consumer

6) Among the alternate models of B2B e-commerce _____ is the best means to obtain a competitive advantage in the Market Place.
a) Process based b) Strategic relationship based
c) Transaction based d) None of these

7) _____ is basically a concept of online marketing and distributing of products and services over the internet.
a) B2G b) B2E
c) B2C d) B2B

8) MIS is normally found in _____ sector.
a) Service b) Education
c) Manufacturing d) Marketing

9) The Management Information System receives input from the _____.
a) SSL b) GPS
c) TPS d) LMS

10) A Decision Support System (DSS) is an application for information systems that helps in _____.
a) System Design b) System Analysis
c) Decision making d) All of the mentioned above

11) A TPS is a set of information which processes the _____ in database system.
a) Information management b) Data transaction
c) Scheduling d) None of the mentioned above

12) Information System that monitors elementary activities & transaction of organization are _____.
a) Management level System b) Operational level System
c) Knowledge level System d) None of these

13) Projections& responses to queries are Information output characteristics associated with _____.
a) ESS b) MIS
c) DSS d) TPS

14) IT infrastructure consists of only those physical computing devices & software required to operate the enterprise.
a) True b) False

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Management Information System (BTN03709)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any FOUR. **16**

a) What is Management Information System? Explain its characteristics.
b) Explain in detail Contemporary Software Platform Trends.
c) Explain the concept of Strategic Information System.
d) What are major problem areas in Information System?
e) How MIS supports to the management in Organization?

Q.3 Attempt Any Two. **12**

a) What is Organization and explain its features?
b) Explain in detail Tools & technologies for collaboration and social business.
c) What are different applications of MIS in various functional areas?

Section – II

Q.4 Attempt Any FOUR. **16**

a) Define Security & explain its needs.
b) Define DOS attack.
c) Explain tools of Security Management.
d) Explain M-Commerce in details.
e) List and describe problem of traditional file environment.

Q.5 Attempt Any Two. **12**

a) Explain in detail Contemporary Hardware Platform trends.
b) Explain E-commerce business Model.
c) What are the principles technologies and standards for wireless networking & Internet access?

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Management Information System (BTN03709)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct options. **14**

1) The traditional business system is called as _____.
a) modern method b) advanced method
c) effective method d) legacy method

2) _____ is not a major type of electronic commerce.
a) Consumer to Business b) Business to Consumer
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3) Among the alternate models of B2B e-commerce _____ is the best means to obtain a competitive advantage in the Market Place.
a) Process based b) Strategic relationship based
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4) _____ is basically a concept of online marketing and distributing of products and services over the internet.
a) B2G b) B2E
c) B2C d) B2B

5) MIS is normally found in _____ sector.
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c) Manufacturing d) Marketing

6) The Management Information System receives input from the _____.
a) SSL b) GPS
c) TPS d) LMS

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b) Operational level System
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10) Projections& responses to queries are Information output characteristics associated with _____.

a) ESS
b) MIS
c) DSS
d) TPS

11) IT infrastructure consists of only those physical computing devices & software required to operate the enterprise.

a) True
b) False

12) Which of the following areas are affected by BI?

a) Revenue
b) CRM
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13) "A process of defining the security controls in order to protect the information assets". This is the definition of: _____

a) Information management
b) Information security management
c) Information security management protocol
d) Information technology management

14) An enterprise is a group of people with _____.

a) common goal
b) separate goal for each department
c) multiple goals
d) two or more goal

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Management Information System (BTN03709)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any FOUR. **16**

a) What is Management Information System? Explain its characteristics.
b) Explain in detail Contemporary Software Platform Trends.
c) Explain the concept of Strategic Information System.
d) What are major problem areas in Information System?
e) How MIS supports to the management in Organization?

Q.3 Attempt Any Two. **12**

a) What is Organization and explain its features?
b) Explain in detail Tools & technologies for collaboration and social business.
c) What are different applications of MIS in various functional areas?

Section – II

Q.4 Attempt Any FOUR. **16**

a) Define Security & explain its needs.
b) Define DOS attack.
c) Explain tools of Security Management.
d) Explain M-Commerce in details.
e) List and describe problem of traditional file environment.

Q.5 Attempt Any Two. **12**

a) Explain in detail Contemporary Hardware Platform trends.
b) Explain E-commerce business Model.
c) What are the principles technologies and standards for wireless networking & Internet access?

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Management Information System (BTN03709)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct options. **14**

1) Projections& responses to queries are Information output characteristics associated with _____.
a) ESS b) MIS
c) DSS d) TPS

2) IT infrastructure consists of only those physical computing devices & software required to operate the enterprise.
a) True b) False

3) Which of the following areas are affected by BI?
a) Revenue b) CRM
c) Sales d) All of the mentioned

4) "A process of defining the security controls in order to protect the information assets". This is the definition of: _____
a) Information management
b) Information security management
c) Information security management protocol
d) Information technology management

5) An enterprise is a group of people with _____.
a) common goal
b) separate goal for each department
c) multiple goals
d) two or more goal

6) The traditional business system is called as _____.
a) modern method b) advanced method
c) effective method d) legacy method

7) _____ is not a major type of electronic commerce.
a) Consumer to Business b) Business to Consumer
c) Business to Business d) Consumer to Consumer

8) Among the alternate models of B2B e-commerce _____ is the best means to obtain a competitive advantage in the Market Place.
a) Process based b) Strategic relationship based
c) Transaction based d) None of these

9) _____ is basically a concept of online marketing and distributing of products and services over the internet.
a) B2G b) B2E
c) B2C d) B2B

10) MIS is normally found in _____ sector.
a) Service b) Education
c) Manufacturing d) Marketing

11) The Management Information System receives input from the _____.
a) SSL b) GPS
c) TPS d) LMS

12) A Decision Support System (DSS) is an application for information systems that helps in _____.
a) System Design b) System Analysis
c) Decision making d) All of the mentioned above

13) A TPS is a set of information which processes the _____ in database system.
a) Information management b) Data transaction
c) Scheduling d) None of the mentioned above

14) Information System that monitors elementary activities & transaction of organization are _____.
a) Management level System b) Operational level System
c) Knowledge level System d) None of these

SLR-GF-287

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Management Information System (BTN03709)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any FOUR. **16**

a) What is Management Information System? Explain its characteristics.
b) Explain in detail Contemporary Software Platform Trends.
c) Explain the concept of Strategic Information System.
d) What are major problem areas in Information System?
e) How MIS supports to the management in Organization?

Q.3 Attempt Any Two. **12**

a) What is Organization and explain its features?
b) Explain in detail Tools & technologies for collaboration and social business.
c) What are different applications of MIS in various functional areas?

Section – II

Q.4 Attempt Any FOUR. **16**

a) Define Security & explain its needs.
b) Define DOS attack.
c) Explain tools of Security Management.
d) Explain M-Commerce in details.
e) List and describe problem of traditional file environment.

Q.5 Attempt Any Two. **12**

a) Explain in detail Contemporary Hardware Platform trends.
b) Explain E-commerce business Model.
c) What are the principles technologies and standards for wireless networking & Internet access?

SLR-GF-289

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In Big Data environments, Variety of data includes _____.
a) Includes multiple formats and types of data
b) Includes structured data in the form of financial transactions,
c) Includes semi-structured data in the form of emails and unstructured data in the form of image
d) All of the mentioned above

2) Which of the following are Benefits of Big Data Processing?
a) Cost Reduction b) Time Reductions
c) Smarter Business Decisions d) All of these

3) Amongst which of the following is/are not Big Data Technologies?
a) Apache Hadoop b) Apache Spark
c) Apache Kafka d) Apache Pytarch

4) Amongst which of the following can be considered as the main source of unstructured data.
a) Twitter b) Facebook
c) Webpages d) All of these

5) Scalability, elasticity, resource pooling, self-service, and low cost and fault tolerance are the features of, _____
a) Cloud computing b) Power BI
c) System development d) None of these

6) What is a Virtual Machine (VM)?
a) Virtual representation of a physical computer
b) Virtual System Integration
c) Virtual representation of a logical computer
d) All of the mentioned above

7) MongoDB is a _____ database.
a) SQL b) DBMS
c) NoSQL d) RDBMS

8) In the layered architecture of Big Data Stack, Interfaces and feeds,
a) Internally managed data
b) Data feeds from external sources.
c) It provides access to each and every layer & components of big data stack
d) All of the mentioned above

9) Amongst which of the following represents the Use of Hadoop, _____.
a) Robust and Scalable
b) Affordable and Cost Effective
c) Adaptive and Flexible
d) All of the mentioned above

10) Database name is a MongoDB command is used for _____.
a) Database Creation
b) Dropping Databases
c) Creating a Collection
d) All of these

11) _____ is a platform for developing data flows for the extraction, transformation, and loading (ETL) of huge datasets, as well as for data analysis.
a) Spark
b) HBase
c) Hive
d) Pig

12) In order to interact with HDFS, a command line interface named _____ is provided.
a) HDFS Shell
b) DFS Shell
c) K Shell
d) FS Shell

13) _____ general - purpose model and runtime framework for distributed data analytics.
a) MapReduce
b) Spark
c) Hive
d) All of the mentioned above

14) Apache Hive is data storage and _____ that stores and organizes data for study and querying.
a) Querying tool
b) Mapper
c) MapReduce
d) All of the mentioned above

Seat No.	

Set | P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) What are different challenges with Big data?
b) Write a short note on Big data stack.
c) What are different ways/issues to deal unstructured data.
d) Write short note on Data Science. Give different responsibilities of a Data Scientist.
e) Explain YARN architecture in detail.

Q.3 Solve any two of the following. **12**

a) What is Digital Data? Explain different types of Digital data.
b) What is Hadoop and explain its components in detail.
c) Short note on NoSQL and NewSQL database and give its difference with RDBMS.

Section – II

Q.4 Solve any four of the following. **16**

a) Write MongoDB query for an objective given below.
Create a collection “food” and insert 5 documents into the food collection by “_id” and “fruits” array.
Check these documents are present in food collection.
Find that document from food collection where “grapes” is present in 2nd index position of the fruit array.
b) Explain different features of Cassandra in detail
c) Explain Hive User defined Function with example
d) Give different key features of Pig
e) Explain Counter and Alter command in Cassandra

Q.5 Solve any two of the following. **12**

a) Explain different CRUD operations in MongoDB with examples.
b) Write HQL (HIVE QUERY LANGUAGE) queries along with its syntax for the following.
1) Create a table named student having fields {Rollno, name, year, department}
2) Insert the data of three students from text file using LOAD statement.
3) Add three partitions to the table and rename them to SY, TY, and Final year.
4) Drop a partition Final year from the table.
c) Give word count example using Pig.

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

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c) It provides access to each and every layer & components of big data stack
d) All of the mentioned above

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a) Twitter
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12) Scalability, elasticity, resource pooling, self-service, and low cost and fault tolerance are the features of, _____
a) Cloud computing
b) Power BI
c) System development
d) None of these

13) What is a Virtual Machine (VM)?
a) Virtual representation of a physical computer
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c) Virtual representation of a logical computer
d) All of the mentioned above

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a) SQL
b) DBMS
c) NoSQL
d) RDBMS

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) What are different challenges with Big data?
b) Write a short note on Big data stack.
c) What are different ways/issues to deal unstructured data.
d) Write short note on Data Science. Give different responsibilities of a Data Scientist.
e) Explain YARN architecture in detail.

Q.3 Solve any two of the following. **12**

a) What is Digital Data? Explain different types of Digital data.
b) What is Hadoop and explain its components in detail.
c) Short note on NoSQL and NewSQL database and give its difference with RDBMS.

Section – II

Q.4 Solve any four of the following. **16**

a) Write MongoDB query for an objective given below.
Create a collection “food” and insert 5 documents into the food collection by “_id” and “fruits” array.
Check these documents are present in food collection.
Find that document from food collection where “grapes” is present in 2nd index position of the fruit array.
b) Explain different features of Cassandra in detail
c) Explain Hive User defined Function with example
d) Give different key features of Pig
e) Explain Counter and Alter command in Cassandra

Q.5 Solve any two of the following. **12**

a) Explain different CRUD operations in MongoDB with examples.
b) Write HQL (HIVE QUERY LANGUAGE) queries along with its syntax for the following.
1) Create a table named student having fields {Rollno, name, year, department}
2) Insert the data of three students from text file using LOAD statement.
3) Add three partitions to the table and rename them to SY, TY, and Final year.
4) Drop a partition Final year from the table.
c) Give word count example using Pig.

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is a platform for developing data flows for the extraction, transformation, and loading (ETL) of huge datasets, as well as for data analysis.
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c) Hive d) Pig

2) In order to interact with HDFS, a command line interface named _____ is provided.
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4) Apache Hive is data storage and _____ that stores and organizes data for study and querying.
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5) In Big Data environments, Variety of data includes _____.
a) Includes multiple formats and types of data
b) Includes structured data in the form of financial transactions,
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6) Which of the following are Benefits of Big Data Processing?
a) Cost Reduction b) Time Reductions
c) Smarter Business Decisions d) All of these

7) Amongst which of the following is/are not Big Data Technologies?
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b) Facebook
c) Webpages
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9) Scalability, elasticity, resource pooling, self-service, and low cost and fault tolerance are the features of, _____
a) Cloud computing
b) Power BI
c) System development
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10) What is a Virtual Machine (VM)?
a) Virtual representation of a physical computer
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11) MongoDB is a _____ database.
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b) DBMS
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a) Internally managed data
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a) Database Creation
b) Dropping Databases
c) Creating a Collection
d) All of these

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) What are different challenges with Big data?
b) Write a short note on Big data stack.
c) What are different ways/issues to deal unstructured data.
d) Write short note on Data Science. Give different responsibilities of a Data Scientist.
e) Explain YARN architecture in detail.

Q.3 Solve any two of the following. **12**

a) What is Digital Data? Explain different types of Digital data.
b) What is Hadoop and explain its components in detail.
c) Short note on NoSQL and NewSQL database and give its difference with RDBMS.

Section – II

Q.4 Solve any four of the following. **16**

a) Write MongoDB query for an objective given below.
Create a collection “food” and insert 5 documents into the food collection by “_id” and “fruits” array.
Check these documents are present in food collection.
Find that document from food collection where “grapes” is present in 2nd index position of the fruit array.
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d) Give different key features of Pig
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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What is a Virtual Machine (VM)?
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c) Virtual representation of a logical computer
d) All of the mentioned above

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b) Time Reductions
c) Smarter Business Decisions
d) All of these

12) Amongst which of the following is/are not Big Data Technologies?

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c) Apache Kafka
d) Apache Pytarch

13) Amongst which of the following can be considered as the main source of unstructured data.

a) Twitter
b) Facebook
c) Webpages
d) All of these

14) Scalability, elasticity, resource pooling, self-service, and low cost and fault tolerance are the features of, _____

a) Cloud computing
b) Power BI
c) System development
d) None of these

SLR-GF-289

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Big Data Analytics (BTN03711)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) What are different challenges with Big data?
b) Write a short note on Big data stack.
c) What are different ways/issues to deal unstructured data.
d) Write short note on Data Science. Give different responsibilities of a Data Scientist.
e) Explain YARN architecture in detail.

Q.3 Solve any two of the following. **12**

a) What is Digital Data? Explain different types of Digital data.
b) What is Hadoop and explain its components in detail.
c) Short note on NoSQL and NewSQL database and give its difference with RDBMS.

Section – II

Q.4 Solve any four of the following. **16**

a) Write MongoDB query for an objective given below.
Create a collection “food” and insert 5 documents into the food collection by “_id” and “fruits” array.
Check these documents are present in food collection.
Find that document from food collection where “grapes” is present in 2nd index position of the fruit array.
b) Explain different features of Cassandra in detail
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d) Give different key features of Pig
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Q.5 Solve any two of the following. **12**

a) Explain different CRUD operations in MongoDB with examples.
b) Write HQL (HIVE QUERY LANGUAGE) queries along with its syntax for the following.
1) Create a table named student having fields {Rollno, name, year, department}
2) Insert the data of three students from text file using LOAD statement.
3) Add three partitions to the table and rename them to SY, TY, and Final year.
4) Drop a partition Final year from the table.
c) Give word count example using Pig.

SLR-GF-291

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Deep Learning (BTN03713)

Day & Date: Thursday 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The number of nodes in the input layer is 12 and the hidden layer is 5. The maximum number of connections from the input layer to the hidden layer are ____.
a) 60 b) Less than 60
c) More than 60 d) It is an arbitrary value

2) Which of the following functions can be used as an activation function in the output layer if we wish to predict the probabilities of n classes (p1, p2..pk) such that sum of p over all n equals to 1?
a) Softmax b) ReLU
c) Sigmoid d) Tanh

3) Dimensionality reduction does _____.
a) reduce computational time
b) may lead to some data loss
c) remove redundant feature
d) All

4) Under fitting means _____.
a) low bias & high variance b) high bias & low variance
c) low bias & low variance d) high bias & high variance

5) Recurrent Neural Networks are best suited for Text Processing.
a) True b) False

6) De-noising and Contractive are examples of _____.
a) Auto encoders
b) Convolution Neural Networks
c) Recurrent Neural Networks
d) None

7) The reuse of a pre-trained model on a new problem is known as _____.
a) Learning rate b) Bias
c) Variance d) transfer learning

8) _____ is a pooling operation that selects the maximum element from the region of the feature map covered by the filter.

a) Max Pooling
b) Average Pooling
c) Global pooling
d) None of these

9) _____ is a Neural Nets way of classifying inputs Learning.

a) Forward Propagation
b) Activation
c) Classification
d) Backward Propagation

10) Which of the following statement is true regrading dropout _____.

i) Dropout gives a way to approximate by combining many different architectures
ii) Dropout demands high learning rates
iii) Dropout can help preventing overfitting

a) Both i) and ii)
b) Both i) and iii)
c) Both ii) and iii)
d) All i), ii) and iii)

11) IN Neural Network The input from Input layer is then feed into the _____.

a) Input layer
b) Output layer
c) Hidden layer
d) None of these

12) _____ computes the output volume by computing dot product between all filters and image patch.

a) Input Layer
b) Convolution Layer
c) Activation Function Layer
d) Pool Layer

13) What will happen to our machine learning model if the number of features is more than the number of data elements in our dataset?

a) It will be in under-fitting
b) It will not work
c) It will be in overfitting
d) It will not be affected

14) The rate at which cost changes with respect to weight or bias is called _____.

a) Derivative
b) Gradient
c) Rate of Change
d) Loss

SLR-GF-291

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Deep Learning (BTN03713)

Day & Date: Thursday 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Write short note on TensorFlow.
b) Write differences between underfitting and overfitting.
c) Assume a simple deep learning model with 3 neurons and inputs= 1,2,3 The weights to the input neurons are 6,7 and 8 respectively. Assume the activation function is a linear constant value of 2. calculate the output?
d) Enlist the different platform for deep learning.
e) Write a short note on.
i) Bias
ii) Variance

Q.3 Answer Any One **06**

a) What is drawback of RNN. How t is overcome by LSTM. Explain it in details.
b) Discuss different types of hyper parameter.

Q.4 Answer the following **06**

Explain
i) ReLU activation function.
ii) Sigmoid activation function.
iii) Binary activation Function.

Section – II

Q.5 Attempt Any Four **16**

a) Explain the different operations in Convolutional Neural Network.
b) Explain the different gates in Recurrent neural network.
c) Explain denoising auto encoder.
d) Write a short note on ImageNet.
e) Explain the use of auto encoder in dimensionality reduction & classification

Q.6 Answer Any One **06**

a) Define Transfer Learning. Explain in detail.
b) Explain SGD optimizer for CNNs.

Q.7 Attempt the following. **06**

Explain RCNNs with Keras

SLR-GF-291

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Deep Learning (BTN03713)

Day & Date: Thursday 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ is a pooling operation that selects the maximum element from the region of the feature map covered by the filter.
a) Max Pooling b) Average Pooling
c) Global pooling d) None of these

2) _____ is a Neural Nets way of classifying inputs Learning.
a) Forward Propagation b) Activation
c) Classification d) Backward Propagation

3) Which of the following statement is true regrading dropout _____.
i) Dropout gives a way to approximate by combining many different architectures
ii) Dropout demands high learning rates
iii) Dropout can help preventing overfitting
a) Both i) and ii) b) Both i) and iii)
c) Both ii) and iii) d) All i), ii) and iii)

4) IN Neural Network The input from Input layer is then feed into the _____.
a) Input layer b) Output layer
c) Hidden layer d) None of these

5) _____ computes the output volume by computing dot product between all filters and image patch.
a) Input Layer b) Convolution Layer
c) Activation Function Layer d) Pool Layer

6) What will happen to our machine learning model if the number of features is more than the number of data elements in our dataset?
a) It will be in under-fitting b) It will not work
c) It will be in overfitting d) It will not be affected

7) The rate at which cost changes with respect to weight or bias is called _____.
a) Derivative b) Gradient
c) Rate of Change d) Loss

8) The number of nodes in the input layer is 12 and the hidden layer is 5. The maximum number of connections from the input layer to the hidden layer are ____.

a) 60 b) Less than 60
c) More than 60 d) It is an arbitrary value

9) Which of the following functions can be used as an activation function in the output layer if we wish to predict the probabilities of n classes (p1, p2..pk) such that sum of p over all n equals to 1?

a) Softmax b) ReLU
c) Sigmoid d) Tanh

10) Dimensionality reduction does _____.

a) reduce computational time
b) may lead to some data loss
c) remove redundant feature
d) All

11) Under fitting means _____.

a) low bias & high variance b) high bias & low variance
c) low bias & low variance d) high bias & high variance

12) Recurrent Neural Networks are best suited for Text Processing.

a) True b) False

13) De-noising and Contractive are examples of _____.

a) Auto encoders
b) Convolution Neural Networks
c) Recurrent Neural Networks
d) None

14) The reuse of a pre-trained model on a new problem is known as _____.

a) Learning rate b) Bias
c) Variance d) transfer learning

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Deep Learning (BTN03713)

Day & Date: Thursday 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Write short note on TensorFlow.
b) Write differences between underfitting and overfitting.
c) Assume a simple deep learning model with 3 neurons and inputs= 1,2,3 The weights to the input neurons are 6,7 and 8 respectively. Assume the activation function is a linear constant value of 2. calculate the output?
d) Enlist the different platform for deep learning.
e) Write a short note on.
i) Bias
ii) Variance

Q.3 Answer Any One **06**

a) What is drawback of RNN. How t is overcome by LSTM. Explain it in details.
b) Discuss different types of hyper parameter.

Q.4 Answer the following **06**

Explain
i) ReLU activation function.
ii) Sigmoid activation function.
iii) Binary activation Function.

Section – II

Q.5 Attempt Any Four **16**

a) Explain the different operations in Convolutional Neural Network.
b) Explain the different gates in Recurrent neural network.
c) Explain denoising auto encoder.
d) Write a short note on ImageNet.
e) Explain the use of auto encoder in dimensionality reduction & classification

Q.6 Answer Any One **06**

a) Define Transfer Learning. Explain in detail.
b) Explain SGD optimizer for CNNs.

Q.7 Attempt the following. **06**

Explain RCNNs with Keras

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Deep Learning (BTN03713)

Day & Date: Thursday 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) IN Neural Network The input from Input layer is then feed into the _____.
a) Input layer b) Output layer
c) Hidden layer d) None of these

2) _____ computes the output volume by computing dot product between all filters and image patch.
a) Input Layer b) Convolution Layer
c) Activation Function Layer d) Pool Layer

3) What will happen to our machine learning model if the number of features is more than the number of data elements in our dataset?
a) It will be in under-fitting b) It will not work
c) It will be in overfitting d) It will not be affected

4) The rate at which cost changes with respect to weight or bias is called _____.
a) Derivative b) Gradient
c) Rate of Change d) Loss

5) The number of nodes in the input layer is 12 and the hidden layer is 5. The maximum number of connections from the input layer to the hidden layer are ____.
a) 60 b) Less than 60
c) More than 60 d) It is an arbitrary value

6) Which of the following functions can be used as an activation function in the output layer if we wish to predict the probabilities of n classes (p1, p2..pk) such that sum of p over all n equals to 1?
a) Softmax b) ReLU
c) Sigmoid d) Tanh

7) Dimensionality reduction does _____.
a) reduce computational time
b) may lead to some data loss
c) remove redundant feature
d) All

8) Under fitting means _____.
a) low bias & high variance b) high bias & low variance
c) low bias & low variance d) high bias & high variance

9) Recurrent Neural Networks are best suited for Text Processing.
a) True b) False

10) De-noising and Contractive are examples of _____.
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b) Convolution Neural Networks
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11) The reuse of a pre-trained model on a new problem is known as _____.
a) Learning rate b) Bias
c) Variance d) transfer learning

12) _____ is a pooling operation that selects the maximum element from the region of the feature map covered by the filter.
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13) _____ is a Neural Nets way of classifying inputs Learning.
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14) Which of the following statement is true regrading dropout _____.
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ii) Dropout demands high learning rates
iii) Dropout can help preventing overfitting
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c) Both ii) and iii) d) All i), ii) and iii)

SLR-GF-291

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Deep Learning (BTN03713)

Day & Date: Thursday 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Write short note on TensorFlow.
b) Write differences between underfitting and overfitting.
c) Assume a simple deep learning model with 3 neurons and inputs= 1,2,3 The weights to the input neurons are 6,7 and 8 respectively. Assume the activation function is a linear constant value of 2. calculate the output?
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e) Write a short note on.
i) Bias
ii) Variance

Q.3 Answer Any One **06**

a) What is drawback of RNN. How t is overcome by LSTM. Explain it in details.
b) Discuss different types of hyper parameter.

Q.4 Answer the following **06**

Explain
i) ReLU activation function.
ii) Sigmoid activation function.
iii) Binary activation Function.

Section – II

Q.5 Attempt Any Four **16**

a) Explain the different operations in Convolutional Neural Network.
b) Explain the different gates in Recurrent neural network.
c) Explain denoising auto encoder.
d) Write a short note on ImageNet.
e) Explain the use of auto encoder in dimensionality reduction & classification

Q.6 Answer Any One **06**

a) Define Transfer Learning. Explain in detail.
b) Explain SGD optimizer for CNNs.

Q.7 Attempt the following. **06**

Explain RCNNs with Keras

SLR-GF-291

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Deep Learning (BTN03713)

Day & Date: Thursday 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) De-noising and Contractive are examples of _____.
a) Auto encoders
b) Convolution Neural Networks
c) Recurrent Neural Networks
d) None

2) The reuse of a pre-trained model on a new problem is known as _____.
a) Learning rate b) Bias
c) Variance d) transfer learning

3) _____ is a pooling operation that selects the maximum element from the region of the feature map covered by the filter.
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c) Global pooling d) None of these

4) _____ is a Neural Nets way of classifying inputs Learning.
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c) Classification d) Backward Propagation

5) Which of the following statement is true regrading dropout _____.
i) Dropout gives a way to approximate by combining many different architectures
ii) Dropout demands high learning rates
iii) Dropout can help preventing overfitting
a) Both i) and ii) b) Both i) and iii)
c) Both ii) and iii) d) All i), ii) and iii)

6) IN Neural Network The input from Input layer is then feed into the _____.
a) Input layer b) Output layer
c) Hidden layer d) None of these

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9) The rate at which cost changes with respect to weight or bias is called _____.

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b) Gradient
c) Rate of Change
d) Loss

10) The number of nodes in the input layer is 12 and the hidden layer is 5. The maximum number of connections from the input layer to the hidden layer are ____.

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11) Which of the following functions can be used as an activation function in the output layer if we wish to predict the probabilities of n classes (p1, p2..pk) such that sum of p over all n equals to 1?

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b) ReLU
c) Sigmoid
d) Tanh

12) Dimensionality reduction does _____.

a) reduce computational time
b) may lead to some data loss
c) remove redundant feature
d) All

13) Under fitting means _____.

a) low bias & high variance
b) high bias & low variance
c) low bias & low variance
d) high bias & high variance

14) Recurrent Neural Networks are best suited for Text Processing.

a) True
b) False

SLR-GF-291

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Deep Learning (BTN03713)

Day & Date: Thursday 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Write short note on TensorFlow.
b) Write differences between underfitting and overfitting.
c) Assume a simple deep learning model with 3 neurons and inputs= 1,2,3 The weights to the input neurons are 6,7 and 8 respectively. Assume the activation function is a linear constant value of 2. calculate the output?
d) Enlist the different platform for deep learning.
e) Write a short note on.
i) Bias
ii) Variance

Q.3 Answer Any One **06**

a) What is drawback of RNN. How t is overcome by LSTM. Explain it in details.
b) Discuss different types of hyper parameter.

Q.4 Answer the following **06**

Explain
i) ReLU activation function.
ii) Sigmoid activation function.
iii) Binary activation Function.

Section – II

Q.5 Attempt Any Four **16**

a) Explain the different operations in Convolutional Neural Network.
b) Explain the different gates in Recurrent neural network.
c) Explain denoising auto encoder.
d) Write a short note on ImageNet.
e) Explain the use of auto encoder in dimensionality reduction & classification

Q.6 Answer Any One **06**

a) Define Transfer Learning. Explain in detail.
b) Explain SGD optimizer for CNNs.

Q.7 Attempt the following. **06**

Explain RCNNs with Keras

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A model is a mathematical representation of an _____.
a) Object b) Process
c) object or process d) none of the given options

2) Which of the following approach is required for developing predictive analytics?
a) thoroughly understand the business problem we're trying to solve
b) run statistical analysis, data-mining and machine-learning algorithms on the data
c) obtain and prepare the data we want our model to work with
d) all of the given options

3) Companies typically create predictive analytics solutions by _____.
a) Business knowledge
b) Data science team and technology
c) The data
d) All of the options

4) Collaborative filtering algorithm requires _____.
a) A community of users to generate data
b) Creating a database of interest for items by users
c) Both options a and b
d) None of the given options

5) Characteristics of structured data _____.
a) Easy to access and query b) Efficient to analyze
c) Both option a and b d) Scattered and dispersed

6) Data source for attitudinal data is _____.
a) Customers thoughts b) Customers actions
c) Collected from surveys d) None of the given options

7) For data driven analytics _____.
a) no prior business knowledge is required
b) in-depth domain knowledge is required
c) both option a and b
d) none of the options

8) _____ model are built on the underlying associations and relationships present in the data.

a) Associations
b) Decision
c) Clustering and classification
d) Predictive

9) Twitter-based predictors of earthquakes is based on ____ idea:

a) The earthquake-detection application starts collecting tweets about an event that's happening in real time.
b) The collected tweets would be used to trace the exact location of the earthquake.
c) Both option a and b
d) None of the given options

10) A data matrix is a table of numbers, documents or expressions, represented in rows and columns as follows:

a) Each row corresponds to a given item in the data set
b) Each column represents a particular characteristic of an item.
c) Both option a and b
d) None of the given options

11) Data clustering is used in ____ field.

a) Information retrieval
b) Medicine
c) Marketing
d) All of the given options

12) ____ is used to describe data by extracting meaningful groupings or categories from a body of data that contains similar elements.

a) Data clustering
b) Data classification
c) Decision tree
d) Support Vector Machine

13) Way of using ensemble model is _____.

1) Split the training data into several sets.
2) Have each of the individual models that make up the ensemble model process parts of the data and learn from it.
3) Have each model produce its learning outcome from that data.

a) 1,2,3
b) 2,1,3
c) 3,2,1
d) 1,3,2

14) ____ customers could be those who shop regularly or semi-regularly.

a) Seasonal
b) Discount-oriented
c) Faithful
d) None of these

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) Describe the technology used in predictive analytics and list the factors for selecting the right software product.
b) Describe content-based recommendation system with an example.
c) Compare the characteristics of structured and unstructured data.
d) Compare attitudinal data and behavioral data with respective to their characteristics.

Q.3 Attempt any two. **16**

a) Discuss the following three main concepts of searching unstructured data.
i) Keyword-based search
ii) Semantic-based search
iii) Contextual search
b) Differentiate item based collaborative filtering and user based collaborative filtering with an example.
c) Compare data driven and user driven analytics with respective to their characteristics.

Section – II

Q.4 Attempt any three. **12**

a) Describe association model and decision models.
b) List the operations of k-means clustering algorithm.
c) Write the general steps of nearest neighbors' algorithm.
d) With an example explain support vector machine for predictions.

Q.5 Attempt any two. **16**

a) Discuss the idea of twitter-based predictors of earthquakes and political campaign.
b) Develop a predictive analytics model that leverages Google Flu Trends data to forecast influenza outbreaks accurately.
c) With an example explain decision tree to predict customer interest.

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ model are built on the underlying associations and relationships present in the data.
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2) Twitter-based predictors of earthquakes is based on ____ idea:
a) The earthquake-detection application starts collecting tweets about an event that's happening in real time.
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3) A data matrix is a table of numbers, documents or expressions, represented in rows and columns as follows:
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4) Data clustering is used in ____ field.
a) Information retrieval b) Medicine
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5) ____ is used to describe data by extracting meaningful groupings or categories from a body of data that contains similar elements.
a) Data clustering b) Data classification
c) Decision tree d) Support Vector Machine

6) Way of using ensemble model is _____.
1) Split the training data into several sets.
2) Have each of the individual models that make up the ensemble model process parts of the data and learn from it.
3) Have each model produce its learning outcome from that data.
a) 1,2,3 b) 2,1,3
c) 3,2,1 d) 1,3,2

7) ____ customers could be those who shop regularly or semi-regularly.
a) Seasonal b) Discount-oriented
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Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) Describe the technology used in predictive analytics and list the factors for selecting the right software product.
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c) Compare the characteristics of structured and unstructured data.
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Q.3 Attempt any two. **16**

a) Discuss the following three main concepts of searching unstructured data.
i) Keyword-based search
ii) Semantic-based search
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b) Differentiate item based collaborative filtering and user based collaborative filtering with an example.
c) Compare data driven and user driven analytics with respective to their characteristics.

Section – II

Q.4 Attempt any three. **12**

a) Describe association model and decision models.
b) List the operations of k-means clustering algorithm.
c) Write the general steps of nearest neighbors' algorithm.
d) With an example explain support vector machine for predictions.

Q.5 Attempt any two. **16**

a) Discuss the idea of twitter-based predictors of earthquakes and political campaign.
b) Develop a predictive analytics model that leverages Google Flu Trends data to forecast influenza outbreaks accurately.
c) With an example explain decision tree to predict customer interest.

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Data clustering is used in ____ field.
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2) Have each of the individual models that make up the ensemble model process parts of the data and learn from it.
3) Have each model produce its learning outcome from that data.
a) 1,2,3 b) 2,1,3
c) 3,2,1 d) 1,3,2

4) ____ customers could be those who shop regularly or semi-regularly.
a) Seasonal b) Discount-oriented
c) Faithful d) None of these

5) A model is a mathematical representation of an _____.
a) Object b) Process
c) object or process d) none of the given options

6) Which of the following approach is required for developing predictive analytics?
a) thoroughly understand the business problem we're trying to solve
b) run statistical analysis, data-mining and machine-learning algorithms on the data
c) obtain and prepare the data we want our model to work with
d) all of the given options

7) Companies typically create predictive analytics solutions by _____.
a) Business knowledge
b) Data science team and technology
c) The data
d) All of the options

8) Collaborative filtering algorithm requires _____.
a) A community of users to generate data
b) Creating a database of interest for items by users
c) Both options a and b
d) None of the given options

9) Characteristics of structured data _____.
a) Easy to access and query b) Efficient to analyze
c) Both option a and b d) Scattered and dispersed

10) Data source for attitudinal data is _____.
a) Customers thoughts b) Customers actions
c) Collected from surveys d) None of the given options

11) For data driven analytics _____.
a) no prior business knowledge is required
b) in-depth domain knowledge is required
c) both option a and b
d) none of the options

12) _____ model are built on the underlying associations and relationships present in the data.
a) Associations b) Decision
c) Clustering and classification d) Predictive

13) Twitter-based predictors of earthquakes is based on ____ idea:
a) The earthquake-detection application starts collecting tweets about an event that's happening in real time.
b) The collected tweets would be used to trace the exact location of the earthquake.
c) Both option a and b
d) None of the given options

14) A data matrix is a table of numbers, documents or expressions, represented in rows and columns as follows:
a) Each row corresponds to a given item in the data set
b) Each column represents a particular characteristic of an item.
c) Both option a and b
d) None of the given options

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Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) Describe the technology used in predictive analytics and list the factors for selecting the right software product.
b) Describe content-based recommendation system with an example.
c) Compare the characteristics of structured and unstructured data.
d) Compare attitudinal data and behavioral data with respective to their characteristics.

Q.3 Attempt any two. **16**

a) Discuss the following three main concepts of searching unstructured data.
i) Keyword-based search
ii) Semantic-based search
iii) Contextual search
b) Differentiate item based collaborative filtering and user based collaborative filtering with an example.
c) Compare data driven and user driven analytics with respective to their characteristics.

Section – II

Q.4 Attempt any three. **12**

a) Describe association model and decision models.
b) List the operations of k-means clustering algorithm.
c) Write the general steps of nearest neighbors' algorithm.
d) With an example explain support vector machine for predictions.

Q.5 Attempt any two. **16**

a) Discuss the idea of twitter-based predictors of earthquakes and political campaign.
b) Develop a predictive analytics model that leverages Google Flu Trends data to forecast influenza outbreaks accurately.
c) With an example explain decision tree to predict customer interest.

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Data source for attitudinal data is _____.
a) Customers thoughts b) Customers actions
c) Collected from surveys d) None of the given options

2) For data driven analytics _____.
a) no prior business knowledge is required
b) in-depth domain knowledge is required
c) both option a and b
d) none of the options

3) _____ model are built on the underlying associations and relationships present in the data.
a) Associations b) Decision
c) Clustering and classification d) Predictive

4) Twitter-based predictors of earthquakes is based on ____ idea:
a) The earthquake-detection application starts collecting tweets about an event that's happening in real time.
b) The collected tweets would be used to trace the exact location of the earthquake.
c) Both option a and b
d) None of the given options

5) A data matrix is a table of numbers, documents or expressions, represented in rows and columns as follows:
a) Each row corresponds to a given item in the data set
b) Each column represents a particular characteristic of an item.
c) Both option a and b
d) None of the given options

6) Data clustering is used in ____ field.
a) Information retrieval b) Medicine
c) Marketing d) All of the given options

7) ____ is used to describe data by extracting meaningful groupings or categories from a body of data that contains similar elements.

a) Data clustering
b) Data classification
c) Decision tree
d) Support Vector Machine

8) Way of using ensemble model is _____.

1) Split the training data into several sets.
2) Have each of the individual models that make up the ensemble model process parts of the data and learn from it.
3) Have each model produce its learning outcome from that data.

a) 1,2,3
b) 2,1,3
c) 3,2,1
d) 1,3,2

9) ____ customers could be those who shop regularly or semi-regularly.

a) Seasonal
b) Discount-oriented
c) Faithful
d) None of these

10) A model is a mathematical representation of an _____.

a) Object
b) Process
c) object or process
d) none of the given options

11) Which of the following approach is required for developing predictive analytics?

a) thoroughly understand the business problem we're trying to solve
b) run statistical analysis, data-mining and machine-learning algorithms on the data
c) obtain and prepare the data we want our model to work with
d) all of the given options

12) Companies typically create predictive analytics solutions by _____.

a) Business knowledge
b) Data science team and technology
c) The data
d) All of the options

13) Collaborative filtering algorithm requires _____.

a) A community of users to generate data
b) Creating a database of interest for items by users
c) Both options a and b
d) None of the given options

14) Characteristics of structured data _____.

a) Easy to access and query
b) Efficient to analyze
c) Both option a and b
d) Scattered and dispersed

SLR-GF-292

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov2023
COMPUTER SCIENCE AND ENGINEERING
Predictive Analytics (BTN03715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) Describe the technology used in predictive analytics and list the factors for selecting the right software product.
b) Describe content-based recommendation system with an example.
c) Compare the characteristics of structured and unstructured data.
d) Compare attitudinal data and behavioral data with respective to their characteristics.

Q.3 Attempt any two. **16**

a) Discuss the following three main concepts of searching unstructured data.
i) Keyword-based search
ii) Semantic-based search
iii) Contextual search
b) Differentiate item based collaborative filtering and user based collaborative filtering with an example.
c) Compare data driven and user driven analytics with respective to their characteristics.

Section – II

Q.4 Attempt any three. **12**

a) Describe association model and decision models.
b) List the operations of k-means clustering algorithm.
c) Write the general steps of nearest neighbors' algorithm.
d) With an example explain support vector machine for predictions.

Q.5 Attempt any two. **16**

a) Discuss the idea of twitter-based predictors of earthquakes and political campaign.
b) Develop a predictive analytics model that leverages Google Flu Trends data to forecast influenza outbreaks accurately.
c) With an example explain decision tree to predict customer interest.

SLR-GF-293

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) During a DoS attack, the regular traffic on the target _____ will be either dawdling down or entirely interrupted.
a) network b) system
c) website d) router

2) Try to keep your passwords without meaning so that _____ attack becomes almost impossible to perform successfully.
a) social engineering b) Phishing
c) password guessing d) brute force

3) Increase your security for social media account by always ____ as you step away from the system.
a) signing in b) logging out
c) signing up d) logging in

4) A good audit report must at least meet one of the following qualifications:
a) It should offer constructive and timely suggestions to the management.
b) It should not point out mistakes.
c) It should not be based on factual information.
d) It should not be based on balance sheet.

5) The main object of investigation is:
a) To discover errors and frauds b) To prevent errors and frauds
c) To verify statements d) All the above

6) _____ is a type of software designed to help the user's computer detect viruses and avoid them.
a) Malware b) Adware
c) Antivirus d) Both B and C

7) Which of the following refers to stealing one's idea or invention of others and use it for their own benefits?
a) Piracy b) Plagiarism
c) Intellectual property rights d) All of the above

8) Which of the following is not a cybercrime?
a) Denial of Service b) Man in the Middle
c) Malware d) AES

9) Which of the following act violates cyber security?
a) Exploit b) Attack
c) Threat d) Vulnerability

10) _____ is a special type of vulnerability' that doesn't possess risk.
a) Vulnerabilities without risk b) Vulnerabilities without attacker
c) Vulnerabilities without action d) Vulnerabilities no one knows

11) Is penetration testing used to help or for damaging a system?
a) Helping b) Securing
c) Damaging d) both a & c

12) Which of them is not a major way of stealing email information?
a) Stealing cookies b) Reverse Engineering
c) Password Phishing d) Social Engineering

13) In _____ attacks an attacker do not contact with authorizing party for stealing password.
a) passive online b) active online
c) offline d) non-electronic

14) Data leakage threats do not usually occur from which of the following?
a) Web and email b) Mobile data storage
c) USB drives and laptops d) Television

SLR-GF-293

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Write and explain what are benefits of external audit.
b) What is the Purpose of Monitoring Network Traffic?
c) What is a security audit? Why are security audits important?
d) What is traffic analysis? what are key benefits of traffic analysis.
e) How does a security audit work? How do you perform a security audit?

Q.3 Attempt the following (Any Two) **12**

a) Explain Audit Trails in details.
b) Write and explain methodologies of information security.
c) What is Performance Metrics? what are the types of Performance Metrics? List common issues in Performance Metrics.

Section – II

Q.4 Attempt the following (Any Four) **16**

a) Write difference between trojan and viruses.
b) Write a note on log management in cyber security.
c) What is email security? What are the steps to secure emails.
d) What Is a Data Leak? How Do Data Leaks Happen?
e) Write a note Penetration testing for Denial of Service.

Q.5 Attempt the following (Any Two) **12**

a) What Is Vulnerability Assessment? What are Vulnerability Assessment Checklist?
b) What is trojan horse? What are the types of trojan horse, how it's working.
c) What is password cracking? Write 5 Common password cracking techniques.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is not a cybercrime?
a) Denial of Service b) Man in the Middle
c) Malware d) AES

2) Which of the following act violates cyber security?
a) Exploit b) Attack
c) Threat d) Vulnerability

3) _____ is a special type of vulnerability' that doesn't possess risk.
a) Vulnerabilities without risk b) Vulnerabilities without attacker
c) Vulnerabilities without action d) Vulnerabilities no one knows

4) Is penetration testing used to help or for damaging a system?
a) Helping b) Securing
c) Damaging d) both a & c

5) Which of them is not a major way of stealing email information?
a) Stealing cookies b) Reverse Engineering
c) Password Phishing d) Social Engineering

6) In _____ attacks an attacker do not contact with authorizing party for stealing password.
a) passive online b) active online
c) offline d) non-electronic

7) Data leakage threats do not usually occur from which of the following?
a) Web and email b) Mobile data storage
c) USB drives and laptops d) Television

8) During a DoS attack, the regular traffic on the target _____ will be either dawdling down or entirely interrupted.
a) network b) system
c) website d) router

9) Try to keep your passwords without meaning so that _____ attack becomes almost impossible to perform successfully.

a) social engineering b) Phishing
c) password guessing d) brute force

10) Increase your security for social media account by always ____ as you step away from the system.

a) signing in b) logging out
c) signing up d) logging in

11) A good audit report must at least meet one of the following qualifications:

a) It should offer constructive and timely suggestions to the management.
b) It should not point out mistakes.
c) It should not be based on factual information.
d) It should not be based on balance sheet.

12) The main object of investigation is:

a) To discover errors and frauds b) To prevent errors and frauds
c) To verify statements d) All the above

13) _____ is a type of software designed to help the user's computer detect viruses and avoid them.

a) Malware b) Adware
c) Antivirus d) Both B and C

14) Which of the following refers to stealing one's idea or invention of others and use it for their own benefits?

a) Piracy b) Plagiarism
c) Intellectual property rights d) All of the above

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Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Write and explain what are benefits of external audit.
b) What is the Purpose of Monitoring Network Traffic?
c) What is a security audit? Why are security audits important?
d) What is traffic analysis? what are key benefits of traffic analysis.
e) How does a security audit work? How do you perform a security audit?

Q.3 Attempt the following (Any Two) **12**

a) Explain Audit Trails in details.
b) Write and explain methodologies of information security.
c) What is Performance Metrics? what are the types of Performance Metrics? List common issues in Performance Metrics.

Section – II

Q.4 Attempt the following (Any Four) **16**

a) Write difference between trojan and viruses.
b) Write a note on log management in cyber security.
c) What is email security? What are the steps to secure emails.
d) What Is a Data Leak? How Do Data Leaks Happen?
e) Write a note Penetration testing for Denial of Service.

Q.5 Attempt the following (Any Two) **12**

a) What Is Vulnerability Assessment? What are Vulnerability Assessment Checklist?
b) What is trojan horse? What are the types of trojan horse, how it's working.
c) What is password cracking? Write 5 Common password cracking techniques.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Is penetration testing used to help or for damaging a system?
a) Helping b) Securing
c) Damaging d) both a & c

2) Which of them is not a major way of stealing email information?
a) Stealing cookies b) Reverse Engineering
c) Password Phishing d) Social Engineering

3) In _____ attacks an attacker do not contact with authorizing party for stealing password.
a) passive online b) active online
c) offline d) non-electronic

4) Data leakage threats do not usually occur from which of the following?
a) Web and email b) Mobile data storage
c) USB drives and laptops d) Television

5) During a DoS attack, the regular traffic on the target _____ will be either dawdling down or entirely interrupted.
a) network b) system
c) website d) router

6) Try to keep your passwords without meaning so that _____ attack becomes almost impossible to perform successfully.
a) social engineering b) Phishing
c) password guessing d) brute force

7) Increase your security for social media account by always ____ as you step away from the system.
a) signing in b) logging out
c) signing up d) logging in

8) A good audit report must at least meet one of the following qualifications:
a) It should offer constructive and timely suggestions to the management.
b) It should not point out mistakes.
c) It should not be based on factual information.
d) It should not be based on balance sheet.

9) The main object of investigation is:
a) To discover errors and frauds b) To prevent errors and frauds
c) To verify statements d) All the above

10) _____ is a type of software designed to help the user's computer detect viruses and avoid them.
a) Malware b) Adware
c) Antivirus d) Both B and C

11) Which of the following refers to stealing one's idea or invention of others and use it for their own benefits?
a) Piracy b) Plagiarism
c) Intellectual property rights d) All of the above

12) Which of the following is not a cybercrime?
a) Denial of Service b) Man in the Middle
c) Malware d) AES

13) Which of the following act violates cyber security?
a) Exploit b) Attack
c) Threat d) Vulnerability

14) _____ is a special type of vulnerability' that doesn’t possess risk.
a) Vulnerabilities without risk b) Vulnerabilities without attacker
c) Vulnerabilities without action d) Vulnerabilities no one knows

SLR-GF-293

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Write and explain what are benefits of external audit.
b) What is the Purpose of Monitoring Network Traffic?
c) What is a security audit? Why are security audits important?
d) What is traffic analysis? what are key benefits of traffic analysis.
e) How does a security audit work? How do you perform a security audit?

Q.3 Attempt the following (Any Two) **12**

a) Explain Audit Trails in details.
b) Write and explain methodologies of information security.
c) What is Performance Metrics? what are the types of Performance Metrics? List common issues in Performance Metrics.

Section – II

Q.4 Attempt the following (Any Four) **16**

a) Write difference between trojan and viruses.
b) Write a note on log management in cyber security.
c) What is email security? What are the steps to secure emails.
d) What Is a Data Leak? How Do Data Leaks Happen?
e) Write a note Penetration testing for Denial of Service.

Q.5 Attempt the following (Any Two) **12**

a) What Is Vulnerability Assessment? What are Vulnerability Assessment Checklist?
b) What is trojan horse? What are the types of trojan horse, how it's working.
c) What is password cracking? Write 5 Common password cracking techniques.

SLR-GF-293

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is a type of software designed to help the user's computer detect viruses and avoid them.
a) Malware b) Adware
c) Antivirus d) Both B and C

2) Which of the following refers to stealing one's idea or invention of others and use it for their own benefits?
a) Piracy b) Plagiarism
c) Intellectual property rights d) All of the above

3) Which of the following is not a cybercrime?
a) Denial of Service b) Man in the Middle
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a) Helping b) Securing
c) Damaging d) both a & c

7) Which of them is not a major way of stealing email information?
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c) USB drives and laptops d) Television

10) During a DoS attack, the regular traffic on the target _____ will be either dawdling down or entirely interrupted.
a) network b) system
c) website d) router

11) Try to keep your passwords without meaning so that _____ attack becomes almost impossible to perform successfully.
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12) Increase your security for social media account by always ____ as you step away from the system.
a) signing in b) logging out
c) signing up d) logging in

13) A good audit report must at least meet one of the following qualifications:
a) It should offer constructive and timely suggestions to the management.
b) It should not point out mistakes.
c) It should not be based on factual information.
d) It should not be based on balance sheet.

14) The main object of investigation is:
a) To discover errors and frauds b) To prevent errors and frauds
c) To verify statements d) All the above

SLR-GF-293

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information Auditing and monitoring (BTN03717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Write and explain what are benefits of external audit.
b) What is the Purpose of Monitoring Network Traffic?
c) What is a security audit? Why are security audits important?
d) What is traffic analysis? what are key benefits of traffic analysis.
e) How does a security audit work? How do you perform a security audit?

Q.3 Attempt the following (Any Two) **12**

a) Explain Audit Trails in details.
b) Write and explain methodologies of information security.
c) What is Performance Metrics? what are the types of Performance Metrics? List common issues in Performance Metrics.

Section – II

Q.4 Attempt the following (Any Four) **16**

a) Write difference between trojan and viruses.
b) Write a note on log management in cyber security.
c) What is email security? What are the steps to secure emails.
d) What Is a Data Leak? How Do Data Leaks Happen?
e) Write a note Penetration testing for Denial of Service.

Q.5 Attempt the following (Any Two) **12**

a) What Is Vulnerability Assessment? What are Vulnerability Assessment Checklist?
b) What is trojan horse? What are the types of trojan horse, how it's working.
c) What is password cracking? Write 5 Common password cracking techniques.

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Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (197043701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) In distributed system, each processor has its own _____.
a) local memory b) clock
c) both local memory and clock d) none of the mentioned

2) When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place is called _____.
a) dynamic condition b) race condition
c) essential condition d) critical condition

3) A "glue" between client and server parts of application _____
a) middleware b) firmware
c) package d) system software

4) Process Fail - Stop in process omission faults ____
a) can be detected in synchronous system
b) can be detected in asynchronous system
c) can be detected in synchronous and asynchronous system
d) can be detected in standalone system

5) How many types of replications is provided by SQL Server?
a) 2 b) 3
c) 4 d) 5

6) Remote Procedure Calls are used _____
a) for communication between two processes remotely different from each other the same system
b) for communication between two processes on the same system
c) for communication between two processes on separate systems
d) none of the mentioned

7) To differentiate the many network services a system supports _____ are used.

a) Variables
b) Sockets
c) Ports
d) Service names

8) Which of the following condition is required for a deadlock to be possible?

a) mutual exclusion
b) a process may hold allocated resources while awaiting assignment of other resources
c) no resource can be forcibly removed from a process holding it
d) all of the mentioned

9) Which one of the following is the deadlock avoidance algorithm?

a) banker's algorithm
b) round-robin algorithm
c) elevator algorithm
d) karn's algorithm

10) What is the drawback of banker's algorithm?

a) in advance processes rarely know how much resource they will need
b) the number of processes changes as time progresses
c) resource once available can disappear
d) all of the mentioned

11) A deadlock can be broken by _____

a) abort one or more processes to break the circular wait
b) abort all the process in the system
c) preempt all resources from all processes
d) none of the mentioned

12) What are the different ways file accesses take place?

a) sequential access
b) direct access
c) indexed sequential access
d) all of the mentioned

13) _____ is not possible in distributed file system.

a) File replication
b) Migration
c) Client interface
d) Remote access

14) DSM stands for _____

a) Direct shared memory
b) Direct system memory
c) Distributed shared memory
d) Distributed system memory

SLR-GF-294

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (197043701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Explain Fundamental of OS.
- **b)** Discuss in evolution of Distributed system.
- **c)** Explain FLIP.
- **d)** Write a note on Clock synchronization.
- **e)** Discuss exception handling.

Q.3 Attempt any one. **08**
- **a)** Explain RPC model with diagram.
- **b)** Discuss in detail client / server binding with advantages and disadvantages.

Q.4 What is process Migration? List of advantages of process migration. **08**

Section – II

Q.5 Answer any three. **12**
- **a)** Explain approaches of Mutual Exclusion Algorithms.
- **b)** Explain Ricart-Agrawala Algorithm.
- **c)** Explain Memory coherence.
- **d)** What is deadlock Prevention?
- **e)** Explain Log structured File System.

Q.6 Answer any one. **08**
- **a)** Explain Distributed deadlock detection.
- **b)** Draw and explain architecture of distributed file system.

Q.7 Discuss in details Lamports Algorithm. **08**

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (197043701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which of the following condition is required for a deadlock to be possible?
a) mutual exclusion
b) a process may hold allocated resources while awaiting assignment of other resources
c) no resource can be forcibly removed from a process holding it
d) all of the mentioned

2) Which one of the following is the deadlock avoidance algorithm?
a) banker's algorithm b) round-robin algorithm
c) elevator algorithm d) karn's algorithm

3) What is the drawback of banker's algorithm?
a) in advance processes rarely know how much resource they will need
b) the number of processes changes as time progresses
c) resource once available can disappear
d) all of the mentioned

4) A deadlock can be broken by _____
a) abort one or more processes to break the circular wait
b) abort all the process in the system
c) preempt all resources from all processes
d) none of the mentioned

5) What are the different ways file accesses take place?
a) sequential access b) direct access
c) indexed sequential access d) all of the mentioned

6) _____ is not possible in distributed file system.
a) File replication b) Migration
c) Client interface d) Remote access

7) DSM stands for _____
a) Direct shared memory b) Direct system memory
c) Distributed shared memory d) Distributed system memory

8) In distributed system, each processor has its own _____.
a) local memory b) clock
c) both local memory and clock d) none of the mentioned

9) When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place is called _____.
a) dynamic condition b) race condition
c) essential condition d) critical condition

10) A "glue" between client and server parts of application _____
a) middleware b) firmware
c) package d) system software

11) Process Fail - Stop in process omission faults ____
a) can be detected in synchronous system
b) can be detected in asynchronous system
c) can be detected in synchronous and asynchronous system
d) can be detected in standalone system

12) How many types of replications is provided by SQL Server?
a) 2 b) 3
c) 4 d) 5

13) Remote Procedure Calls are used _____
a) for communication between two processes remotely different from each other the same system
b) for communication between two processes on the same system
c) for communication between two processes on separate systems
d) none of the mentioned

14) To differentiate the many network services a system supports _____ are used.
a) Variables b) Sockets
c) Ports d) Service names

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (197043701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Explain Fundamental of OS.
- **b)** Discuss in evolution of Distributed system.
- **c)** Explain FLIP.
- **d)** Write a note on Clock synchronization.
- **e)** Discuss exception handling.

Q.3 Attempt any one. **08**
- **a)** Explain RPC model with diagram.
- **b)** Discuss in detail client / server binding with advantages and disadvantages.

Q.4 What is process Migration? List of advantages of process migration. **08**

Section – II

Q.5 Answer any three. **12**
- **a)** Explain approaches of Mutual Exclusion Algorithms.
- **b)** Explain Ricart-Agrawala Algorithm.
- **c)** Explain Memory coherence.
- **d)** What is deadlock Prevention?
- **e)** Explain Log structured File System.

Q.6 Answer any one. **08**
- **a)** Explain Distributed deadlock detection.
- **b)** Draw and explain architecture of distributed file system.

Q.7 Discuss in details Lamports Algorithm. **08**

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (197043701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) A deadlock can be broken by _____
- a) abort one or more processes to break the circular wait
- b) abort all the process in the system
- c) preempt all resources from all processes
- d) none of the mentioned

2) What are the different ways file accesses take place?
- a) sequential access
- b) direct access
- c) indexed sequential access
- d) all of the mentioned

3) _____ is not possible in distributed file system.
- a) File replication
- b) Migration
- c) Client interface
- d) Remote access

4) DSM stands for _____
- a) Direct shared memory
- b) Direct system memory
- c) Distributed shared memory
- d) Distributed system memory

5) In distributed system, each processor has its own _____.
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- b) clock
- c) both local memory and clock
- d) none of the mentioned

6) When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place is called _____.
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- c) essential condition
- d) critical condition

7) A "glue" between client and server parts of application _____
- a) middleware
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- c) package
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8) Process Fail - Stop in process omission faults ____
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b) can be detected in asynchronous system
c) can be detected in synchronous and asynchronous system
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9) How many types of replications is provided by SQL Server?
a) 2 b) 3
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13) Which one of the following is the deadlock avoidance algorithm?
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c) elevator algorithm d) karn's algorithm

14) What is the drawback of banker's algorithm?
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b) the number of processes changes as time progresses
c) resource once available can disappear
d) all of the mentioned

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (197043701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Explain Fundamental of OS.
- **b)** Discuss in evolution of Distributed system.
- **c)** Explain FLIP.
- **d)** Write a note on Clock synchronization.
- **e)** Discuss exception handling.

Q.3 Attempt any one. **08**
- **a)** Explain RPC model with diagram.
- **b)** Discuss in detail client / server binding with advantages and disadvantages.

Q.4 What is process Migration? List of advantages of process migration. **08**

Section – II

Q.5 Answer any three. **12**
- **a)** Explain approaches of Mutual Exclusion Algorithms.
- **b)** Explain Ricart-Agrawala Algorithm.
- **c)** Explain Memory coherence.
- **d)** What is deadlock Prevention?
- **e)** Explain Log structured File System.

Q.6 Answer any one. **08**
- **a)** Explain Distributed deadlock detection.
- **b)** Draw and explain architecture of distributed file system.

Q.7 Discuss in details Lamports Algorithm. **08**

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (197043701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Remote Procedure Calls are used _____
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- c) for communication between two processes on separate systems
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- b) Sockets
- c) Ports
- d) Service names

3) Which of the following condition is required for a deadlock to be possible?
- a) mutual exclusion
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- c) no resource can be forcibly removed from a process holding it
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c) indexed sequential access d) all of the mentioned

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a) Direct shared memory b) Direct system memory
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11) When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place is called _____.
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c) essential condition d) critical condition

12) A "glue" between client and server parts of application _____
a) middleware b) firmware
c) package d) system software

13) Process Fail - Stop in process omission faults ____
a) can be detected in synchronous system
b) can be detected in asynchronous system
c) can be detected in synchronous and asynchronous system
d) can be detected in standalone system

14) How many types of replications is provided by SQL Server?
a) 2 b) 3
c) 4 d) 5

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Distributed Systems (197043701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Explain Fundamental of OS.
- **b)** Discuss in evolution of Distributed system.
- **c)** Explain FLIP.
- **d)** Write a note on Clock synchronization.
- **e)** Discuss exception handling.

Q.3 Attempt any one. **08**
- **a)** Explain RPC model with diagram.
- **b)** Discuss in detail client / server binding with advantages and disadvantages.

Q.4 What is process Migration? List of advantages of process migration. **08**

Section – II

Q.5 Answer any three. **12**
- **a)** Explain approaches of Mutual Exclusion Algorithms.
- **b)** Explain Ricart-Agrawala Algorithm.
- **c)** Explain Memory coherence.
- **d)** What is deadlock Prevention?
- **e)** Explain Log structured File System.

Q.6 Answer any one. **08**
- **a)** Explain Distributed deadlock detection.
- **b)** Draw and explain architecture of distributed file system.

Q.7 Discuss in details Lamports Algorithm. **08**

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (197043702)

Day & Date: Friday,29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Type of matrix decomposition model is _____.
a) predictive model b) descriptive model
c) logical model d) none

2) Which of the following is a disadvantage of decision trees?
a) Decision trees are prone to be overfit
b) Decision trees are robust to outliers
c) Factor analysis
d) None of the above

3) Data used to optimize the parameter settings of a supervised learner model is called _____.
a) Test b) Training
c) Validation d) None of the above

4) The output of training process in machine learning is _____.
a) machine learning algorithm b) machine learning model
c) null d) accuracy

5) The average positive difference between computed and desired outcome values _____.
a) Mean positive error b) Mean absolute error
c) Mean squared error d) Root mean squared error

6) What is the purpose of performing cross-validation?
a) To assess the predictive performance of the models
b) To judge how the trained model performs outside the sample on test data
c) Both a and b
d) None of Above

7) Following are the types of supervised learning _____.
a) regression b) classification
c) subgroup discovery d) all of above

8) The problem of finding hidden structure in unlabeled data is called _____.
a) unsupervised learning b) reinforcement learning
c) supervised learning d) none

9) Machine learning algorithms build a model based on sample data, known as _____.
a) Training Data b) Transfer Data
c) Data Training d) none of the above

10) Fraud Detection, Image Classification, Diagnostic, and Customer Retention are applications in which of the following _____.
a) Unsupervised Learning: Regression
b) Supervised Learning: Classification
c) Unsupervised Learning: Clustering
d) Reinforcement Learning

11) What is Machine learning?
a) The autonomous acquisition of knowledge through the use of computer programs
b) The autonomous acquisition of knowledge through the use of manual programs
c) The selective acquisition of knowledge through the use of computer programs
d) The selective acquisition of knowledge through the use of manual programs

12) A measurable property or parameter of the data-set is _____.
a) training data b) test data
c) feature d) validation data

13) Father of Machine Learning (ML) _____.
a) Geoffrey Chaucer b) Geoffrey Hill
c) Geoffrey Everest Hinton d) None of the above

14) The output of training process in machine learning is _____.
a) machine learning algorithm b) machine learning model
c) null d) accuracy

SLR-GF-295

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (197043702)

Day & Date: Friday,29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the Putting Machine Learning in context.
b) Explain the Machine Learning Cycle.
c) How can we apply Machine Learning to Business needs?
d) Explain how can we Prepare Data when looking inside ML.
e) How can we determine the Best Learning Model in ML.

Q.3 Solve any two **12**

a) How can we explore cost functions in Machine Learning.
b) What is Machine Learning? Explain the types of Machine Learning.
c) Explain Descending the Error Curve in ML.

Section – II

Q.4 Solve any four **16**

a) Explain the Discovering the incredible perception in ML.
b) Explain Searching for the Best Hyper-Parameters in Machine Learning.
c) Explore the Resorting to Cross-Validation in ML.
d) Explain selecting features and examples.
e) Explain Future of Machine Learning.

Q.5 Solve any two **12**

a) Explain Classifying Images with Machine Learning in detail.
b) Explain Scoring Opinions and Sentiments in ML.
c) Explain the Choosing the Right Error or Score Metrics in Machine Learning.

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (197043702)

Day & Date: Friday,29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The problem of finding hidden structure in unlabeled data is called _____.
a) unsupervised learning b) reinforcement learning
c) supervised learning d) none

2) Machine learning algorithms build a model based on sample data, known as _____.
a) Training Data b) Transfer Data
c) Data Training d) none of the above

3) Fraud Detection, Image Classification, Diagnostic, and Customer Retention are applications in which of the following _____.
a) Unsupervised Learning: Regression
b) Supervised Learning: Classification
c) Unsupervised Learning: Clustering
d) Reinforcement Learning

4) What is Machine learning?
a) The autonomous acquisition of knowledge through the use of computer programs
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5) A measurable property or parameter of the data-set is _____.
a) training data b) test data
c) feature d) validation data

6) Father of Machine Learning (ML) _____.
a) Geoffrey Chaucer b) Geoffrey Hill
c) Geoffrey Everest Hinton d) None of the above

7) The output of training process in machine learning is _____.
a) machine learning algorithm b) machine learning model
c) null d) accuracy

8) Type of matrix decomposition model is _____.
a) predictive model b) descriptive model
c) logical model d) none

9) Which of the following is a disadvantage of decision trees?
a) Decision trees are prone to be overfit
b) Decision trees are robust to outliers
c) Factor analysis
d) None of the above

10) Data used to optimize the parameter settings of a supervised learner model is called _____.
a) Test b) Training
c) Validation d) None of the above

11) The output of training process in machine learning is _____.
a) machine learning algorithm b) machine learning model
c) null d) accuracy

12) The average positive difference between computed and desired outcome values _____.
a) Mean positive error b) Mean absolute error
c) Mean squared error d) Root mean squared error

13) What is the purpose of performing cross-validation?
a) To assess the predictive performance of the models
b) To judge how the trained model performs outside the sample on test data
c) Both a and b
d) None of Above

14) Following are the types of supervised learning _____.
a) regression b) classification
c) subgroup discovery d) all of above

SLR-GF-295

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (197043702)

Day & Date: Friday,29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four **16**

a) Explain the Putting Machine Learning in context.
b) Explain the Machine Learning Cycle.
c) How can we apply Machine Learning to Business needs?
d) Explain how can we Prepare Data when looking inside ML.
e) How can we determine the Best Learning Model in ML.

Q.3 Solve any two **12**

a) How can we explore cost functions in Machine Learning.
b) What is Machine Learning? Explain the types of Machine Learning.
c) Explain Descending the Error Curve in ML.

Section – II

Q.4 Solve any four **16**

a) Explain the Discovering the incredible perception in ML.
b) Explain Searching for the Best Hyper-Parameters in Machine Learning.
c) Explore the Resorting to Cross-Validation in ML.
d) Explain selecting features and examples.
e) Explain Future of Machine Learning.

Q.5 Solve any two **12**

a) Explain Classifying Images with Machine Learning in detail.
b) Explain Scoring Opinions and Sentiments in ML.
c) Explain the Choosing the Right Error or Score Metrics in Machine Learning.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (197043702)

Day & Date: Friday,29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What is Machine learning?
a) The autonomous acquisition of knowledge through the use of computer programs
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c) The selective acquisition of knowledge through the use of computer programs
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2) A measurable property or parameter of the data-set is _____.
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a) Geoffrey Chaucer b) Geoffrey Hill
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5) Type of matrix decomposition model is _____.
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6) Which of the following is a disadvantage of decision trees?
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c) Validation d) None of the above

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a) machine learning algorithm b) machine learning model
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9) The average positive difference between computed and desired outcome values _____.
a) Mean positive error b) Mean absolute error
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10) What is the purpose of performing cross-validation?
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b) Supervised Learning: Classification
c) Unsupervised Learning: Clustering
d) Reinforcement Learning

SLR-GF-295

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (197043702)

Day & Date: Friday,29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the Putting Machine Learning in context.
b) Explain the Machine Learning Cycle.
c) How can we apply Machine Learning to Business needs?
d) Explain how can we Prepare Data when looking inside ML.
e) How can we determine the Best Learning Model in ML.

Q.3 Solve any two **12**

a) How can we explore cost functions in Machine Learning.
b) What is Machine Learning? Explain the types of Machine Learning.
c) Explain Descending the Error Curve in ML.

Section – II

Q.4 Solve any four **16**

a) Explain the Discovering the incredible perception in ML.
b) Explain Searching for the Best Hyper-Parameters in Machine Learning.
c) Explore the Resorting to Cross-Validation in ML.
d) Explain selecting features and examples.
e) Explain Future of Machine Learning.

Q.5 Solve any two **12**

a) Explain Classifying Images with Machine Learning in detail.
b) Explain Scoring Opinions and Sentiments in ML.
c) Explain the Choosing the Right Error or Score Metrics in Machine Learning.

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (197043702)

Day & Date: Friday,29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What is the purpose of performing cross-validation?
a) To assess the predictive performance of the models
b) To judge how the trained model performs outside the sample on test data
c) Both a and b
d) None of Above

2) Following are the types of supervised learning _____.
a) regression b) classification
c) subgroup discovery d) all of above

3) The problem of finding hidden structure in unlabeled data is called _____.
a) unsupervised learning b) reinforcement learning
c) supervised learning d) none

4) Machine learning algorithms build a model based on sample data, known as _____.
a) Training Data b) Transfer Data
c) Data Training d) none of the above

5) Fraud Detection, Image Classification, Diagnostic, and Customer Retention are applications in which of the following _____.
a) Unsupervised Learning: Regression
b) Supervised Learning: Classification
c) Unsupervised Learning: Clustering
d) Reinforcement Learning

6) What is Machine learning?
a) The autonomous acquisition of knowledge through the use of computer programs
b) The autonomous acquisition of knowledge through the use of manual programs
c) The selective acquisition of knowledge through the use of computer programs
d) The selective acquisition of knowledge through the use of manual programs

7) A measurable property or parameter of the data-set is _____.
a) training data b) test data
c) feature d) validation data

8) Father of Machine Learning (ML) _____.
a) Geoffrey Chaucer b) Geoffrey Hill
c) Geoffrey Everest Hinton d) None of the above

9) The output of training process in machine learning is _____.
a) machine learning algorithm b) machine learning model
c) null d) accuracy

10) Type of matrix decomposition model is _____.
a) predictive model b) descriptive model
c) logical model d) none

11) Which of the following is a disadvantage of decision trees?
a) Decision trees are prone to be overfit
b) Decision trees are robust to outliers
c) Factor analysis
d) None of the above

12) Data used to optimize the parameter settings of a supervised learner model is called _____.
a) Test b) Training
c) Validation d) None of the above

13) The output of training process in machine learning is _____.
a) machine learning algorithm b) machine learning model
c) null d) accuracy

14) The average positive difference between computed and desired outcome values _____.
a) Mean positive error b) Mean absolute error
c) Mean squared error d) Root mean squared error

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Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Machine Learning (197043702)

Day & Date: Friday,29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the Putting Machine Learning in context.
b) Explain the Machine Learning Cycle.
c) How can we apply Machine Learning to Business needs?
d) Explain how can we Prepare Data when looking inside ML.
e) How can we determine the Best Learning Model in ML.

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a) How can we explore cost functions in Machine Learning.
b) What is Machine Learning? Explain the types of Machine Learning.
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Section – II

Q.4 Solve any four **16**

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b) Explain Searching for the Best Hyper-Parameters in Machine Learning.
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d) Explain selecting features and examples.
e) Explain Future of Machine Learning.

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c) Explain the Choosing the Right Error or Score Metrics in Machine Learning.

SLR-GF-296

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Modern Database System (197043703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) _____ Server is also called as Query Server.
a) Local Server b) Apache Server
c) Data Server d) Transaction Server

2) Every individual operation in query are parallelized in _____.
a) Interquery Parallelism b) Interoperation Parallelism
c) Intraoperation Parallelism d) None

3) The task of correcting and pre-processing the data is called as _____.
a) Data Correction b) Data warehousing
c) Loading d) Data Cleaning

4) _____ is an unordered collection, where an element may occur multiple times.
a) Array b) Multiset
c) Create Type d) Structure Type

5) In Quorum Consensus protocol, values for read quorum Qr and Write Quorum Qw for each data item are choosen as _____, Where S is the weight for all sites.
a) Qr + Qw > S and 2* Qw > S b) Qr + Qw < S and 2* Qw > S
c) Qr + Qw > S and 2* Qw < S d) Qr + Qw < S and 2* Qw < S

6) _____ Partitioning technique is Best suited for Point Queries based on partitioning attributes.
a) Range Partitioning b) Round Robin Partitioning
c) Hash Partitioning d) All

7) For Joins where partitioning is not applicable, parallelism can be accomplished by _____ technique.
a) range partitioning sort b) parallel external sort merge
c) partition parallel join d) fragment and replicate join

8) _____ can best be described as a programming model used to develop Hadoop-based applications that can process massive amounts of data.
a) MapReduce b) Mahout
c) Oozie d) All of the mentioned

9) Most NoSQL databases support automatic _____, meaning that you get high availability and disaster recovery.

a) Processing
b) Scalability
c) Replication
d) All of the mentioned

10) A variation of the star schema that allows more than one central fact table.

a) Snowflake Schema
b) Linked star schema
c) Distributed Star Schema
d) Constellation Schema

11) NoSQL databases is used mainly for handling large volumes of _____ data.

a) unstructured
b) structured
c) semi-structured
d) All of the mentioned

12) A global locking system is required in _____.

a) Shared disk architecture
b) Shared Nothing architecture
c) Shared-memory Architecture
d) All of these

13) _____ predicts future trends & behaviour's, allowing business managers to make proactive, knowledge-driven decisions.

a) Data warehouse
b) Data mining
c) Datamarts
d) Metadata

14) The type of relationship in star schema is _____.

a) many-to-many
b) one-to-one
c) one-to-many
d) many-to-one

SLR-GF-296

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Modern Database System (197043703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer Any Three. **12**

a) Write a note on Data Server.
b) List and explain 4 methods of OLAP implementation.
c) How deadlock is handled in distributed database systems?
d) Explain different parallel Database Architecture.
e) Differentiate Vertical and Horizontal Fragmentation.

Q.3 Answer Any One. **08**

a) Define Data Warehouse and Data Mining. Explain KDD process in Detail.
b) In Distributed Transaction which protocol is used to ensure Atomicity? Explain the protocol in detail.

Q.4 Explain Transaction Server Architecture in detail. **08**

Section – II

Q.5 Answer Any Three: **12**

a) Describe characteristics of NO SQL.
b) Explain Type inheritance with example.
c) Differentiate between object oriented DBMS and Object relational DBMS.
d) Explain external Sort merge in detail.
e) Explain Nested-Loop Join algorithm.

Q.6 Answer Any one. **08**

a) In Object oriented database, structured type can have *methods.* With example, write declaration, body of method and also explain how this method can be invoked on instance of Type.
b) List Equivalence Rules of Query optimization and explain any two in detail.

Q.7 Explain Hadoop Distributed File System (HDFS) Architecture with diagram. **08**

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Modern Database System (197043703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) _____ can best be described as a programming model used to develop Hadoop-based applications that can process massive amounts of data.
a) MapReduce b) Mahout
c) Oozie d) All of the mentioned

2) Most NoSQL databases support automatic _____, meaning that you get high availability and disaster recovery.
a) Processing b) Scalability
c) Replication d) All of the mentioned

3) A variation of the star schema that allows more than one central fact table.
a) Snowflake Schema b) Linked star schema
c) Distributed Star Schema d) Constellation Schema

4) NoSQL databases is used mainly for handling large volumes of _____ data.
a) unstructured b) structured
c) semi-structured d) All of the mentioned

5) A global locking system is required in _____.
a) Shared disk architecture b) Shared Nothing architecture
c) Shared-memory Architecture d) All of these

6) _____ predicts future trends & behaviour's, allowing business managers to make proactive, knowledge-driven decisions.
a) Data warehouse b) Data mining
c) Datamarts d) Metadata

7) The type of relationship in star schema is _____.
a) many-to-many b) one-to-one
c) one-to-many d) many-to-one

8) _____ Server is also called as Query Server.
a) Local Server b) Apache Server
c) Data Server d) Transaction Server

9) Every individual operation in query are parallelized in _____.
a) Interquery Parallelism b) Interoperation Parallelism
c) Intraoperation Parallelism d) None

10) The task of correcting and pre-processing the data is called as _____.

a) Data Correction
b) Data warehousing
c) Loading
d) Data Cleaning

11) _____ is an unordered collection, where an element may occur multiple times.

a) Array
b) Multiset
c) Create Type
d) Structure Type

12) In Quorum Consensus protocol, values for read quorum Qr and Write Quorum Qw for each data item are choosen as _____, Where S is the weight for all sites.

a) Qr + Qw > S and 2* Qw > S
b) Qr + Qw < S and 2* Qw > S
c) Qr + Qw > S and 2* Qw < S
d) Qr + Qw < S and 2* Qw < S

13) _____ Partitioning technique is Best suited for Point Queries based on partitioning attributes.

a) Range Partitioning
b) Round Robin Partitioning
c) Hash Partitioning
d) All

14) For Joins where partitioning is not applicable, parallelism can be accomplished by _____ technique.

a) range partitioning sort
b) parallel external sort merge
c) partition parallel join
d) fragment and replicate join

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Modern Database System (197043703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer Any Three. **12**

a) Write a note on Data Server.
b) List and explain 4 methods of OLAP implementation.
c) How deadlock is handled in distributed database systems?
d) Explain different parallel Database Architecture.
e) Differentiate Vertical and Horizontal Fragmentation.

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a) Define Data Warehouse and Data Mining. Explain KDD process in Detail.
b) In Distributed Transaction which protocol is used to ensure Atomicity? Explain the protocol in detail.

Q.4 Explain Transaction Server Architecture in detail. **08**

Section – II

Q.5 Answer Any Three: **12**

a) Describe characteristics of NO SQL.
b) Explain Type inheritance with example.
c) Differentiate between object oriented DBMS and Object relational DBMS.
d) Explain external Sort merge in detail.
e) Explain Nested-Loop Join algorithm.

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a) In Object oriented database, structured type can have *methods.* With example, write declaration, body of method and also explain how this method can be invoked on instance of Type.
b) List Equivalence Rules of Query optimization and explain any two in detail.

Q.7 Explain Hadoop Distributed File System (HDFS) Architecture with diagram. **08**

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Modern Database System (197043703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

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b) Scalability
c) Replication
d) All of the mentioned

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a) Snowflake Schema
b) Linked star schema
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d) Constellation Schema

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Modern Database System (197043703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

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Q.4 Explain Transaction Server Architecture in detail. **08**

Section – II

Q.5 Answer Any Three: **12**

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Q.7 Explain Hadoop Distributed File System (HDFS) Architecture with diagram. **08**

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Modern Database System (197043703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) Data Server d) Transaction Server

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c) Intraoperation Parallelism d) None

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c) Qr + Qw > S and 2* Qw < S d) Qr + Qw < S and 2* Qw < S

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Modern Database System (197043703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer Any Three. **12**

a) Write a note on Data Server.
b) List and explain 4 methods of OLAP implementation.
c) How deadlock is handled in distributed database systems?
d) Explain different parallel Database Architecture.
e) Differentiate Vertical and Horizontal Fragmentation.

Q.3 Answer Any One. **08**

a) Define Data Warehouse and Data Mining. Explain KDD process in Detail.
b) In Distributed Transaction which protocol is used to ensure Atomicity? Explain the protocol in detail.

Q.4 Explain Transaction Server Architecture in detail. **08**

Section – II

Q.5 Answer Any Three: **12**

a) Describe characteristics of NO SQL.
b) Explain Type inheritance with example.
c) Differentiate between object oriented DBMS and Object relational DBMS.
d) Explain external Sort merge in detail.
e) Explain Nested-Loop Join algorithm.

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a) In Object oriented database, structured type can have *methods.* With example, write declaration, body of method and also explain how this method can be invoked on instance of Type.
b) List Equivalence Rules of Query optimization and explain any two in detail.

Q.7 Explain Hadoop Distributed File System (HDFS) Architecture with diagram. **08**

SLR-GF-297

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (197043707)

Day & Date: Tuesday,16-01-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following is true about IoT?
a) The term things in IoT refers to anything and everything in day to day life
b) IoT has greater transparency, control and performance
c) Both a and b
d) None of the above

2) _____ are the characteristics of IoT.
a) Intelligence, Scalable b) Security
c) Heterogeneity d) All of the above

3) The M2M is _____ scalable than IOT.
a) Highly b) Less
c) Very high d) None of the above

4) Which one is an example for M2M?
a) Remote monitoring b) Smart cities
c) Smart agriculture d) All of the above

5) Which one of the following protocols is lightweight?
a) IP b) HTTP
c) MQTT d) CoAP

6) Which of the following protocols does not exist at the data link layer?
a) ZigBee Smart Energy b) LoRaWAN
c) Ethernet d) MQTT

7) Which layer protocol is CoAP?
a) Control layer b) Transport layer
c) Service layer d) Application layer

8) In RFID tags, the tags are _____.
a) Active b) Passive
c) Active or passive d) None of the above

9) ZigBee solutions are aimed at smart objects and sensors that have _____ needs.
a) low bandwidth and low power b) high bandwidth and low power
c) low bandwidth and high power d) high bandwidth and high power

10) What is full form of LoRa?
a) Level Range Radio b) low Range Radio
c) long Range Radio d) None

11) Xively is _____.
a) PaaS b) IaaS
c) DaaS d) SaaS

12) The new cloud computing paradigm uses _____ for data collection, storage and computing.
a) Localization b) ICT
c) XAAS d) All of the above

13) Process of identifying any individual _____.
a) Auditing b) Authorization
c) Authentication d) Accounting

14) Which is not a functional component of security?
a) Authentication b) Authorization
c) Trust and reputation d) Threat analysis

SLR-GF-297

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (197043707)

Day & Date: Tuesday,16-01-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any three of the following. **12**

a) Explain Level-4 of IoT deployment template with example.
b) Distinguish IoT and M2M systems.
c) Explain the concept of participatory sensing and industrial IoT in brief.
d) Write a note on sensors technology.

Q.3 Solve any two **16**

a) Write a note on logical design of IoT.
b) Draw and explain modified OSI model and ITU-T reference model for IoT/M2M systems.
c) Explain RFID technology in detail.

Section – II

Q.4 Solve any three **12**

a) Write a short note on NFC.
b) Write a short note on AMQP protocol.
c) Describe cloud computing service models in XAAS.
d) Explain IoT privacy and vulnerabilities in brief.

Q.5 Solve any two **16**

a) Explain zigbee/IEEE 802.15.4 standard protocol.
b) Write a note on IoT cloud based services using Xively.
c) Draw layered attacker model and explain solutions for mitigating the attacks on layers.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (197043707)

Day & Date: Tuesday,16-01-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In RFID tags, the tags are _____.
a) Active b) Passive
c) Active or passive d) None of the above

2) ZigBee solutions are aimed at smart objects and sensors that have _____ needs.
a) low bandwidth and low power b) high bandwidth and low power
c) low bandwidth and high power d) high bandwidth and high power

3) What is full form of LoRa?
a) Level Range Radio b) low Range Radio
c) long Range Radio d) None

4) Xively is _____.
a) PaaS b) IaaS
c) DaaS d) SaaS

5) The new cloud computing paradigm uses _____ for data collection, storage and computing.
a) Localization b) ICT
c) XAAS d) All of the above

6) Process of identifying any individual _____.
a) Auditing b) Authorization
c) Authentication d) Accounting

7) Which is not a functional component of security?
a) Authentication b) Authorization
c) Trust and reputation d) Threat analysis

8) Which of the following is true about IoT?
a) The term things in IoT refers to anything and everything in day to day life
b) IoT has greater transparency, control and performance
c) Both a and b
d) None of the above

9) _____ are the characteristics of IoT.
a) Intelligence, Scalable b) Security
c) Heterogeneity d) All of the above

10) The M2M is _____ scalable than IOT.
a) Highly b) Less
c) Very high d) None of the above

11) Which one is an example for M2M?
a) Remote monitoring b) Smart cities
c) Smart agriculture d) All of the above

12) Which one of the following protocols is lightweight?
a) IP b) HTTP
c) MQTT d) CoAP

13) Which of the following protocols does not exist at the data link layer?
a) ZigBee Smart Energy b) LoRaWAN
c) Ethernet d) MQTT

14) Which layer protocol is CoAP?
a) Control layer b) Transport layer
c) Service layer d) Application layer

SLR-GF-297

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (197043707)

Day & Date: Tuesday,16-01-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any three of the following. **12**

a) Explain Level-4 of IoT deployment template with example.
b) Distinguish IoT and M2M systems.
c) Explain the concept of participatory sensing and industrial IoT in brief.
d) Write a note on sensors technology.

Q.3 Solve any two **16**

a) Write a note on logical design of IoT.
b) Draw and explain modified OSI model and ITU-T reference model for IoT/M2M systems.
c) Explain RFID technology in detail.

Section – II

Q.4 Solve any three **12**

a) Write a short note on NFC.
b) Write a short note on AMQP protocol.
c) Describe cloud computing service models in XAAS.
d) Explain IoT privacy and vulnerabilities in brief.

Q.5 Solve any two **16**

a) Explain zigbee/IEEE 802.15.4 standard protocol.
b) Write a note on IoT cloud based services using Xively.
c) Draw layered attacker model and explain solutions for mitigating the attacks on layers.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (197043707)

Day & Date: Tuesday,16-01-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Xively is _____.
a) PaaS b) IaaS
c) DaaS d) SaaS

2) The new cloud computing paradigm uses _____ for data collection, storage and computing.
a) Localization b) ICT
c) XAAS d) All of the above

3) Process of identifying any individual _____.
a) Auditing b) Authorization
c) Authentication d) Accounting

4) Which is not a functional component of security?
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SLR-GF-297

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
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Q.3 Solve any two **16**

a) Write a note on logical design of IoT.
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Section – II

Q.4 Solve any three **12**

a) Write a short note on NFC.
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Q.5 Solve any two **16**

a) Explain zigbee/IEEE 802.15.4 standard protocol.
b) Write a note on IoT cloud based services using Xively.
c) Draw layered attacker model and explain solutions for mitigating the attacks on layers.

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (197043707)

Day & Date: Tuesday,16-01-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following protocols does not exist at the data link layer?
a) ZigBee Smart Energy b) LoRaWAN
c) Ethernet d) MQTT

2) Which layer protocol is CoAP?
a) Control layer b) Transport layer
c) Service layer d) Application layer

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c) Authentication d) Accounting

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13) Which one is an example for M2M?
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c) Smart agriculture d) All of the above

14) Which one of the following protocols is lightweight?
a) IP b) HTTP
c) MQTT d) CoAP

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Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Internet of Things (197043707)

Day & Date: Tuesday,16-01-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section –I

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d) Write a note on sensors technology.

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a) Write a note on logical design of IoT.
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c) Explain RFID technology in detail.

Section – II

Q.4 Solve any three **12**

a) Write a short note on NFC.
b) Write a short note on AMQP protocol.
c) Describe cloud computing service models in XAAS.
d) Explain IoT privacy and vulnerabilities in brief.

Q.5 Solve any two **16**

a) Explain zigbee/IEEE 802.15.4 standard protocol.
b) Write a note on IoT cloud based services using Xively.
c) Draw layered attacker model and explain solutions for mitigating the attacks on layers.

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (197043708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Executing the same test case on a modified build called as _____.
a) Regression Testing b) Retesting
c) Ad hoc testing d) Sanity testing

2) _____ Testing is used to check the code?
a) Grey box testing b) Black box testing
c) White-box testing d) Red box testing

3) Identify among the following which is not a type of incremental testing approach.
a) Big - bang b) Top-down
c) Bottom-up d) Functional incrimination

4) Which is a black box testing technique appropriate to all levels of testing?
a) Acceptance testing b) Regression testing
c) Equivalence partitioning d) Quality assurance

5) Software testing which is done without planning and documentation is known as _____.
a) Ad hoc testing b) Unit testing
c) Regression testing d) Functional testing

6) Which of the following is not a SQA plan for a project?
a) Evaluations to be performed
b) Amount of technical work
c) Audits and reviews to be performed
d) Documents to be produced by the SQA group

7) What allows different projects to use the same source files at the same time?
a) Version Control b) Access control
c) CM Process d) Version Control and Access control

8) In which environment we can performed the Beta testing?
a) User's and developer's end b) Developer's end
c) User's end d) None of the above

9) What is the order in which test levels are performed?
a) Unit, Integration, System, Acceptance
b) Unit, System, Integration, Acceptance
c) Unit, Integration, Acceptance, System
d) It depends on nature of a project

10) According to ISO 9001, inspection and testing comes under which management responsibility?
a) Process control
b) Document control
c) Control of non-conforming products
d) Servicing

11) Which of the following is not a valid phase of SDLC (Software Development Life Cycle)?
a) Testing Phase b) Requirement Phase
c) Deployment phase d) Testing closure

12) White box testing techniques are?
a) Statement coverage testing b) Decision coverage testing
c) Data flow testing d) All of the above

13) Degree to which design specifications are followed in manufacturing the product is called?
a) Quality control b) Quality of conformance
c) Quality assurance d) None of the mentioned

14) Which of the following is not an appraisal cost in SQA?
a) Inter-process inspection b) Maintenance
c) Quality planning d) Testing

SLR-GF-298

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (197043708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four questions. **16**
- **a)** List and explain the different essentials of software testing?
- **b)** Compare Black box testing and White box testing.
- **c)** Explain different types of system testing.
- **d)** Write a short note on Alpha, Beta and Gamma testing.
- **e)** Write short note on regression testing and smoke testing.

Q.3 Answer any one. **06**
- **a)** Summarize the software development life cycle during testing.
- **b)** Explain verification and validation model.

Q.4 What are the different levels of testing? **06**

Section – II

Q.5 Answer any four questions. **16**
- **a)** List and explain the goal of test planning in testing.
- **b)** Write a note on Testing Vs Debugging.
- **c)** Explain CMM quality standards.
- **d)** Write short note on testing tools.
- **e)** What is automation test? Explain benefits of automation testing.

Q.6 Answer any one. **06**
- **a)** Elaborate writing & tracking test cases in software testing.
- **b)** Explain Random testing in automation.

Q.7 List and explain the elements of software quality assurance. **06**

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (197043708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In which environment we can performed the Beta testing?
a) User's and developer's end b) Developer's end
c) User's end d) None of the above

2) What is the order in which test levels are performed?
a) Unit, Integration, System, Acceptance
b) Unit, System, Integration, Acceptance
c) Unit, Integration, Acceptance, System
d) It depends on nature of a project

3) According to ISO 9001, inspection and testing comes under which management responsibility?
a) Process control
b) Document control
c) Control of non-conforming products
d) Servicing

4) Which of the following is not a valid phase of SDLC (Software Development Life Cycle)?
a) Testing Phase b) Requirement Phase
c) Deployment phase d) Testing closure

5) White box testing techniques are?
a) Statement coverage testing b) Decision coverage testing
c) Data flow testing d) All of the above

6) Degree to which design specifications are followed in manufacturing the product is called?
a) Quality control b) Quality of conformance
c) Quality assurance d) None of the mentioned

7) Which of the following is not an appraisal cost in SQA?
a) Inter-process inspection b) Maintenance
c) Quality planning d) Testing

8) Executing the same test case on a modified build called as _____.
a) Regression Testing b) Retesting
c) Ad hoc testing d) Sanity testing

9) _____ Testing is used to check the code?
a) Grey box testing b) Black box testing
c) White-box testing d) Red box testing

10) Identify among the following which is not a type of incremental testing approach.
a) Big - bang b) Top-down
c) Bottom-up d) Functional incrimination

11) Which is a black box testing technique appropriate to all levels of testing?
a) Acceptance testing b) Regression testing
c) Equivalence partitioning d) Quality assurance

12) Software testing which is done without planning and documentation is known as _____.
a) Ad hoc testing b) Unit testing
c) Regression testing d) Functional testing

13) Which of the following is not a SQA plan for a project?
a) Evaluations to be performed
b) Amount of technical work
c) Audits and reviews to be performed
d) Documents to be produced by the SQA group

14) What allows different projects to use the same source files at the same time?
a) Version Control b) Access control
c) CM Process d) Version Control and Access control

SLR-GF-298

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (197043708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four questions. **16**
- **a)** List and explain the different essentials of software testing?
- **b)** Compare Black box testing and White box testing.
- **c)** Explain different types of system testing.
- **d)** Write a short note on Alpha, Beta and Gamma testing.
- **e)** Write short note on regression testing and smoke testing.

Q.3 Answer any one. **06**
- **a)** Summarize the software development life cycle during testing.
- **b)** Explain verification and validation model.

Q.4 What are the different levels of testing? **06**

Section – II

Q.5 Answer any four questions. **16**
- **a)** List and explain the goal of test planning in testing.
- **b)** Write a note on Testing Vs Debugging.
- **c)** Explain CMM quality standards.
- **d)** Write short note on testing tools.
- **e)** What is automation test? Explain benefits of automation testing.

Q.6 Answer any one. **06**
- **a)** Elaborate writing & tracking test cases in software testing.
- **b)** Explain Random testing in automation.

Q.7 List and explain the elements of software quality assurance. **06**

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (197043708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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14) According to ISO 9001, inspection and testing comes under which management responsibility?
a) Process control
b) Document control
c) Control of non-conforming products
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Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (197043708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Answer any four questions. **16**
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Section – II

Q.5 Answer any four questions. **16**
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- **b)** Write a note on Testing Vs Debugging.
- **c)** Explain CMM quality standards.
- **d)** Write short note on testing tools.
- **e)** What is automation test? Explain benefits of automation testing.

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Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (197043708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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d) Functional incrimination

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c) Equivalence partitioning
d) Quality assurance

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b) Unit testing
c) Regression testing
d) Functional testing

SLR-GF-298

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Software Testing and Quality Assurance (197043708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four questions. **16**
- **a)** List and explain the different essentials of software testing?
- **b)** Compare Black box testing and White box testing.
- **c)** Explain different types of system testing.
- **d)** Write a short note on Alpha, Beta and Gamma testing.
- **e)** Write short note on regression testing and smoke testing.

Q.3 Answer any one. **06**
- **a)** Summarize the software development life cycle during testing.
- **b)** Explain verification and validation model.

Q.4 What are the different levels of testing? **06**

Section – II

Q.5 Answer any four questions. **16**
- **a)** List and explain the goal of test planning in testing.
- **b)** Write a note on Testing Vs Debugging.
- **c)** Explain CMM quality standards.
- **d)** Write short note on testing tools.
- **e)** What is automation test? Explain benefits of automation testing.

Q.6 Answer any one. **06**
- **a)** Elaborate writing & tracking test cases in software testing.
- **b)** Explain Random testing in automation.

Q.7 List and explain the elements of software quality assurance. **06**

SLR-GF-299

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Adhoc and Sensor Networks (197043709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In wireless ad-hoc network, _____.
a) Access point is not required b) Access point is required
c) Nodes are not required d) All nodes are access points

2) In wireless LAN, there are many hidden stations so we cannot detect the ____.
a) Frames b) Collisions
c) Signal d) Data

3) In _____ routing, the routing table hold the address of just the next hop instead of complete route information.
a) next-hop b) Network- specific
c) Host- specific d) default

4) Which of the following is not the requirement of routing function?
a) Robustness b) Delay time
c) Stability d) Correctness

5) The main source of power consumption in wireless ad-hoc network is _____.
a) transmitting b) recepting
c) both d) none of the above

6) Existing MAC protocols can not be used in MANET because _____.
a) Resource constrained nodes b) Limited bandwidth
c) Lack of control d) All of the above

7) Which is hybrid routing protocol?
a) DSR b) AODV
c) ZRP d) All

8) In WRP, the table entry at node consists of _____.
a) LCT b) RT
c) DT d) All of the above

9) Wireless network needs to address which issues listed below _____.
a) Node stability b) Node mobility
c) High bandwidth availability d) None of these

10) Hidden and exposed nodes cause issues in wireless ad-hoc networks such as _____.
a) Cross talks b) Collision detection
c) Range d) None of the above

11) Dynamic source routing is a process of finding _____.
a) Routing with minimum hops b) Routing with shortest path
c) Routing with longest path d) Routing with maximum hops

12) CSMA can not be used in wireless sensing networks because _____.
a) Hidden nodes b) Node mobility
c) Range d) All of the above

13) Main disadvantage of wireless ad-hoc network is _____.
a) Configuration of wireless network
b) Security in the network
c) Hidden nodes
d) All of the above

14) Ad-hoc wireless sensor networks do not have _____.
a) Centralized co-Ordinator
b) Centralized node
c) data link between co-ordinator and nodes
d) Hidden network

SLR-GF-299

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Adhoc and Sensor Networks (197043709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any three questions. **12**

a) Compare computer network and wireless sensor network.
b) Explain issues in Wireless sensor network routing.
c) Compare TDMA and FDMA.
d) Explain need of on demand routing protocol.

Q.3 Answer any one question. **08**

What is routing protocol? Explain issues in designing a routing protocol for ad-hoc wireless network.

OR

What is table driven protocol? Explain DSDV in detail.

Q.4 Give classification of MAC protocol in Ad-hoc wireless networks. **08**

Section – II

Q.5 Answer any three questions. **12**

a) Explain need of on demand routing protocol.
b) Why security is necessary in wireless ad-hoc network.
c) What is the need of energy efficient design in WSN?
d) State goals of Transport layer protocol in WSN.

Q.6 Answer any one question. **08**

Explain different methods in routing of WSN.

OR

Explain Optimized link state routing in detail.

Q.7 Explain Triangularization with neat diagram. **08**

SLR-GF-299

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Adhoc and Sensor Networks (197043709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In WRP, the table entry at node consists of _____.
a) LCT b) RT
c) DT d) All of the above

2) Wireless network needs to address which issues listed below _____.
a) Node stability b) Node mobility
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c) Routing with longest path d) Routing with maximum hops

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a) Configuration of wireless network
b) Security in the network
c) Hidden nodes
d) All of the above

7) Ad-hoc wireless sensor networks do not have _____.
a) Centralized co-Ordinator
b) Centralized node
c) data link between co-ordinator and nodes
d) Hidden network

8) In wireless ad-hoc network, _____.
a) Access point is not required b) Access point is required
c) Nodes are not required d) All nodes are access points

9) In wireless LAN, there are many hidden stations so we cannot detect the ____.
a) Frames b) Collisions
c) Signal d) Data

10) In _____ routing, the routing table hold the address of just the next hop instead of complete route information.
a) next-hop b) Network- specific
c) Host- specific d) default

11) Which of the following is not the requirement of routing function?
a) Robustness b) Delay time
c) Stability d) Correctness

12) The main source of power consumption in wireless ad-hoc network is _____.
a) transmitting b) recepting
c) both d) none of the above

13) Existing MAC protocols can not be used in MANET because _____.
a) Resource constrained nodes b) Limited bandwidth
c) Lack of control d) All of the above

14) Which is hybrid routing protocol?
a) DSR b) AODV
c) ZRP d) All

SLR-GF-299

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Adhoc and Sensor Networks (197043709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any three questions. **12**

a) Compare computer network and wireless sensor network.
b) Explain issues in Wireless sensor network routing.
c) Compare TDMA and FDMA.
d) Explain need of on demand routing protocol.

Q.3 Answer any one question. **08**

What is routing protocol? Explain issues in designing a routing protocol for ad-hoc wireless network.

OR

What is table driven protocol? Explain DSDV in detail.

Q.4 Give classification of MAC protocol in Ad-hoc wireless networks. **08**

Section – II

Q.5 Answer any three questions. **12**

a) Explain need of on demand routing protocol.
b) Why security is necessary in wireless ad-hoc network.
c) What is the need of energy efficient design in WSN?
d) State goals of Transport layer protocol in WSN.

Q.6 Answer any one question. **08**

Explain different methods in routing of WSN.

OR

Explain Optimized link state routing in detail.

Q.7 Explain Triangularization with neat diagram. **08**

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Adhoc and Sensor Networks (197043709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Dynamic source routing is a process of finding _____.
a) Routing with minimum hops b) Routing with shortest path
c) Routing with longest path d) Routing with maximum hops

2) CSMA can not be used in wireless sensing networks because _____.
a) Hidden nodes b) Node mobility
c) Range d) All of the above

3) Main disadvantage of wireless ad-hoc network is _____.
a) Configuration of wireless network
b) Security in the network
c) Hidden nodes
d) All of the above

4) Ad-hoc wireless sensor networks do not have _____.
a) Centralized co-Ordinator
b) Centralized node
c) data link between co-ordinator and nodes
d) Hidden network

5) In wireless ad-hoc network, _____.
a) Access point is not required b) Access point is required
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6) In wireless LAN, there are many hidden stations so we cannot detect the ____.
a) Frames b) Collisions
c) Signal d) Data

7) In _____ routing, the routing table hold the address of just the next hop instead of complete route information.
a) next-hop b) Network- specific
c) Host- specific d) default

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a) Robustness b) Delay time
c) Stability d) Correctness

9) The main source of power consumption in wireless ad-hoc network is _____.
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c) both d) none of the above

10) Existing MAC protocols can not be used in MANET because _____.
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c) Lack of control d) All of the above

11) Which is hybrid routing protocol?
a) DSR b) AODV
c) ZRP d) All

12) In WRP, the table entry at node consists of _____.
a) LCT b) RT
c) DT d) All of the above

13) Wireless network needs to address which issues listed below _____.
a) Node stability b) Node mobility
c) High bandwidth availability d) None of these

14) Hidden and exposed nodes cause issues in wireless ad-hoc networks such as _____.
a) Cross talks b) Collision detection
c) Range d) None of the above

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Adhoc and Sensor Networks (197043709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any three questions. **12**
- **a)** Compare computer network and wireless sensor network.
- **b)** Explain issues in Wireless sensor network routing.
- **c)** Compare TDMA and FDMA.
- **d)** Explain need of on demand routing protocol.

Q.3 Answer any one question. **08**
What is routing protocol? Explain issues in designing a routing protocol for ad-hoc wireless network.

OR

What is table driven protocol? Explain DSDV in detail.

Q.4 Give classification of MAC protocol in Ad-hoc wireless networks. **08**

Section – II

Q.5 Answer any three questions. **12**
- **a)** Explain need of on demand routing protocol.
- **b)** Why security is necessary in wireless ad-hoc network.
- **c)** What is the need of energy efficient design in WSN?
- **d)** State goals of Transport layer protocol in WSN.

Q.6 Answer any one question. **08**
Explain different methods in routing of WSN.

OR

Explain Optimized link state routing in detail.

Q.7 Explain Triangularization with neat diagram. **08**

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Adhoc and Sensor Networks (197043709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Existing MAC protocols can not be used in MANET because _____.
a) Resource constrained nodes b) Limited bandwidth
c) Lack of control d) All of the above

2) Which is hybrid routing protocol?
a) DSR b) AODV
c) ZRP d) All

3) In WRP, the table entry at node consists of _____.
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b) Security in the network
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d) All of the above

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c) both d) none of the above

SLR-GF-299

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old)(CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Adhoc and Sensor Networks (197043709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any three questions. **12**
- **a)** Compare computer network and wireless sensor network.
- **b)** Explain issues in Wireless sensor network routing.
- **c)** Compare TDMA and FDMA.
- **d)** Explain need of on demand routing protocol.

Q.3 Answer any one question. **08**
What is routing protocol? Explain issues in designing a routing protocol for ad-hoc wireless network.

OR

What is table driven protocol? Explain DSDV in detail.

Q.4 Give classification of MAC protocol in Ad-hoc wireless networks. **08**

Section – II

Q.5 Answer any three questions. **12**
- **a)** Explain need of on demand routing protocol.
- **b)** Why security is necessary in wireless ad-hoc network.
- **c)** What is the need of energy efficient design in WSN?
- **d)** State goals of Transport layer protocol in WSN.

Q.6 Answer any one question. **08**
Explain different methods in routing of WSN.

OR

Explain Optimized link state routing in detail.

Q.7 Explain Triangularization with neat diagram. **08**

SLR-GF-300

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Business Intelligence (197043710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. Each question carries one mark. **14**

1) The purpose of regression models, also known as _____ models.
a) Explanatory b) Predictive
c) Forecasting d) All

2) How do we perform Bayesian classification when some features are missing?
a) We assuming the missing values as the mean of all values.
b) We ignore the missing features.
c) We integrate the posteriors probabilities over the missing features.
d) Drop the features completely.

3) Agglomerative clustering falls under which type of clustering method?
a) partition b) hierarchical
c) Both d) None of the above

4) Which of the following metrics are used to evaluate classification models?
a) Area under the ROC curve b) F1 score
c) Confusion matrix d) All of the above

5) The problem of finding hidden structure in unlabeled data is called _____.
a) Supervised Learning b) Unsupervised Learning
c) Reinforcement Learning d) All of the Above

6) If there are n number of independent variables then the referred regression model is _____.
a) Simple Linear Regression b) Ridge Regression
c) Multiple Linear Regression d) Generalized Linear Regression

7) What is the relation between the distance between clusters and the corresponding class discriminability?
a) proportional b) inversely-proportional
c) no-relation d) We can Say All

8) Data can be store, retrieve and updated in _____.
a) SMTOP b) FTP
c) OLAP d) OLTP

9) The classification of the data mining system involves _____.
a) Machine learning b) Database technology
c) Information Science d) All of the above

10) If the coefficient of determination is a positive value, then the regression equation _____.
a) must have a positive slope
b) must have a negative slope
c) could have either a positive or a negative slope
d) must have a positive y intercept

11) The most learning models benefit from a preventive standardization of the data is also called as _____.
a) Normalization b) Extraction
c) Sampling d) transformation

12) According to forward search scheme, also referred as _____.
a) top-down b) trade off
c) bottom-up d) None

13) _____ analysis, in which the properties of each single attribute of a dataset are investigated;
a) bivariate b) multivariate
c) both A and B d) univariate

14) A _____ is definitely the most intuitive graphical representation of the relationship between two numerical attributes.
a) Scatter plot b) Loses plot
c) Quantile-Quantile plot d) Level Curves

SLR-GF-300

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Business Intelligence (197043710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) What do you mean by effective and timely decisions? Describe the benefits of a Business intelligence system.
b) How Data mining process provide useful knowledge to decision makers? Explain with neat diagram.
c) What is the purpose of Data exploratory analysis? Explain the three main phases of Data exploratory analysis.
d) Write a short note on Data Reduction.

Q.3 Attempt any One. **08**

a) Define Decision system. Describe the phases of Decision-making process in detail.
b) What do you mean by Data validation? Explain techniques used for data validation.

Q.4 Draw architecture of business intelligence system and explain the components of business intelligence system. **08**

Section – II

Q.5 Attempt any Four. **16**

a) Describe the purpose of Regression models and list the types of regression.
b) Write a short note on Bayesian methods.
c) Why exponential smoothing models are used?
d) Compare Bivariate and multivariate analysis.
e) Define clustering. Explain any one clustering technique.

Q.6 Attempt any One. **06**

a) Define Time series. How evaluation and analysis of time series take place?
b) What are the various data mining techniques for BI? Explain classification and its problems in detail.

Q.7 Explain Apriori algorithm & general association rules. **06**

SLR-GF-300

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Business Intelligence (197043710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. Each question carries one mark. **14**

1) Data can be store, retrieve and updated in _____.
a) SMTOP b) FTP
c) OLAP d) OLTP

2) The classification of the data mining system involves _____.
a) Machine learning b) Database technology
c) Information Science d) All of the above

3) If the coefficient of determination is a positive value, then the regression equation _____.
a) must have a positive slope
b) must have a negative slope
c) could have either a positive or a negative slope
d) must have a positive y intercept

4) The most learning models benefit from a preventive standardization of the data is also called as _____.
a) Normalization b) Extraction
c) Sampling d) transformation

5) According to forward search scheme, also referred as _____.
a) top-down b) trade off
c) bottom-up d) None

6) _____ analysis, in which the properties of each single attribute of a dataset are investigated;
a) bivariate b) multivariate
c) both A and B d) univariate

7) A _____ is definitely the most intuitive graphical representation of the relationship between two numerical attributes.
a) Scatter plot b) Loses plot
c) Quantile-Quantile plot d) Level Curves

8) The purpose of regression models, also known as _____ models.
a) Explanatory b) Predictive
c) Forecasting d) All

9) How do we perform Bayesian classification when some features are missing?
a) We assuming the missing values as the mean of all values.
b) We ignore the missing features.
c) We integrate the posteriors probabilities over the missing features.
d) Drop the features completely.

10) Agglomerative clustering falls under which type of clustering method?
a) partition b) hierarchical
c) Both d) None of the above

11) Which of the following metrics are used to evaluate classification models?
a) Area under the ROC curve b) F1 score
c) Confusion matrix d) All of the above

12) The problem of finding hidden structure in unlabeled data is called _____.
a) Supervised Learning b) Unsupervised Learning
c) Reinforcement Learning d) All of the Above

13) If there are n number of independent variables then the referred regression model is _____.
a) Simple Linear Regression b) Ridge Regression
c) Multiple Linear Regression d) Generalized Linear Regression

14) What is the relation between the distance between clusters and the corresponding class discriminability?
a) proportional b) inversely-proportional
c) no-relation d) We can Say All

SLR-GF-300

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Business Intelligence (197043710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) What do you mean by effective and timely decisions? Describe the benefits of a Business intelligence system.
b) How Data mining process provide useful knowledge to decision makers? Explain with neat diagram.
c) What is the purpose of Data exploratory analysis? Explain the three main phases of Data exploratory analysis.
d) Write a short note on Data Reduction.

Q.3 Attempt any One. **08**

a) Define Decision system. Describe the phases of Decision-making process in detail.
b) What do you mean by Data validation? Explain techniques used for data validation.

Q.4 Draw architecture of business intelligence system and explain the components of business intelligence system. **08**

Section – II

Q.5 Attempt any Four. **16**

a) Describe the purpose of Regression models and list the types of regression.
b) Write a short note on Bayesian methods.
c) Why exponential smoothing models are used?
d) Compare Bivariate and multivariate analysis.
e) Define clustering. Explain any one clustering technique.

Q.6 Attempt any One. **06**

a) Define Time series. How evaluation and analysis of time series take place?
b) What are the various data mining techniques for BI? Explain classification and its problems in detail.

Q.7 Explain Apriori algorithm & general association rules. **06**

SLR-GF-300

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Business Intelligence (197043710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. Each question carries one mark. **14**

1) The most learning models benefit from a preventive standardization of the data is also called as _____.
a) Normalization b) Extraction
c) Sampling d) transformation

2) According to forward search scheme, also referred as _____.
a) top-down b) trade off
c) bottom-up d) None

3) _____ analysis, in which the properties of each single attribute of a dataset are investigated;
a) bivariate b) multivariate
c) both A and B d) univariate

4) A _____ is definitely the most intuitive graphical representation of the relationship between two numerical attributes.
a) Scatter plot b) Loses plot
c) Quantile-Quantile plot d) Level Curves

5) The purpose of regression models, also known as _____ models.
a) Explanatory b) Predictive
c) Forecasting d) All

6) How do we perform Bayesian classification when some features are missing?
a) We assuming the missing values as the mean of all values.
b) We ignore the missing features.
c) We integrate the posteriors probabilities over the missing features.
d) Drop the features completely.

7) Agglomerative clustering falls under which type of clustering method?
a) partition b) hierarchical
c) Both d) None of the above

8) Which of the following metrics are used to evaluate classification models?
a) Area under the ROC curve b) F1 score
c) Confusion matrix d) All of the above

9) The problem of finding hidden structure in unlabeled data is called _____.
a) Supervised Learning b) Unsupervised Learning
c) Reinforcement Learning d) All of the Above

10) If there are n number of independent variables then the referred regression model is _____.
a) Simple Linear Regression b) Ridge Regression
c) Multiple Linear Regression d) Generalized Linear Regression

11) What is the relation between the distance between clusters and the corresponding class discriminability?
a) proportional b) inversely-proportional
c) no-relation d) We can Say All

12) Data can be store, retrieve and updated in _____.
a) SMTOP b) FTP
c) OLAP d) OLTP

13) The classification of the data mining system involves _____.
a) Machine learning b) Database technology
c) Information Science d) All of the above

14) If the coefficient of determination is a positive value, then the regression equation _____.
a) must have a positive slope
b) must have a negative slope
c) could have either a positive or a negative slope
d) must have a positive y intercept

SLR-GF-300

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Business Intelligence (197043710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) What do you mean by effective and timely decisions? Describe the benefits of a Business intelligence system.
b) How Data mining process provide useful knowledge to decision makers? Explain with neat diagram.
c) What is the purpose of Data exploratory analysis? Explain the three main phases of Data exploratory analysis.
d) Write a short note on Data Reduction.

Q.3 Attempt any One. **08**

a) Define Decision system. Describe the phases of Decision-making process in detail.
b) What do you mean by Data validation? Explain techniques used for data validation.

Q.4 Draw architecture of business intelligence system and explain the components of business intelligence system. **08**

Section – II

Q.5 Attempt any Four. **16**

a) Describe the purpose of Regression models and list the types of regression.
b) Write a short note on Bayesian methods.
c) Why exponential smoothing models are used?
d) Compare Bivariate and multivariate analysis.
e) Define clustering. Explain any one clustering technique.

Q.6 Attempt any One. **06**

a) Define Time series. How evaluation and analysis of time series take place?
b) What are the various data mining techniques for BI? Explain classification and its problems in detail.

Q.7 Explain Apriori algorithm & general association rules. **06**

SLR-GF-300

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Business Intelligence (197043710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. Each question carries one mark. **14**

1) If there are n number of independent variables then the referred regression model is _____.
a) Simple Linear Regression b) Ridge Regression
c) Multiple Linear Regression d) Generalized Linear Regression

2) What is the relation between the distance between clusters and the corresponding class discriminability?
a) proportional b) inversely-proportional
c) no-relation d) We can Say All

3) Data can be store, retrieve and updated in _____.
a) SMTOP b) FTP
c) OLAP d) OLTP

4) The classification of the data mining system involves _____.
a) Machine learning b) Database technology
c) Information Science d) All of the above

5) If the coefficient of determination is a positive value, then the regression equation _____.
a) must have a positive slope
b) must have a negative slope
c) could have either a positive or a negative slope
d) must have a positive y intercept

6) The most learning models benefit from a preventive standardization of the data is also called as _____.
a) Normalization b) Extraction
c) Sampling d) transformation

7) According to forward search scheme, also referred as _____.
a) top-down b) trade off
c) bottom-up d) None

8) _____ analysis, in which the properties of each single attribute of a dataset are investigated;

a) bivariate
b) multivariate
c) both A and B
d) univariate

9) A _____ is definitely the most intuitive graphical representation of the relationship between two numerical attributes.

a) Scatter plot
b) Loses plot
c) Quantile-Quantile plot
d) Level Curves

10) The purpose of regression models, also known as _____ models.

a) Explanatory
b) Predictive
c) Forecasting
d) All

11) How do we perform Bayesian classification when some features are missing?

a) We assuming the missing values as the mean of all values.
b) We ignore the missing features.
c) We integrate the posteriors probabilities over the missing features.
d) Drop the features completely.

12) Agglomerative clustering falls under which type of clustering method?

a) partition
b) hierarchical
c) Both
d) None of the above

13) Which of the following metrics are used to evaluate classification models?

a) Area under the ROC curve
b) F1 score
c) Confusion matrix
d) All of the above

14) The problem of finding hidden structure in unlabeled data is called _____.

a) Supervised Learning
b) Unsupervised Learning
c) Reinforcement Learning
d) All of the Above

SLR-GF-300

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Business Intelligence (197043710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) What do you mean by effective and timely decisions? Describe the benefits of a Business intelligence system.
b) How Data mining process provide useful knowledge to decision makers? Explain with neat diagram.
c) What is the purpose of Data exploratory analysis? Explain the three main phases of Data exploratory analysis.
d) Write a short note on Data Reduction.

Q.3 Attempt any One. **08**

a) Define Decision system. Describe the phases of Decision-making process in detail.
b) What do you mean by Data validation? Explain techniques used for data validation.

Q.4 Draw architecture of business intelligence system and explain the components of business intelligence system. **08**

Section – II

Q.5 Attempt any Four. **16**

a) Describe the purpose of Regression models and list the types of regression.
b) Write a short note on Bayesian methods.
c) Why exponential smoothing models are used?
d) Compare Bivariate and multivariate analysis.
e) Define clustering. Explain any one clustering technique.

Q.6 Attempt any One. **06**

a) Define Time series. How evaluation and analysis of time series take place?
b) What are the various data mining techniques for BI? Explain classification and its problems in detail.

Q.7 Explain Apriori algorithm & general association rules. **06**

SLR-GF-301

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Mining (197043711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following applied on warehouse?
a) write only b) read only
c) both a) and b) d) none of these

2) Data mining is _____.
a) time variant non-volatile collection of data
b) The actual discovery phase of a knowledge
c) The stage of selecting the right data
d) None of these

3) Multiple data sources may be combined is called as _____.
a) Data Reduction b) Data Cleaning
c) Data Integration d) Data Transformation

4) The data mining process should be highly _____.
a) On Going b) Active
c) Interactive d) Flexible

5) An itemset whose support is greater than or equal to a minimum support threshold is _____.
a) Itemset b) Frequent Itemset
c) Infrequent items d) Threshold values

6) What techniques can be used to improve the efficiency of apriori algorithm?
a) Hash-based techniques b) Transaction Increases
c) Sampling d) Cleaning

7) The analysis performed to uncover the interesting statistical correlation between associated attributes value pairs are known as the _____.
a) Mining of association b) Mining of correlation
c) Mining of clusters d) All of the above

8) Which one of the following correctly refers to the task of the classification?
a) A measure of the accuracy, of the classification of a concept that is given by a certain theory
b) The task of assigning a classification to a set of examples
c) A subdivision of a set of examples into a number of classes
d) None of the above

9) Which function is used for k-means clustering?
a) k-means
b) k-mean
c) heatmap
d) none of the mentioned

10) Which clustering technique requires a merging approach?
a) Partitional
b) Hierarchical
c) Naive Bayes
d) None of the mentioned

11) Which of the following is the direct application of frequent itemset mining?
a) Social Network Analysis
b) Market Basket Analysis
c) Outlier Detection
d) Intrusion Detection

12) What does FP growth algorithm do?
a) It mines all frequent patterns through pruning rules with lesser support.
b) It mines all frequent patterns through pruning rules with higher support.
c) It mines all frequent patterns by constructing a FP tree.
d) It mines all frequent patterns by constructing an itemset.

13) Which of the following is not belong to data mining?
a) Knowledge extraction
b) Data transformation
c) Data exploration
d) Data archaeology

14) Which of the following is not a data pre-processing methods?
a) Data Visualization
b) Data Discretization
c) Data Cleaning
d) Data Reduction

SLR-GF-301

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Mining (197043711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Describe any five data mining applications.
b) What are the major tasks in data preprocessing? Explain in detail.
c) Explain in detail Pattern Exploration and Application.
d) What do you mean by distance - based algorithm?

Q.3 Attempt any Two. **16**

a) Explain in detail technological support for data mining.
b) Write a short note on Pattern Mining: A Road Map.
c) Describe Bayesian classification with example

Section – II

Q.4 Attempt any Three. **12**

a) Write a note on — Divisive clustering.
b) Explain partitioning method used for association rules.
c) Write a note on Web Content Mining.
d) What are the outlier detection methods? Explain.

Q.6 Attempt any Two. **16**

a) Explain BIRCH method used for clustering large databases.
b) What do you mean Web content mining.
c) Write a short note on Clustering based approaches and Classification based approaches.

SLR-GF-301

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Mining (197043711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Which one of the following correctly refers to the task of the classification?
a) A measure of the accuracy, of the classification of a concept that is given by a certain theory
b) The task of assigning a classification to a set of examples
c) A subdivision of a set of examples into a number of classes
d) None of the above

2) Which function is used for k-means clustering?
a) k-means b) k-mean
c) heatmap d) none of the mentioned

3) Which clustering technique requires a merging approach?
a) Partitional b) Hierarchical
c) Naive Bayes d) None of the mentioned

4) Which of the following is the direct application of frequent itemset mining?
a) Social Network Analysis b) Market Basket Analysis
c) Outlier Detection d) Intrusion Detection

5) What does FP growth algorithm do?
a) It mines all frequent patterns through pruning rules with lesser support.
b) It mines all frequent patterns through pruning rules with higher support.
c) It mines all frequent patterns by constructing a FP tree.
d) It mines all frequent patterns by constructing an itemset.

6) Which of the following is not belong to data mining?
a) Knowledge extraction b) Data transformation
c) Data exploration d) Data archaeology

7) Which of the following is not a data pre-processing methods?
a) Data Visualization b) Data Discretization
c) Data Cleaning d) Data Reduction

8) Which of the following applied on warehouse?
a) write only b) read only
c) both a) and b) d) none of these

9) Data mining is _____.
a) time variant non-volatile collection of data
b) The actual discovery phase of a knowledge
c) The stage of selecting the right data
d) None of these

10) Multiple data sources may be combined is called as _____.
a) Data Reduction b) Data Cleaning
c) Data Integration d) Data Transformation

11) The data mining process should be highly _____.
a) On Going b) Active
c) Interactive d) Flexible

12) An itemset whose support is greater than or equal to a minimum support threshold is _____.
a) Itemset b) Frequent Itemset
c) Infrequent items d) Threshold values

13) What techniques can be used to improve the efficiency of apriori algorithm?
a) Hash-based techniques b) Transaction Increases
c) Sampling d) Cleaning

14) The analysis performed to uncover the interesting statistical correlation between associated attributes value pairs are known as the _____.
a) Mining of association b) Mining of correlation
c) Mining of clusters d) All of the above

SLR-GF-301

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Mining (197043711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Describe any five data mining applications.
b) What are the major tasks in data preprocessing? Explain in detail.
c) Explain in detail Pattern Exploration and Application.
d) What do you mean by distance - based algorithm?

Q.3 Attempt any Two. **16**

a) Explain in detail technological support for data mining.
b) Write a short note on Pattern Mining: A Road Map.
c) Describe Bayesian classification with example

Section – II

Q.4 Attempt any Three. **12**

a) Write a note on — Divisive clustering.
b) Explain partitioning method used for association rules.
c) Write a note on Web Content Mining.
d) What are the outlier detection methods? Explain.

Q.6 Attempt any Two. **16**

a) Explain BIRCH method used for clustering large databases.
b) What do you mean Web content mining.
c) Write a short note on Clustering based approaches and Classification based approaches.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Mining (197043711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is the direct application of frequent itemset mining?
a) Social Network Analysis b) Market Basket Analysis
c) Outlier Detection d) Intrusion Detection

2) What does FP growth algorithm do?
a) It mines all frequent patterns through pruning rules with lesser support.
b) It mines all frequent patterns through pruning rules with higher support.
c) It mines all frequent patterns by constructing a FP tree.
d) It mines all frequent patterns by constructing an itemset.

3) Which of the following is not belong to data mining?
a) Knowledge extraction b) Data transformation
c) Data exploration d) Data archaeology

4) Which of the following is not a data pre-processing methods?
a) Data Visualization b) Data Discretization
c) Data Cleaning d) Data Reduction

5) Which of the following applied on warehouse?
a) write only b) read only
c) both a) and b) d) none of these

6) Data mining is _____.
a) time variant non-volatile collection of data
b) The actual discovery phase of a knowledge
c) The stage of selecting the right data
d) None of these

7) Multiple data sources may be combined is called as _____.
a) Data Reduction b) Data Cleaning
c) Data Integration d) Data Transformation

8) The data mining process should be highly _____.
a) On Going b) Active
c) Interactive d) Flexible

9) An itemset whose support is greater than or equal to a minimum support threshold is _____.

a) Itemset
b) Frequent Itemset
c) Infrequent items
d) Threshold values

10) What techniques can be used to improve the efficiency of apriori algorithm?

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b) Transaction Increases
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d) Cleaning

11) The analysis performed to uncover the interesting statistical correlation between associated attributes value pairs are known as the _____.

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c) A subdivision of a set of examples into a number of classes
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13) Which function is used for k-means clustering?

a) k-means
b) k-mean
c) heatmap
d) none of the mentioned

14) Which clustering technique requires a merging approach?

a) Partitional
b) Hierarchical
c) Naive Bayes
d) None of the mentioned

SLR-GF-301

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Mining (197043711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Describe any five data mining applications.
b) What are the major tasks in data preprocessing? Explain in detail.
c) Explain in detail Pattern Exploration and Application.
d) What do you mean by distance - based algorithm?

Q.3 Attempt any Two. **16**

a) Explain in detail technological support for data mining.
b) Write a short note on Pattern Mining: A Road Map.
c) Describe Bayesian classification with example

Section – II

Q.4 Attempt any Three. **12**

a) Write a note on — Divisive clustering.
b) Explain partitioning method used for association rules.
c) Write a note on Web Content Mining.
d) What are the outlier detection methods? Explain.

Q.6 Attempt any Two. **16**

a) Explain BIRCH method used for clustering large databases.
b) What do you mean Web content mining.
c) Write a short note on Clustering based approaches and Classification based approaches.

SLR-GF-301

Seat No.	

Set S

Fourth Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Mining (197043711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) What techniques can be used to improve the efficiency of apriori algorithm?
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c) Data Integration d) Data Transformation

13) The data mining process should be highly _____.
a) On Going b) Active
c) Interactive d) Flexible

14) An itemset whose support is greater than or equal to a minimum support threshold is _____.
a) Itemset b) Frequent Itemset
c) Infrequent items d) Threshold values

SLR-GF-301

Seat No.	

Set S

Fourth Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Data Mining (197043711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Describe any five data mining applications.
b) What are the major tasks in data preprocessing? Explain in detail.
c) Explain in detail Pattern Exploration and Application.
d) What do you mean by distance - based algorithm?

Q.3 Attempt any Two. **16**

a) Explain in detail technological support for data mining.
b) Write a short note on Pattern Mining: A Road Map.
c) Describe Bayesian classification with example

Section – II

Q.4 Attempt any Three. **12**

a) Write a note on — Divisive clustering.
b) Explain partitioning method used for association rules.
c) Write a note on Web Content Mining.
d) What are the outlier detection methods? Explain.

Q.6 Attempt any Two. **16**

a) Explain BIRCH method used for clustering large databases.
b) What do you mean Web content mining.
c) Write a short note on Clustering based approaches and Classification based approaches.

SLR-GF-303

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Management Information System (197043801)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The objective of the MIS is to provide information for a _____ support in the process of management.
a) Decision b) Goal
c) Tool d) Analysis

2) _____ details are given by Management to Marketing Service System.
a) Customer b) Employee
c) Supplier d) None of the above

3) These are the rights of the owner of information to decide how much information is to be exchanged, shared or distributed.
a) Computer Ethics b) Labour law
c) Cyber law d) Intellectual property rights

4) An Executive information system (EIS), also known as _____.
a) Decision Support System (DSS)
b) Executive Support System (ESS)
c) Transaction Process System (TPS)
d) None of the mentioned above

5) Decision makers who are concerned with tactical (short-term) operational problems and decision making are _____.
a) middle managers b) executive managers
c) supervisors d) mobile managers

6) To improve the performance of a business process, which of the following is most relevant?
a) Input b) Processing
c) Output d) Control and feedback

7) The Principles and standards that guide behavior toward other people are collectively called _____.
a) copyrights b) ethics
c) Intellectual property d) Fair use Doctrine

8) _____ represent complex data using interactive three- dimensional graphical forms such as charts, graphs, and maps.
a) Data Entry Systems b) Data Analysis systems
c) Database Management d) Data visualization systems

9) Which of the following is not an IT infrastructure service component?
a) operating system software
b) computing platforms to provide a coherent digital environment
c) physical facilities management to manage the facilities housing physical components
d) IT education services that provide training to employees

10) Which of the following refers to buying and selling of goods or service through to use of internet enabled wireless devices?
a) www b) M-banking
c) M-commerce d) Internet

11) The types of Business to Business e-commerce are _____.
a) Direct selling and support to Business
b) Industry portals
c) Information sites about an industry
d) All of the above

12) The firewall screening technology that determines whether packets are part of an ongoing dialogue between a sender and receiver is called____.
a) packet filtering
b) stateful inspection
c) Network addresses translation
d) Application proxy filtering

13) A _____ is an overall general statement produced by senior management (or a selected policy board or committee) that dictates what role security plays within the organization.
a) security audit b) security mechanism
c) security alerts d) security policy

14) An important feature of supply chain management is its application of electronic commerce technology that allows companies to share and operate systems for _____.
a) future purchasing of computer systems
b) cost-effective flowing of raw materials
c) order processing, transportation scheduling and inventory management
d) future merger opportunities

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Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Management Information System (197043801)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four **16**

a) Write Tool and technologies for collaboration and social business.
b) What is Organizations and explain its features.
c) What are the challenges to the protection of individual privacy & intellectual property?
d) What are business processes? How are they related to information systems?
e) What is role and importance of Management Information system?
f) List and define the three legal traditions that protect intellectual property.

Q.3 Attempt any Two **12**

a) List and describe the five steps in an ethical analysis.
b) Describe the impact of the management information system in the organization.
c) What are the challenges posed by strategic information systems?

Section – II

Q.4 Attempt any Four **16**

a) Define IT infrastructure from both a technology and a services perspective.
b) Define Denial of service (DoS) attacks.
c) Explain clearly what do you mean by Security Audit?
d) What are the principal components of telecommunications networks?
e) List and describe the unique features of e-commerce.
f) Explain the concept of M-Commerce.

Q.5 Attempt any Two **12**

a) What are the challenges of managing IT infrastructure?
b) Define Security and Explain security concepts: Confidentiality, Integrity, and Availability.
c) What are the basic types of e-commerce?

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Management Information System (197043801)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ represent complex data using interactive three- dimensional graphical forms such as charts, graphs, and maps.
a) Data Entry Systems b) Data Analysis systems
c) Database Management d) Data visualization systems

2) Which of the following is not an IT infrastructure service component?
a) operating system software
b) computing platforms to provide a coherent digital environment
c) physical facilities management to manage the facilities housing physical components
d) IT education services that provide training to employees

3) Which of the following refers to buying and selling of goods or service through to use of internet enabled wireless devices?
a) www b) M-banking
c) M-commerce d) Internet

4) The types of Business to Business e-commerce are _____.
a) Direct selling and support to Business
b) Industry portals
c) Information sites about an industry
d) All of the above

5) The firewall screening technology that determines whether packets are part of an ongoing dialogue between a sender and receiver is called____.
a) packet filtering
b) stateful inspection
c) Network addresses translation
d) Application proxy filtering

6) A _____ is an overall general statement produced by senior management (or a selected policy board or committee) that dictates what role security plays within the organization.
a) security audit b) security mechanism
c) security alerts d) security policy

7) An important feature of supply chain management is its application of electronic commerce technology that allows companies to share and operate systems for _____.
a) future purchasing of computer systems
b) cost-effective flowing of raw materials
c) order processing, transportation scheduling and inventory management
d) future merger opportunities

8) The objective of the MIS is to provide information for a _____ support in the process of management.
a) Decision b) Goal
c) Tool d) Analysis

9) _____ details are given by Management to Marketing Service System.
a) Customer b) Employee
c) Supplier d) None of the above

10) These are the rights of the owner of information to decide how much information is to be exchanged, shared or distributed.
a) Computer Ethics b) Labour law
c) Cyber law d) Intellectual property rights

11) An Executive information system (EIS), also known as _____.
a) Decision Support System (DSS)
b) Executive Support System (ESS)
c) Transaction Process System (TPS)
d) None of the mentioned above

12) Decision makers who are concerned with tactical (short-term) operational problems and decision making are _____.
a) middle managers b) executive managers
c) supervisors d) mobile managers

13) To improve the performance of a business process, which of the following is most relevant?
a) Input b) Processing
c) Output d) Control and feedback

14) The Principles and standards that guide behavior toward other people are collectively called _____.
a) copyrights b) ethics
c) Intellectual property d) Fair use Doctrine

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Management Information System (197043801)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four **16**

a) Write Tool and technologies for collaboration and social business.
b) What is Organizations and explain its features.
c) What are the challenges to the protection of individual privacy & intellectual property?
d) What are business processes? How are they related to information systems?
e) What is role and importance of Management Information system?
f) List and define the three legal traditions that protect intellectual property.

Q.3 Attempt any Two **12**

a) List and describe the five steps in an ethical analysis.
b) Describe the impact of the management information system in the organization.
c) What are the challenges posed by strategic information systems?

Section – II

Q.4 Attempt any Four **16**

a) Define IT infrastructure from both a technology and a services perspective.
b) Define Denial of service (DoS) attacks.
c) Explain clearly what do you mean by Security Audit?
d) What are the principal components of telecommunications networks?
e) List and describe the unique features of e-commerce.
f) Explain the concept of M-Commerce.

Q.5 Attempt any Two **12**

a) What are the challenges of managing IT infrastructure?
b) Define Security and Explain security concepts: Confidentiality, Integrity, and Availability.
c) What are the basic types of e-commerce?

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Management Information System (197043801)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The types of Business to Business e-commerce are _____.
a) Direct selling and support to Business
b) Industry portals
c) Information sites about an industry
d) All of the above

2) The firewall screening technology that determines whether packets are part of an ongoing dialogue between a sender and receiver is called____.
a) packet filtering
b) stateful inspection
c) Network addresses translation
d) Application proxy filtering

3) A _____ is an overall general statement produced by senior management (or a selected policy board or committee) that dictates what role security plays within the organization.
a) security audit b) security mechanism
c) security alerts d) security policy

4) An important feature of supply chain management is its application of electronic commerce technology that allows companies to share and operate systems for _____.
a) future purchasing of computer systems
b) cost-effective flowing of raw materials
c) order processing, transportation scheduling and inventory management
d) future merger opportunities

5) The objective of the MIS is to provide information for a _____ support in the process of management.
a) Decision b) Goal
c) Tool d) Analysis

6) _____ details are given by Management to Marketing Service System.
a) Customer b) Employee
c) Supplier d) None of the above

7) These are the rights of the owner of information to decide how much information is to be exchanged, shared or distributed.
a) Computer Ethics b) Labour law
c) Cyber law d) Intellectual property rights

8) An Executive information system (EIS), also known as _____.
a) Decision Support System (DSS)
b) Executive Support System (ESS)
c) Transaction Process System (TPS)
d) None of the mentioned above

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10) To improve the performance of a business process, which of the following is most relevant?
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11) The Principles and standards that guide behavior toward other people are collectively called _____.
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12) _____ represent complex data using interactive three- dimensional graphical forms such as charts, graphs, and maps.
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c) Database Management d) Data visualization systems

13) Which of the following is not an IT infrastructure service component?
a) operating system software
b) computing platforms to provide a coherent digital environment
c) physical facilities management to manage the facilities housing physical components
d) IT education services that provide training to employees

14) Which of the following refers to buying and selling of goods or service through to use of internet enabled wireless devices?
a) www b) M-banking
c) M-commerce d) Internet

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Management Information System (197043801)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four **16**

a) Write Tool and technologies for collaboration and social business.
b) What is Organizations and explain its features.
c) What are the challenges to the protection of individual privacy & intellectual property?
d) What are business processes? How are they related to information systems?
e) What is role and importance of Management Information system?
f) List and define the three legal traditions that protect intellectual property.

Q.3 Attempt any Two **12**

a) List and describe the five steps in an ethical analysis.
b) Describe the impact of the management information system in the organization.
c) What are the challenges posed by strategic information systems?

Section – II

Q.4 Attempt any Four **16**

a) Define IT infrastructure from both a technology and a services perspective.
b) Define Denial of service (DoS) attacks.
c) Explain clearly what do you mean by Security Audit?
d) What are the principal components of telecommunications networks?
e) List and describe the unique features of e-commerce.
f) Explain the concept of M-Commerce.

Q.5 Attempt any Two **12**

a) What are the challenges of managing IT infrastructure?
b) Define Security and Explain security concepts: Confidentiality, Integrity, and Availability.
c) What are the basic types of e-commerce?

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Management Information System (197043801)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) To improve the performance of a business process, which of the following is most relevant?
a) Input b) Processing
c) Output d) Control and feedback

2) The Principles and standards that guide behavior toward other people are collectively called _____.
a) copyrights b) ethics
c) Intellectual property d) Fair use Doctrine

3) _____ represent complex data using interactive three- dimensional graphical forms such as charts, graphs, and maps.
a) Data Entry Systems b) Data Analysis systems
c) Database Management d) Data visualization systems

4) Which of the following is not an IT infrastructure service component?
a) operating system software
b) computing platforms to provide a coherent digital environment
c) physical facilities management to manage the facilities housing physical components
d) IT education services that provide training to employees

5) Which of the following refers to buying and selling of goods or service through to use of internet enabled wireless devices?
a) www b) M-banking
c) M-commerce d) Internet

6) The types of Business to Business e-commerce are _____.
a) Direct selling and support to Business
b) Industry portals
c) Information sites about an industry
d) All of the above

7) The firewall screening technology that determines whether packets are part of an ongoing dialogue between a sender and receiver is called____.
a) packet filtering
b) stateful inspection
c) Network addresses translation
d) Application proxy filtering

8) A _____ is an overall general statement produced by senior management (or a selected policy board or committee) that dictates what role security plays within the organization.
a) security audit
b) security mechanism
c) security alerts
d) security policy

9) An important feature of supply chain management is its application of electronic commerce technology that allows companies to share and operate systems for _____.
a) future purchasing of computer systems
b) cost-effective flowing of raw materials
c) order processing, transportation scheduling and inventory management
d) future merger opportunities

10) The objective of the MIS is to provide information for a _____ support in the process of management.
a) Decision
b) Goal
c) Tool
d) Analysis

11) _____ details are given by Management to Marketing Service System.
a) Customer
b) Employee
c) Supplier
d) None of the above

12) These are the rights of the owner of information to decide how much information is to be exchanged, shared or distributed.
a) Computer Ethics
b) Labour law
c) Cyber law
d) Intellectual property rights

13) An Executive information system (EIS), also known as _____.
a) Decision Support System (DSS)
b) Executive Support System (ESS)
c) Transaction Process System (TPS)
d) None of the mentioned above

14) Decision makers who are concerned with tactical (short-term) operational problems and decision making are _____.
a) middle managers
b) executive managers
c) supervisors
d) mobile managers

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Management Information System (197043801)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four **16**

a) Write Tool and technologies for collaboration and social business.
b) What is Organizations and explain its features.
c) What are the challenges to the protection of individual privacy & intellectual property?
d) What are business processes? How are they related to information systems?
e) What is role and importance of Management Information system?
f) List and define the three legal traditions that protect intellectual property.

Q.3 Attempt any Two **12**

a) List and describe the five steps in an ethical analysis.
b) Describe the impact of the management information system in the organization.
c) What are the challenges posed by strategic information systems?

Section – II

Q.4 Attempt any Four **16**

a) Define IT infrastructure from both a technology and a services perspective.
b) Define Denial of service (DoS) attacks.
c) Explain clearly what do you mean by Security Audit?
d) What are the principal components of telecommunications networks?
e) List and describe the unique features of e-commerce.
f) Explain the concept of M-Commerce.

Q.5 Attempt any Two **12**

a) What are the challenges of managing IT infrastructure?
b) Define Security and Explain security concepts: Confidentiality, Integrity, and Availability.
c) What are the basic types of e-commerce?

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information & Cyber Security (197043802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) DES follows _____.
a) Hash Algorithm b) Caesars Cipher
c) Feistel Cipher Structure d) SP Networks

2) The DES Algorithm uses key size of _____.
a) 64 b) 56
c) 128 d) 256

3) During decryption, we use the Inverse Initial Permutation (IP-1) before the IP.
a) True b) False

4) RSA algorithm is _____ cryptography algorithm.
a) Systematic b) Symmetric
c) Asymmetric d) None of the mentioned above

5) Which of the following modes of operation in DES is used for operating?
a) Cipher Feedback Mode (CFB) b) Cipher Block Chaining (CBC)
c) Electronic Code Book (ECB) d) Output Feedback Modes (OFB)

6) When a hash function is used to provide message authentication, the hash function value is referred to as _____.
a) Message Field b) Message Digest
c) Message Score d) Message Leap

7) Message authentication code is also known as _____.
a) key code b) hash code
c) keyed hash function d) message key hash function2

8) Which component is included in IP security?
a) Authentication Header (AH)
b) Encapsulating Security Payload (ESP)
c) Internet Key Exchange (IKE)
d) All of the mentioned

9) The transaction Merkle Tree root value in a Bitcoin block is calculated using,
a) Hash of transactions
b) Previous block's hash
c) Number of transactions
d) None of the above

10) MAC is a _____.
a) one-to-one mapping
b) many-to-one mapping
c) onto mapping
d) none of the mentioned

11) Bitcoin is a cryptocurrency, which is an application of Blockchain.
a) True
b) False

12) Blockchain can perform user transactions without involving any third-party intermediaries _____.
a) with the help of the third party
b) without involving any third party
c) without involving any owner
d) without involving any authenticated

13) Which of the following is a type of cyber attack?
a) Phishing
b) SQL Injections
c) Password Attack
d) All of the above

14) In tunnel mode, IPSec protects the _____.
a) Entire IP packet
b) IP header
c) IP payload
d) IP trailer

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information & Cyber Security (197043802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any three. **12**

a) What cryptanalysis? Explain linear cryptanalysis.
b) What do you mean by substitution technique? Explain playfair. Solve below by playfair Key: COMPUTER
Plaintext: Communicate with me. So I can do that.
c) Explain public key cryptosystem with diagram.
d) Illustrate the structure of secure hash code with diagram.

Q.3 Answer any one **08**

a) What is digital signature? Explain DSS approaches in detail.
b) Explain RSA with suitable example.

Q.4 What are different block cipher mode of operation? Explain Electronic Codebook (ECB) and cipher block chaining mode. **08**

Section – II

Q.5 Answer any three. **12**

a) Explain Transport and tunnel mode authentication header.
b) What is Block chain? Explain proof of work consensus.
c) What is Encapsulating Security Payload (ESP)? Explain in detail.
d) What do you mean by cyber security standards? explain any two standards.

Q.6 Answer any one. **08**

a) What is Gas limit in block chain technology and its purpose? How does it work?
b) What is Sybil attack? Explain in detail.

Q.7 What is secure socket layer protocol? Explain SSL record protocol and Handshake protocol. **08**

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information & Cyber Security (197043802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which component is included in IP security?
a) Authentication Header (AH)
b) Encapsulating Security Payload (ESP)
c) Internet Key Exchange (IKE)
d) All of the mentioned

2) The transaction Merkle Tree root value in a Bitcoin block is calculated using,
a) Hash of transactions b) Previous block's hash
c) Number of transactions d) None of the above

3) MAC is a _____.
a) one-to-one mapping b) many-to-one mapping
c) onto mapping d) none of the mentioned

4) Bitcoin is a cryptocurrency, which is an application of Blockchain.
a) True b) False

5) Blockchain can perform user transactions without involving any third-party intermediaries _____.
a) with the help of the third party
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d) without involving any authenticated

6) Which of the following is a type of cyber attack?
a) Phishing b) SQL Injections
c) Password Attack d) All of the above

7) In tunnel mode, IPSec protects the _____.
a) Entire IP packet b) IP header
c) IP payload d) IP trailer

8) DES follows _____.
a) Hash Algorithm b) Caesars Cipher
c) Feistel Cipher Structure d) SP Networks

9) The DES Algorithm uses key size of _____.
a) 64 b) 56
c) 128 d) 256

10) During decryption, we use the Inverse Initial Permutation (IP-1) before the IP.
a) True b) False

11) RSA algorithm is _____ cryptography algorithm.
a) Systematic b) Symmetric
c) Asymmetric d) None of the mentioned above

12) Which of the following modes of operation in DES is used for operating?
a) Cipher Feedback Mode (CFB) b) Cipher Block Chaining (CBC)
c) Electronic Code Book (ECB) d) Output Feedback Modes (OFB)

13) When a hash function is used to provide message authentication, the hash function value is referred to as _____.
a) Message Field b) Message Digest
c) Message Score d) Message Leap

14) Message authentication code is also known as _____.
a) key code b) hash code
c) keyed hash function d) message key hash function2

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information & Cyber Security (197043802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any three. **12**

a) What cryptanalysis? Explain linear cryptanalysis.
b) What do you mean by substitution technique? Explain playfair. Solve below by playfair Key: COMPUTER
Plaintext: Communicate with me. So I can do that.
c) Explain public key cryptosystem with diagram.
d) Illustrate the structure of secure hash code with diagram.

Q.3 Answer any one **08**

a) What is digital signature? Explain DSS approaches in detail.
b) Explain RSA with suitable example.

Q.4 What are different block cipher mode of operation? Explain Electronic Codebook (ECB) and cipher block chaining mode. **08**

Section – II

Q.5 Answer any three. **12**

a) Explain Transport and tunnel mode authentication header.
b) What is Block chain? Explain proof of work consensus.
c) What is Encapsulating Security Payload (ESP)? Explain in detail.
d) What do you mean by cyber security standards? explain any two standards.

Q.6 Answer any one. **08**

a) What is Gas limit in block chain technology and its purpose? How does it work?
b) What is Sybil attack? Explain in detail.

Q.7 What is secure socket layer protocol? Explain SSL record protocol and Handshake protocol. **08**

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information & Cyber Security (197043802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Bitcoin is a cryptocurrency, which is an application of Blockchain.
a) True b) False

2) Blockchain can perform user transactions without involving any third-party intermediaries _____.
a) with the help of the third party
b) without involving any third party
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3) Which of the following is a type of cyber attack?
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4) In tunnel mode, IPSec protects the _____.
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6) The DES Algorithm uses key size of _____.
a) 64 b) 56
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7) During decryption, we use the Inverse Initial Permutation (IP-1) before the IP.
a) True b) False

8) RSA algorithm is _____ cryptography algorithm.
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11) Message authentication code is also known as _____.

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b) hash code
c) keyed hash function
d) message key hash function2

12) Which component is included in IP security?

a) Authentication Header (AH)
b) Encapsulating Security Payload (ESP)
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13) The transaction Merkle Tree root value in a Bitcoin block is calculated using,

a) Hash of transactions
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c) Number of transactions
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14) MAC is a _____.

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c) onto mapping
d) none of the mentioned

SLR-GF-304

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information & Cyber Security (197043802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any three. **12**

a) What cryptanalysis? Explain linear cryptanalysis.
b) What do you mean by substitution technique? Explain playfair. Solve below by playfair Key: COMPUTER
Plaintext: Communicate with me. So I can do that.
c) Explain public key cryptosystem with diagram.
d) Illustrate the structure of secure hash code with diagram.

Q.3 Answer any one **08**

a) What is digital signature? Explain DSS approaches in detail.
b) Explain RSA with suitable example.

Q.4 What are different block cipher mode of operation? Explain Electronic Codebook (ECB) and cipher block chaining mode. **08**

Section – II

Q.5 Answer any three. **12**

a) Explain Transport and tunnel mode authentication header.
b) What is Block chain? Explain proof of work consensus.
c) What is Encapsulating Security Payload (ESP)? Explain in detail.
d) What do you mean by cyber security standards? explain any two standards.

Q.6 Answer any one. **08**

a) What is Gas limit in block chain technology and its purpose? How does it work?
b) What is Sybil attack? Explain in detail.

Q.7 What is secure socket layer protocol? Explain SSL record protocol and Handshake protocol. **08**

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information & Cyber Security (197043802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) When a hash function is used to provide message authentication, the hash function value is referred to as _____.
a) Message Field b) Message Digest
c) Message Score d) Message Leap

2) Message authentication code is also known as _____.
a) key code b) hash code
c) keyed hash function d) message key hash function2

3) Which component is included in IP security?
a) Authentication Header (AH)
b) Encapsulating Security Payload (ESP)
c) Internet Key Exchange (IKE)
d) All of the mentioned

4) The transaction Merkle Tree root value in a Bitcoin block is calculated using,
a) Hash of transactions b) Previous block's hash
c) Number of transactions d) None of the above

5) MAC is a _____.
a) one-to-one mapping b) many-to-one mapping
c) onto mapping d) none of the mentioned

6) Bitcoin is a cryptocurrency, which is an application of Blockchain.
a) True b) False

7) Blockchain can perform user transactions without involving any third-party intermediaries _____.
a) with the help of the third party
b) without involving any third party
c) without involving any owner
d) without involving any authenticated

8) Which of the following is a type of cyber attack?
a) Phishing b) SQL Injections
c) Password Attack d) All of the above

9) In tunnel mode, IPSec protects the _____.
a) Entire IP packet b) IP header
c) IP payload d) IP trailer

10) DES follows _____.
a) Hash Algorithm b) Caesars Cipher
c) Feistel Cipher Structure d) SP Networks

11) The DES Algorithm uses key size of _____.
a) 64 b) 56
c) 128 d) 256

12) During decryption, we use the Inverse Initial Permutation (IP-1) before the IP.
a) True b) False

13) RSA algorithm is _____ cryptography algorithm.
a) Systematic b) Symmetric
c) Asymmetric d) None of the mentioned above

14) Which of the following modes of operation in DES is used for operating?
a) Cipher Feedback Mode (CFB) b) Cipher Block Chaining (CBC)
c) Electronic Code Book (ECB) d) Output Feedback Modes (OFB)

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Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Information & Cyber Security (197043802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any three. **12**

a) What cryptanalysis? Explain linear cryptanalysis.
b) What do you mean by substitution technique? Explain playfair. Solve below by playfair Key: COMPUTER
Plaintext: Communicate with me. So I can do that.
c) Explain public key cryptosystem with diagram.
d) Illustrate the structure of secure hash code with diagram.

Q.3 Answer any one **08**

a) What is digital signature? Explain DSS approaches in detail.
b) Explain RSA with suitable example.

Q.4 What are different block cipher mode of operation? Explain Electronic Codebook (ECB) and cipher block chaining mode. **08**

Section – II

Q.5 Answer any three. **12**

a) Explain Transport and tunnel mode authentication header.
b) What is Block chain? Explain proof of work consensus.
c) What is Encapsulating Security Payload (ESP)? Explain in detail.
d) What do you mean by cyber security standards? explain any two standards.

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b) What is Sybil attack? Explain in detail.

Q.7 What is secure socket layer protocol? Explain SSL record protocol and Handshake protocol. **08**

SLR-GF-305

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Bigdata Analytics (197043805)

Day & Date: Wednesday 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ refers to the biases, noise and abnormality in data, trustworthiness of data.
a) Value b) Veracity
c) Velocity d) Volume

2) Consider the following statements:
Statement 1: Volatility refers to the data velocity relative to timescale of event being studied
Statement 2: Valence refers to the rate of data loss and stable lifetime of data
a) Only statement 1 is true b) Only statement 2 is true
c) Both statements are true d) Both statements are false

3) What are the main components of Hadoop Ecosystem?
a) MapReduce, HDFS, YARN b) MLlib, GraphX
c) Gelly, Table, CEP d) None of the mentioned

4) Which of the following is guaranteed by Zookeeper?
a) Interactivity b) Flexibility
c) Scalability d) Reliability

5) Consider the following statements:
Statement 1: The Job Tracker is hosted inside the master and it receives the job execution request from the client.
Statement 2: Task tracker is the MapReduce component on the slave machine as there are multiple slave machines.
a) Only statement 1 is true b) Only statement 2 is true
c) Both statements are true d) Both statements are false

6) The number of maps in MapReduce is usually driven by the total size of _____.
a) Inputs b) Outputs
c) Tasks d) None of the mentioned

7) Point out the correct statement in context of YARN:
a) YARN extends the power of Hadoop to incumbent and new technologies found within the data center
b) YARN is highly scalable.
c) YARN enhances a Hadoop compute cluster in many ways
d) All of the mentioned

8) Consider the pseudo-code for MapReduce's WordCount example (not shown here). Let's now assume that you want to determine the frequency of phrases consisting of 3 words each instead of determining the frequency of single words. Which part of the (pseudo-)code do you need to adapt?
a) Only map()
b) Only reduce()
c) map() and reduce()
d) The code does not have to be changed

9) Cassandra uses a protocol called _____ to discover location and state information about the other nodes participating in a Cassandra cluster.
a) Key-value
b) Memtable
c) Gossip
d) Heartbeat

10) What is eventual consistency?
a) At any time, the system is linearizable
b) At any time, concurrent reads from any node return the same values
c) If writes stop, all reads will return the same value after a while
d) If writes stop, a distributed system will become consistent

11) _____ is Data warehousing tool.
a) Jaspersoft studio
b) Cassandra
c) Pig
d) Hive

12) The interactive mode of Pig is _____.
a) CQLSH
b) HQL
c) GRUNT
d) CDBSH

13) Hive is used to query _____ data built on top of hadoop.
a) Unstructured data
b) Structured data
c) Semi-structured
d) Any type of data

14) Apache Pig is _____.
a) a high-level data flow tool.
b) a low-level data processing tool
c) a data warehousing tool
d) a report generation tool

SLR-GF-305

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Bigdata Analytics (197043805)

Day & Date: Wednesday 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three of the following questions. **12**

a) How is traditional Business Intelligence (BI) environment different from the Big data environment?
b) Distinguish SQL and NoSQL.
c) Explain In-Memory Analytics and In-Database processing?
d) Demonstrate Anatomy of File-read operation in Hadoop with diagram.
e) What are the four modules that make up the Apache Hadoop framework.

Q.3 Attempt any one. **08**

a) With diagram explain the Hadoop ecosystem in detail
b) Compare Analytics 1.0, 2.0 and 3.0.

Q.4 What is Big Data Analytics? Explain all the characteristics of Big Data. **08**

Section – II

Q.5 Attempt any three of the following questions. **12**

a) Write queries for the following in MongoDB:
i) Create a collection by the name "food" & then insert three documents into it. Each document should have "fruits" array.
ii) Find those documents in the "food" collection which have "grapes" in the first index position.
iii) Find those documents from the "food" collection having "banana" as an element in the "fruits" array
iv) Find those documents from the "food" collection where the size of the "fruits" array is 2.
b) With the help of example, explain set collection, list collection and Map collection in Cassandra. When collections should not be used?
c) What is static and dynamic partitioning in HIVE? Illustrate with example
d) Draw & explain the anatomy of Pig.
e) Demonstrate the use of following operators in Pig Latin with example:
a) FOREACH
b) ORDER BY
c) SPLIT
d) LIMIT

Q.6 Attempt any one of the following questions. **08**

a) Explain replication, auto sharding, updating information In-place and implementation of cursor in MongoDB

b) What is the concept of hinted handoffs, tunable consistency and replication factor and user defined data type in Cassandra?

Q.7 Draw the architecture of Hive and explain its components. **08**

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Bigdata Analytics (197043805)

Day & Date: Wednesday 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

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7) Apache Pig is _____.
a) a high-level data flow tool.
b) a low-level data processing tool
c) a data warehousing tool
d) a report generation tool

8) _____ refers to the biases, noise and abnormality in data, trustworthiness of data.
a) Value
b) Veracity
c) Velocity
d) Volume

9) Consider the following statements:
Statement 1: Volatility refers to the data velocity relative to timescale of event being studied
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a) Only statement 1 is true
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10) What are the main components of Hadoop Ecosystem?
a) MapReduce, HDFS, YARN
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d) None of the mentioned

11) Which of the following is guaranteed by Zookeeper?
a) Interactivity
b) Flexibility
c) Scalability
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12) Consider the following statements:
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13) The number of maps in MapReduce is usually driven by the total size of _____.
a) Inputs
b) Outputs
c) Tasks
d) None of the mentioned

14) Point out the correct statement in context of YARN:
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b) YARN is highly scalable.
c) YARN enhances a Hadoop compute cluster in many ways
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Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Bigdata Analytics (197043805)

Day & Date: Wednesday 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three of the following questions. **12**

a) How is traditional Business Intelligence (BI) environment different from the Big data environment?
b) Distinguish SQL and NoSQL.
c) Explain In-Memory Analytics and In-Database processing?
d) Demonstrate Anatomy of File-read operation in Hadoop with diagram.
e) What are the four modules that make up the Apache Hadoop framework.

Q.3 Attempt any one. **08**

a) With diagram explain the Hadoop ecosystem in detail
b) Compare Analytics 1.0, 2.0 and 3.0.

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Section – II

Q.5 Attempt any three of the following questions. **12**

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a) FOREACH
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c) SPLIT
d) LIMIT

Q.6 Attempt any one of the following questions. **08**

a) Explain replication, auto sharding, updating information In-place and implementation of cursor in MongoDB

b) What is the concept of hinted handoffs, tunable consistency and replication factor and user defined data type in Cassandra?

Q.7 Draw the architecture of Hive and explain its components. **08**

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Bigdata Analytics (197043805)

Day & Date: Wednesday 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is Data warehousing tool.
a) Jaspersoft studio b) Cassandra
c) Pig d) Hive

2) The interactive mode of Pig is _____.
a) CQLSH b) HQL
c) GRUNT d) CDBSH

3) Hive is used to query _____ data built on top of hadoop.
a) Unstructured data b) Structured data
c) Semi-structured d) Any type of data

4) Apache Pig is _____.
a) a high-level data flow tool.
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8) Which of the following is guaranteed by Zookeeper?
a) Interactivity b) Flexibility
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10) The number of maps in MapReduce is usually driven by the total size of _____.

a) Inputs
b) Outputs
c) Tasks
d) None of the mentioned

11) Point out the correct statement in context of YARN:

a) YARN extends the power of Hadoop to incumbent and new technologies found within the data center
b) YARN is highly scalable.
c) YARN enhances a Hadoop compute cluster in many ways
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12) Consider the pseudo-code for MapReduce's WordCount example (not shown here). Let's now assume that you want to determine the frequency of phrases consisting of 3 words each instead of determining the frequency of single words. Which part of the (pseudo-)code do you need to adapt?

a) Only map()
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13) Cassandra uses a protocol called _____ to discover location and state information about the other nodes participating in a Cassandra cluster.

a) Key-value
b) Memtable
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14) What is eventual consistency?

a) At any time, the system is linearizable
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SLR-GF-305

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Bigdata Analytics (197043805)

Day & Date: Wednesday 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt any three of the following questions. **12**

a) How is traditional Business Intelligence (BI) environment different from the Big data environment?
b) Distinguish SQL and NoSQL.
c) Explain In-Memory Analytics and In-Database processing?
d) Demonstrate Anatomy of File-read operation in Hadoop with diagram.
e) What are the four modules that make up the Apache Hadoop framework.

Q.3 Attempt any one. **08**

a) With diagram explain the Hadoop ecosystem in detail
b) Compare Analytics 1.0, 2.0 and 3.0.

Q.4 What is Big Data Analytics? Explain all the characteristics of Big Data. **08**

Section – II

Q.5 Attempt any three of the following questions. **12**

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a) FOREACH
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Q.6 Attempt any one of the following questions. **08**

a) Explain replication, auto sharding, updating information In-place and implementation of cursor in MongoDB

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Q.7 Draw the architecture of Hive and explain its components. **08**

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Bigdata Analytics (197043805)

Day & Date: Wednesday 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The number of maps in MapReduce is usually driven by the total size of _____.
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c) Pig d) Hive

7) The interactive mode of Pig is _____.
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c) GRUNT d) CDBSH

8) Hive is used to query _____ data built on top of hadoop.
a) Unstructured data b) Structured data
c) Semi-structured d) Any type of data

9) Apache Pig is _____.
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Statement 1: The Job Tracker is hosted inside the master and it receives the job execution request from the client.
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SLR-GF-305

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Bigdata Analytics (197043805)

Day & Date: Wednesday 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any three of the following questions. **12**

a) How is traditional Business Intelligence (BI) environment different from the Big data environment?
b) Distinguish SQL and NoSQL.
c) Explain In-Memory Analytics and In-Database processing?
d) Demonstrate Anatomy of File-read operation in Hadoop with diagram.
e) What are the four modules that make up the Apache Hadoop framework.

Q.3 Attempt any one. **08**

a) With diagram explain the Hadoop ecosystem in detail
b) Compare Analytics 1.0, 2.0 and 3.0.

Q.4 What is Big Data Analytics? Explain all the characteristics of Big Data. **08**

Section – II

Q.5 Attempt any three of the following questions. **12**

a) Write queries for the following in MongoDB:
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a) FOREACH
b) ORDER BY
c) SPLIT
d) LIMIT

Q.6 Attempt any one of the following questions. **08**

a) Explain replication, auto sharding, updating information In-place and implementation of cursor in MongoDB

b) What is the concept of hinted handoffs, tunable consistency and replication factor and user defined data type in Cassandra?

Q.7 Draw the architecture of Hive and explain its components. **08**

SLR-GF-306

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Natural Language Programming (197043806)

Day & Date: Wednesday 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which is a collection of documents?
a) Corpus b) Ngrams
c) Tokenization d) Stopwords

2) Tick whichever is an application Named Entity Recognition (NER).
a) Efficient Search Algorithms
b) Analysis the rude behavior from customer feedback
c) Classifying content for NEWS providers
d) All of above

3) In a word cloud, what does the size correspond to?
a) Importance b) Frequency
c) Length d) Relation

4) Which function would you use to retrieve the list of unique words?
a) fit_tranform() b) CountVectorizer()
c) get_feature_names() d) download()

5) What is Morphological Segmentation?
a) Does Discourse Analysis
b) Separate words into individual morphemes and identify the class of the morphemes
c) Is an extension of propositional logic
d) None of the mentioned

6) Identify Semantic role or participant - **patient** from the below sentence.
"The boy kicked the ball"
a) the boy b) kicked
c) the d) the ball

7) Which are python libraries used in NLP?
a) pandas b) spacy
c) nltk d) All of above

8) Which step is the process of breaking down documents into smaller units of analysis?

a) Ngrams
b) Tokenization
c) Stopwords
d) Corpus

9) WordNet refers to _____.

a) A machine-readable thesaurus, and aspects of a dictionary
b) A hierarchically organized lexical database
c) Is a lexical database of semantic relations between words
d) All of above

10) Which are included in named entity recognition?

a) Currency
b) Time and dates
c) Nouns
d) All of above

11) What are the Challenges in Word Sense Disambiguation (WSD)? Tick which is (FALSE) from the statements given below.

a) Completely different algorithm might be needed for different applications
b) to decide the sense of the word because different senses can be very closely related
c) The problem of Inter-judge variance as the WSD systems are generally tested by having their results on a task compared against the task of human beings
d) Words can be easily divided into discrete sub-meanings

12) How do we get from NLP text analysis to stock price correlation?

a) Convert parts of speech to categorical variables
b) Transform some NLP results into features
c) Recognize some named entities
d) All of above

13) NLP can be useful for

a) Automatic Text Summarization
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14) Identify Semantic role or participant - **agent** from the below sentence. “The boy kicked the ball”

a) the boy
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SLR-GF-306

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Natural Language Programming (197043806)

Day & Date: Wednesday 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four **16**
- **a)** Write a note “Ambiguity and Uncertainty in Language."
- **b)** Differentiate between Machine Learning and NLP?
- **c)** Explain different stages in NLP?
- **d)** Explain Word-net Application in Query Expansion?
- **e)** Write a short note on WordNet and Wikitionary.

Q.3 Attempt any one **06**
- **a)** What is Morphology? Explain Finite State Machine Based Morphology with example?
- **b)** Explain Word Sense Disambiguation (WSD) in detail.

Q.4 Explain Semantic Roles with example. **06**

Section – II

Q.5 Attempt any four. **16**
- **a)** Define Parsing? Explain Top-dawn parsing?
- **b)** Explain Sentiment Analysis with example?
- **c)** Write a note on: UNL, Speech Synthesis.
- **d)** What do you mean by Scope Ambiguity and Attachment Ambiguity resolution.
- **e)** Explain Text Entailment with example?

Q.6 Attempt any one **06**
- **a)** Explain HMM in detail?
- **b)** Explain Baum Welch Algorithm?

Q.7 Enlist applications of NLP? Explain Cross Lingual Information Retrieval (CLIR). **06**

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Natural Language Programming (197043806)

Day & Date: Wednesday 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-GF-306

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Natural Language Programming (197043806)

Day & Date: Wednesday 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four **16**
- **a)** Write a note “Ambiguity and Uncertainty in Language."
- **b)** Differentiate between Machine Learning and NLP?
- **c)** Explain different stages in NLP?
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- **e)** Write a short note on WordNet and Wikitionary.

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- **a)** What is Morphology? Explain Finite State Machine Based Morphology with example?
- **b)** Explain Word Sense Disambiguation (WSD) in detail.

Q.4 Explain Semantic Roles with example. **06**

Section – II

Q.5 Attempt any four. **16**
- **a)** Define Parsing? Explain Top-dawn parsing?
- **b)** Explain Sentiment Analysis with example?
- **c)** Write a note on: UNL, Speech Synthesis.
- **d)** What do you mean by Scope Ambiguity and Attachment Ambiguity resolution.
- **e)** Explain Text Entailment with example?

Q.6 Attempt any one **06**
- **a)** Explain HMM in detail?
- **b)** Explain Baum Welch Algorithm?

Q.7 Enlist applications of NLP? Explain Cross Lingual Information Retrieval (CLIR). **06**

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Natural Language Programming (197043806)

Day & Date: Wednesday 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What are the Challenges in Word Sense Disambiguation (WSD)? Tick which is (FALSE) from the statements given below.
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b) to decide the sense of the word because different senses can be very closely related
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6) Tick whichever is an application Named Entity Recognition (NER).
a) Efficient Search Algorithms
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8) Which function would you use to retrieve the list of unique words?
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a) Does Discourse Analysis
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Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Natural Language Programming (197043806)

Day & Date: Wednesday 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four **16**
- **a)** Write a note “Ambiguity and Uncertainty in Language."
- **b)** Differentiate between Machine Learning and NLP?
- **c)** Explain different stages in NLP?
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Q.3 Attempt any one **06**
- **a)** What is Morphology? Explain Finite State Machine Based Morphology with example?
- **b)** Explain Word Sense Disambiguation (WSD) in detail.

Q.4 Explain Semantic Roles with example. **06**

Section – II

Q.5 Attempt any four. **16**
- **a)** Define Parsing? Explain Top-dawn parsing?
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- **d)** What do you mean by Scope Ambiguity and Attachment Ambiguity resolution.
- **e)** Explain Text Entailment with example?

Q.6 Attempt any one **06**
- **a)** Explain HMM in detail?
- **b)** Explain Baum Welch Algorithm?

Q.7 Enlist applications of NLP? Explain Cross Lingual Information Retrieval (CLIR). **06**

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Natural Language Programming (197043806)

Day & Date: Wednesday 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Identify Semantic role or participant - **patient** from the below sentence.
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a) Does Discourse Analysis
b) Separate words into individual morphemes and identify the class of the morphemes
c) Is an extension of propositional logic
d) None of the mentioned

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTAR SCIENCE & ENGINEERING
Natural Language Programming (197043806)

Day & Date: Wednesday 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt any four **16**
- **a)** Write a note “Ambiguity and Uncertainty in Language."
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- **e)** Write a short note on WordNet and Wikitionary.

Q.3 Attempt any one **06**
- **a)** What is Morphology? Explain Finite State Machine Based Morphology with example?
- **b)** Explain Word Sense Disambiguation (WSD) in detail.

Q.4 Explain Semantic Roles with example. **06**

Section – II

Q.5 Attempt any four. **16**
- **a)** Define Parsing? Explain Top-dawn parsing?
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- **c)** Write a note on: UNL, Speech Synthesis.
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- **e)** Explain Text Entailment with example?

Q.6 Attempt any one **06**
- **a)** Explain HMM in detail?
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Q.7 Enlist applications of NLP? Explain Cross Lingual Information Retrieval (CLIR). **06**

SLR-GF-307

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (197043807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which of the following is Cloud Platform by Amazon?
a) Azure b) AWS
c) Cloudera d) All of the mentioned

2) Cloud computing is an abstraction based on the notion of pooling physical resources and presenting them as a _____ resource.
a) real b) virtual
c) cloud d) none of the mentioned

3) Which of the following can be identified as cloud?
a) Web Applications b) Intranet
c) Hadoop d) All of the mentioned

4) An application that provides for transaction overflow in a reservation system is an example of _____.
a) cloud bursting b) cloud provisioning
c) cloud servicing d) all of the mentioned

5) In which of the following service models the hardware is virtualized in the cloud?
a) NaaS b) PaaS
c) CaaS d) IaaS

6) Which of the following is an example of a SaaS cloud service?
a) Google Workspace b) Dropbox
c) Salesforce d) All of the above

7) Which of the following is not a property of cloud computing?
a) Virtualization b) Composability
c) Scalability d) all of the mentioned

8) Point out the wrong statement.
a) Cloud services span the gamut of computer applications.
b) The impact of cloud computing on network communication is to discourage the use of open source network protocols in place of proprietary protocol.
c) Atom is a syndication format that allows for HTTP protocols to create and update information.
d) None of the mentioned

9) Which one of the following is not a type of Load Balancer in AWS?
a) Application Load Balancer b) Network Load Balancer
c) Stress Load Balancer d) Classic Load Balancer

10) When you place all your instances on the single hardware to provide low-latency and it is used for high performance applications, the EC2 placement group is called as?
a) Partition Placement Group b) Spread Placement Group
c) Cluster Placement Group d) None of the above

11) Which of the following architectural standards is working with cloud computing industry?
a) Web-application frameworks b) Service-oriented architecture
c) Standardized Web services d) All of the mentioned

12) Which of the following is an edge-storage or content-delivery system that caches data in different physical locations?
a) Amazon Relational Database Service
b) Amazon SimpleDB
c) Amazon Cloudfront
d) Amazon Associates Web Services

13) _____ computing refers to applications and services that run on a distributed network using virtualized resources.
a) Distributed b) Cloud
c) Soft d) Parallel

14) Which of the following cloud concept is related to pooling and sharing of resources?
a) Polymorphism b) Abstraction
c) Virtualization d) none of the mentioned

SLR-GF-307

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (197043807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any three. **12**
- **a)** State and justify the benefits and challenges of Cloud Computing.
- **b)** Illustrate in details all the Cloud service models (IaaS, PaaS & SaaS).
- **c)** Illustrate the role of visualization in cloud computing.
- **d)** State & illustrate the Private Cloud deployment models.

Q.3 Attempt any one. **08**
- **a)** Draw & explain Cloud deployment models (Public, Private, Hybrid and Community Cloud).
- **b)** Extend in detail the designing elastic, highly available, and resilient infrastructure using OpenStack?

Q.4 Draw and illustrate the architecture of Open Stack private cloud model. **08**

Section – II

Q.5 Attempt any three. **12**
- **a)** State & justify the migration paths for cloud.
- **b)** Illustrate the challenges in Cloud Computing in terms of Network Security.
- **c)** State & illustrate the Establishing your Cloud Vision with example.
- **d)** Describe challenges in managing heterogeneous clouds.

Q.6 Attempt any one. **08**
- **a)** Discuss about future technology trends in cloud computing with focus on
  i) Cloud service models
  ii) Cloud deployment models
- **b)** What are the selection criteria for cloud deployment explain the procedure with example?

Q.7 State and explain the issues and risks in migrating to cloud computing. Illustrate how Business intelligence is useful in cloud. **08**

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Cloud Computing (197043807)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

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SLR-GF-307

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (197043807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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Section – I

Q.2 Attempt any three. **12**
- **a)** State and justify the benefits and challenges of Cloud Computing.
- **b)** Illustrate in details all the Cloud service models (IaaS, PaaS & SaaS).
- **c)** Illustrate the role of visualization in cloud computing.
- **d)** State & illustrate the Private Cloud deployment models.

Q.3 Attempt any one. **08**
- **a)** Draw & explain Cloud deployment models (Public, Private, Hybrid and Community Cloud).
- **b)** Extend in detail the designing elastic, highly available, and resilient infrastructure using OpenStack?

Q.4 Draw and illustrate the architecture of Open Stack private cloud model. **08**

Section – II

Q.5 Attempt any three. **12**
- **a)** State & justify the migration paths for cloud.
- **b)** Illustrate the challenges in Cloud Computing in terms of Network Security.
- **c)** State & illustrate the Establishing your Cloud Vision with example.
- **d)** Describe challenges in managing heterogeneous clouds.

Q.6 Attempt any one. **08**
- **a)** Discuss about future technology trends in cloud computing with focus on
  i) Cloud service models
  ii) Cloud deployment models
- **b)** What are the selection criteria for cloud deployment explain the procedure with example?

Q.7 State and explain the issues and risks in migrating to cloud computing. Illustrate how Business intelligence is useful in cloud. **08**

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (197043807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which of the following architectural standards is working with cloud computing industry?
a) Web-application frameworks b) Service-oriented architecture
c) Standardized Web services d) All of the mentioned

2) Which of the following is an edge-storage or content-delivery system that caches data in different physical locations?
a) Amazon Relational Database Service
b) Amazon SimpleDB
c) Amazon Cloudfront
d) Amazon Associates Web Services

3) _____ computing refers to applications and services that run on a distributed network using virtualized resources.
a) Distributed b) Cloud
c) Soft d) Parallel

4) Which of the following cloud concept is related to pooling and sharing of resources?
a) Polymorphism b) Abstraction
c) Virtualization d) none of the mentioned

5) Which of the following is Cloud Platform by Amazon?
a) Azure b) AWS
c) Cloudera d) All of the mentioned

6) Cloud computing is an abstraction based on the notion of pooling physical resources and presenting them as a _____ resource.
a) real b) virtual
c) cloud d) none of the mentioned

7) Which of the following can be identified as cloud?
a) Web Applications b) Intranet
c) Hadoop d) All of the mentioned

8) An application that provides for transaction overflow in a reservation system is an example of _____.

a) cloud bursting
b) cloud provisioning
c) cloud servicing
d) all of the mentioned

9) In which of the following service models the hardware is virtualized in the cloud?

a) NaaS
b) PaaS
c) CaaS
d) IaaS

10) Which of the following is an example of a SaaS cloud service?

a) Google Workspace
b) Dropbox
c) Salesforce
d) All of the above

11) Which of the following is not a property of cloud computing?

a) Virtualization
b) Composability
c) Scalability
d) all of the mentioned

12) Point out the wrong statement.

a) Cloud services span the gamut of computer applications.
b) The impact of cloud computing on network communication is to discourage the use of open source network protocols in place of proprietary protocol.
c) Atom is a syndication format that allows for HTTP protocols to create and update information.
d) None of the mentioned

13) Which one of the following is not a type of Load Balancer in AWS?

a) Application Load Balancer
b) Network Load Balancer
c) Stress Load Balancer
d) Classic Load Balancer

14) When you place all your instances on the single hardware to provide low-latency and it is used for high performance applications, the EC2 placement group is called as?

a) Partition Placement Group
b) Spread Placement Group
c) Cluster Placement Group
d) None of the above

SLR-GF-307

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (197043807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any three. **12**
- **a)** State and justify the benefits and challenges of Cloud Computing.
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- **b)** Extend in detail the designing elastic, highly available, and resilient infrastructure using OpenStack?

Q.4 Draw and illustrate the architecture of Open Stack private cloud model. **08**

Section – II

Q.5 Attempt any three. **12**
- **a)** State & justify the migration paths for cloud.
- **b)** Illustrate the challenges in Cloud Computing in terms of Network Security.
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- **a)** Discuss about future technology trends in cloud computing with focus on
  i) Cloud service models
  ii) Cloud deployment models
- **b)** What are the selection criteria for cloud deployment explain the procedure with example?

Q.7 State and explain the issues and risks in migrating to cloud computing. Illustrate how Business intelligence is useful in cloud. **08**

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (197043807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) Scalability d) all of the mentioned

3) Point out the wrong statement.
a) Cloud services span the gamut of computer applications.
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13) An application that provides for transaction overflow in a reservation system is an example of _____.
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14) In which of the following service models the hardware is virtualized in the cloud?
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b) PaaS
c) CaaS
d) IaaS

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Cloud Computing (197043807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume data wherever necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** State and justify the benefits and challenges of Cloud Computing.
- **b)** Illustrate in details all the Cloud service models (IaaS, PaaS & SaaS).
- **c)** Illustrate the role of visualization in cloud computing.
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Q.4 Draw and illustrate the architecture of Open Stack private cloud model. **08**

Section – II

Q.5 Attempt any three. **12**
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- **b)** Illustrate the challenges in Cloud Computing in terms of Network Security.
- **c)** State & illustrate the Establishing your Cloud Vision with example.
- **d)** Describe challenges in managing heterogeneous clouds.

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- **a)** Discuss about future technology trends in cloud computing with focus on
  i) Cloud service models
  ii) Cloud deployment models
- **b)** What are the selection criteria for cloud deployment explain the procedure with example?

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Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (197043808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The number of nodes in the input layer is 10 and the hidden layer is 5. The maximum number of connections from the input layer to the hidden layer are _____.
a) 50 b) Less than 60
c) More than 50 d) It is an arbitrary value

2) Which of the following functions can be used as an activation function in the output layer if we wish to predict the probabilities of n classes (p1, p2..pk) such that sum of p over all n equals to 1?
a) Softmax b) ReLu
c) Sigmoid d) Tanh

3) _____ computes the output volume by computing dot product between all filters and image patch.
a) Input Layer b) Convolution Layer
c) Activation Function Layer d) Pool Layer

4) What is the difference between the actual output and generated output known as?
a) Output Modulus b) Accuracy
c) Cost d) Output Difference

5) De-noising and Contractive are examples of _____.
a) Auto encoders b) Convolution Neural Networks
c) Recurrent Neural Networks d) None

6) The reuse of a pre-trained model on a new problem is known as _____.
a) Learning rate b) Bias
c) Variance d) Transfer learning

7) Name the component of a Neural Network where the true value of the input is not observed.
a) Hidden Layer b) Gradient Descent
c) Activation Function d) Output Layer

8) What is the best Neural Network Model for Temporal Data?
a) Recurrent Neural Network b) Convolution Neural Networks
c) Temporal Neural Networks d) Multi-Layer Perceptron

9) RELU stands for _____.
a) Rectified Linear Unit b) Rectified Lagrangian Unit
c) Regressive Linear Unit d) Regressive Lagrangian Unit

10) IN Neural Network The input from Input layer is then feed into the _____.
a) Input layer b) Output layer
c) Hidden layer d) None of these

11) The measure of Difference between two probability distributions is known as _____.
a) Probability Difference b) Cost
c) KL Divergence d) Error

12) De-noising and Contractive are examples of _____.
a) Shallow Neural Networks b) Autoencoders
c) Convolution Neural Networks d) Recurrent Neural Networks

13) The rate at which cost changes with respect to weight or bias is called _____.
a) Derivative b) Gradient
c) Rate of Change d) Loss

14) Autoencoders are trained using ____.
a) Feed Forward b) Reconstruction
c) Back Propagation d) They do not require Training

SLR-GF-308

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (197043808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Write differences between LOOCV and K fold cross validation.
b) Explain the term validation.
c) Assume a simple deep learning model with 3 neurons and inputs = 1, 2, 3 The weights to the input neurons are 7, 8 and 9 respectively. Assume the activation function is a linear constant value of 2. calculate the output?
d) Describe Gradient based Learning.
e) Write a short note on:
i) Early stopping
ii) Dropout

Q.3 Attempt Any One. **06**

a) Explain LSTM in details.
b) Explain CNN in details.

Q.4 Attempt the following. **06**

Explain Relu and sigmoid activation function.

Section – II

Q.5 Attempt Any Four. **16**

a) Explain deep feed forward network.
b) Explain Metric Learning.
c) Write a short note on ImageNet.
d) Explain Siamese Networks.
e) Explain the use of auto encoder in dimensionality reduction & classification.

Q.6 Attempt Any One. **06**

a) Define Transfer Learning. Explain in detail.
b) Explain RMS Prop Deep Learning Optimizer for RNNs.

Q.7 Attempt the following. **06**

Explain case study - Handwritten digit recognition using deep learning.

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (197043808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What is the best Neural Network Model for Temporal Data?
a) Recurrent Neural Network b) Convolution Neural Networks
c) Temporal Neural Networks d) Multi-Layer Perceptron

2) RELU stands for _____.
a) Rectified Linear Unit b) Rectified Lagrangian Unit
c) Regressive Linear Unit d) Regressive Lagrangian Unit

3) IN Neural Network The input from Input layer is then feed into the _____.
a) Input layer b) Output layer
c) Hidden layer d) None of these

4) The measure of Difference between two probability distributions is known as _____.
a) Probability Difference b) Cost
c) KL Divergence d) Error

5) De-noising and Contractive are examples of _____.
a) Shallow Neural Networks b) Autoencoders
c) Convolution Neural Networks d) Recurrent Neural Networks

6) The rate at which cost changes with respect to weight or bias is called _____.
a) Derivative b) Gradient
c) Rate of Change d) Loss

7) Autoencoders are trained using ____.
a) Feed Forward b) Reconstruction
c) Back Propagation d) They do not require Training

8) The number of nodes in the input layer is 10 and the hidden layer is 5. The maximum number of connections from the input layer to the hidden layer are _____.
a) 50 b) Less than 60
c) More than 50 d) It is an arbitrary value

9) Which of the following functions can be used as an activation function in the output layer if we wish to predict the probabilities of n classes (p1, p2..pk) such that sum of p over all n equals to 1?
a) Softmax b) ReLu
c) Sigmoid d) Tanh

10) _____ computes the output volume by computing dot product between all filters and image patch.
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11) What is the difference between the actual output and generated output known as?
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12) De-noising and Contractive are examples of _____.
a) Auto encoders b) Convolution Neural Networks
c) Recurrent Neural Networks d) None

13) The reuse of a pre-trained model on a new problem is known as _____.
a) Learning rate b) Bias
c) Variance d) Transfer learning

14) Name the component of a Neural Network where the true value of the input is not observed.
a) Hidden Layer b) Gradient Descent
c) Activation Function d) Output Layer

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Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (197043808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
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Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt Any Four. **16**

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c) Assume a simple deep learning model with 3 neurons and inputs = 1, 2, 3 The weights to the input neurons are 7, 8 and 9 respectively. Assume the activation function is a linear constant value of 2. calculate the output?
d) Describe Gradient based Learning.
e) Write a short note on:
i) Early stopping
ii) Dropout

Q.3 Attempt Any One. **06**

a) Explain LSTM in details.
b) Explain CNN in details.

Q.4 Attempt the following. **06**

Explain Relu and sigmoid activation function.

Section – II

Q.5 Attempt Any Four. **16**

a) Explain deep feed forward network.
b) Explain Metric Learning.
c) Write a short note on ImageNet.
d) Explain Siamese Networks.
e) Explain the use of auto encoder in dimensionality reduction & classification.

Q.6 Attempt Any One. **06**

a) Define Transfer Learning. Explain in detail.
b) Explain RMS Prop Deep Learning Optimizer for RNNs.

Q.7 Attempt the following. **06**

Explain case study - Handwritten digit recognition using deep learning.

SLR-GF-308

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (197043808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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a) Shallow Neural Networks b) Autoencoders
c) Convolution Neural Networks d) Recurrent Neural Networks

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SLR-GF-308

Seat No.		Set	R

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COMPUTER SCIENCE AND ENGINEERING
Deep Learning (197043808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
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Section – I

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Section – II

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SLR-GF-308

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (197043808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
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SLR-GF-308

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Deep Learning (197043808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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Section – I

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e) Write a short note on:
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ii) Dropout

Q.3 Attempt Any One. **06**

a) Explain LSTM in details.
b) Explain CNN in details.

Q.4 Attempt the following. **06**

Explain Relu and sigmoid activation function.

Section – II

Q.5 Attempt Any Four. **16**

a) Explain deep feed forward network.
b) Explain Metric Learning.
c) Write a short note on ImageNet.
d) Explain Siamese Networks.
e) Explain the use of auto encoder in dimensionality reduction & classification.

Q.6 Attempt Any One. **06**

a) Define Transfer Learning. Explain in detail.
b) Explain RMS Prop Deep Learning Optimizer for RNNs.

Q.7 Attempt the following. **06**

Explain case study - Handwritten digit recognition using deep learning.

SLR-GF-309

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electromagnetic Field Theory (BTN06501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The Value of unit vector is _____.
a) 0 b) -1
c) 1 d) 2

2) Total flux through a closed surface held in magnetic field is _____.
a) Infinity b) Zero
c) Unity d) None of these

3) According to Ampere's Circuital Law _____.
a) $\int Hdl = I$ b) $\int Hdl = lenc$
c) $\int Hdl = \int(\nabla XH)ds$ d) $\nabla XE = -\partial B/\partial t$

4) Identify which of the following is the unit of Electric flux density _____.
a) $\mathrm{C/m^3}$ b) Volt
c) $\mathrm{V/m}$ d) $\mathrm{C/m^2}$

5) For a lossy dielectric medium _____.
a) $\sigma = 0$ b) $\sigma \neq 0$
c) $\sigma = 1$ d) None of these

6) Which of following is true?
a) $\nabla . D = 0$ b) $\nabla . B = 0$
c) $\nabla \times D = \rho V$ d) $\nabla \times B = 0$

7) Wave speed in terms of frequency f and wavelength λ is expressed as _____.
a) f/λ b) λ/f
c) λf d) $(\lambda + f)$

8) Maxwell equations shelter on _____.
a) Faradays law b) Gauss law
c) Amperes law d) All of these

9) The β is known as _____.
a) Velocity constant b) Phase constant
c) Absolute constant d) None

10) Energy stored in Electric field is _____.

a) $\frac{1}{2} \in E$ b) $\frac{1}{4} \in E^2$

c) $\frac{1}{2} \in E^2$ d) All of the above

11) Identify the Correct relation _____

a) $\bar{T} = \bar{m} \times \bar{B}$ b) $\bar{T} = \bar{m}.\bar{B}$

c) $\bar{T} = \frac{m}{B}$ d) None

12) A transmission line whose characteristic resistance is pure resistance must be _____.

a) Lossless line b) not a distortion line

c) lossless & distortion less d) All of the above

13) Identify the correct Statement.

a) R & L are series elements b) G & C are shunt elements

c) Parameters are distributed d) All of the above

14) The ratio of conduction current density to the displacement current density is _____.

a) $\sigma/j\omega\epsilon$ b) $j6/\omega\epsilon$

c) $\sigma\omega/j\epsilon$ d) None of these

Seat No.		Set	P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electromagnetic Field Theory (BTN06501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR **16**

a) If $\bar{D} = (2Y^2 + Z)\bar{a}_x + (4XY)\bar{a}_y + X\bar{a}_z\ (c/m^2)$ find.
- i) Volume charge density at $(-1, 0, 3)$
- ii) Flux through cube defined by $0 \leq X, Y, Z \leq 1$
- iii) Total Charge enclosed by the cube.

b) Convert following points specified in cylindrical into Cartesian co-ordinate.
- i) $\left(2, \frac{5\pi}{3}, -2\right)$
- ii) $(4, \frac{\pi}{6}, 1)$

c) Find Electric field intensity at point $P_2(0,1,2)$ due to point charge Q_1 = 300nc located at P_1 (2,0,3) in free space.

d) State & explain Biot-Savart law.

e) Prove that $\bar{E} = -\nabla V$

Q.3 Attempt any TWO. **12**

a) Verify stokes theorem for the field $\bar{H} = 6xy\ \bar{a}_x - 3y^2\ \bar{a}_y$ & the rectangular path around the region, $2 \leq X \leq 5, -1 \leq Y \leq 1, Z = 0$. Let the positive direction of ds be $\bar{a}_z$

b) State Gauss law & derive any two applications of Gauss law.

c) What is Electric dipole? Derive an expression for $\bar{E}$ due to dipole.

Section – II

Q.4 Attempt any FOUR. **16**

a) Explain with suitable derivations, Maxwell equations of Harmonically Varying Fields.

b) Prove that $\bar{P} = \bar{E} \times \bar{H}$

c) Lossless transmission line of 50Ω is having V_{max} = 2.5 V, V_{min} = 1 V when terminated by unknown load. Find VSWR, Reflection Coefficient & Load impedance.

d) Write Short note on: Skin effect

e) Define Transmission line & Explain Primary constant of transmission lines.

Q.5 Attempt any TWO. **12**

a) State & derive Poynting Theorem.

b) Calculate the intrinsic impedance, Propagation Constant & Wave Velocity for conducting medium in which σ = 58 Ms/m, μ_r = 1 at frequency f = 100 MHz.

c) Explain Smith Chart in detail with proper diagram.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electromagnetic Field Theory (BTN06501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Maxwell equations shelter on _____.
a) Faradays law b) Gauss law
c) Amperes law d) All of these

2) The β is known as _____.
a) Velocity constant b) Phase constant
c) Absolute constant d) None

3) Energy stored in Electric field is _____.
a) $\frac{1}{2} \in E$ b) $\frac{1}{4} \in E^2$
c) $\frac{1}{2} \in E^2$ d) All of the above

4) Identify the Correct relation _____
a) $\bar{T} = \bar{m} \times \bar{B}$ b) $\bar{T} = \bar{m}.\bar{B}$
c) $\bar{T} = \frac{m}{B}$ d) None

5) A transmission line whose characteristic resistance is pure resistance must be _____.
a) Lossless line b) not a distortion line
c) lossless & distortion less d) All of the above

6) Identify the correct Statement.
a) R & L are series elements b) G & C are shunt elements
c) Parameters are distributed d) All of the above

7) The ratio of conduction current density to the displacement current density is _____.
a) $\sigma/j\omega\epsilon$ b) $j6/\omega\epsilon$
c) $\sigma\omega/j\epsilon$ d) None of these

8) The Value of unit vector is _____.
a) 0 b) -1
c) 1 d) 2

9) Total flux through a closed surface held in magnetic field is _____.
a) Infinity b) Zero
c) Unity d) None of these

10) According to Ampere's Circuital Law _____.

a) $\int Hdl = I$ b) $\int Hdl = lenc$

c) $\int Hdl = \int (\nabla XH) ds$ d) $\nabla XE = -\partial B/\partial t$

11) Identify which of the following is the unit of Electric flux density _____.

a) $\mathrm{C/m^3}$ b) Volt

c) $\mathrm{V/m}$ d) $\mathrm{C/m^2}$

12) For a lossy dielectric medium _____.

a) $\sigma = 0$ b) $\sigma \neq 0$

c) $\sigma = 1$ d) None of these

13) Which of following is true?

a) $\nabla . D = 0$ b) $\nabla . B = 0$

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14) Wave speed in terms of frequency f and wavelength λ is expressed as _____.

a) f/λ b) λ/f

c) λf d) $(\lambda + f)$

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electromagnetic Field Theory (BTN06501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR **16**

a) If $\bar{D} = (2Y^2 + Z)\bar{a}_x + (4XY)\bar{a}_y + X\bar{a}_z\ (c/m^2)$ find.
i) Volume charge density at $(-1, 0, 3)$
ii) Flux through cube defined by $0 \leq X, Y, Z \leq 1$
iii) Total Charge enclosed by the cube.

b) Convert following points specified in cylindrical into Cartesian co-ordinate.
i) $\left(2, \frac{5\pi}{3}, -2\right)$
ii) $(4, \frac{\pi}{6}, 1)$

c) Find Electric field intensity at point $P_2(0,1,2)$ due to point charge Q_1 = 300nc located at P_1 (2,0,3) in free space.

d) State & explain Biot-Savart law.

e) Prove that $\bar{E} = -\nabla V$

Q.3 Attempt any TWO. **12**

a) Verify stokes theorem for the field $\bar{H} = 6xy\ \bar{a}_x - 3y^2\ \bar{a}_y$ & the rectangular path around the region, $2 \leq X \leq 5, -1 \leq Y \leq 1, Z = 0$. Let the positive direction of ds be $\bar{a}_z$

b) State Gauss law & derive any two applications of Gauss law.

c) What is Electric dipole? Derive an expression for $\bar{E}$ due to dipole.

Section – II

Q.4 Attempt any FOUR. **16**

a) Explain with suitable derivations, Maxwell equations of Harmonically Varying Fields.

b) Prove that $\bar{P} = \bar{E} \times \bar{H}$

c) Lossless transmission line of 50Ω is having V_{max} = 2.5 V, V_{min} = 1 V when terminated by unknown load. Find VSWR, Reflection Coefficient & Load impedance.

d) Write Short note on: Skin effect

e) Define Transmission line & Explain Primary constant of transmission lines.

Q.5 Attempt any TWO. **12**

a) State & derive Poynting Theorem.

b) Calculate the intrinsic impedance, Propagation Constant & Wave Velocity for conducting medium in which σ = 58 Ms/m, μ_r = 1 at frequency f = 100 MHz.

c) Explain Smith Chart in detail with proper diagram.

Seat No.		Set	R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electromagnetic Field Theory (BTN06501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Identify the Correct relation _____
a) $\bar{T} = \bar{m} \times \bar{B}$ b) $\bar{T} = \bar{m}.\bar{B}$
c) $\bar{T} = \frac{m}{B}$ d) None

2) A transmission line whose characteristic resistance is pure resistance must be _____.
a) Lossless line b) not a distortion line
c) lossless & distortion less d) All of the above

3) Identify the correct Statement.
a) R & L are series elements b) G & C are shunt elements
c) Parameters are distributed d) All of the above

4) The ratio of conduction current density to the displacement current density is _____.
a) $\sigma/j\omega\epsilon$ b) $j6/\omega\epsilon$
c) $\sigma\omega/j\epsilon$ d) None of these

5) The Value of unit vector is _____.
a) 0 b) -1
c) 1 d) 2

6) Total flux through a closed surface held in magnetic field is _____.
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7) According to Ampere's Circuital Law _____.
a) $\int Hdl = I$ b) $\int Hdl = lenc$
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8) Identify which of the following is the unit of Electric flux density _____.
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13) The β is known as _____.

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a) $\frac{1}{2} \in E$ b) $\frac{1}{4} \in E^2$

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Seat No.		Set	R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electromagnetic Field Theory (BTN06501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any FOUR **16**

a) If $\bar{D} = (2Y^2 + Z)\bar{a}_x + (4XY)\bar{a}_y + X\bar{a}_z\ (c/m^2)$ find.
- i) Volume charge density at $(-1, 0, 3)$
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d) State & explain Biot-Savart law.

e) Prove that $\bar{E} = -\nabla V$

Q.3 Attempt any TWO. **12**

a) Verify stokes theorem for the field $\bar{H} = 6xy\ \bar{a}_x - 3y^2\ \bar{a}_y$ & the rectangular path around the region, $2 \leq X \leq 5, -1 \leq Y \leq 1, Z = 0$. Let the positive direction of ds be $\bar{a}_z$

b) State Gauss law & derive any two applications of Gauss law.

c) What is Electric dipole? Derive an expression for $\bar{E}$ due to dipole.

Section – II

Q.4 Attempt any FOUR. **16**

a) Explain with suitable derivations, Maxwell equations of Harmonically Varying Fields.

b) Prove that $\bar{P} = \bar{E} \times \bar{H}$

c) Lossless transmission line of 50Ω is having V_{max} = 2.5 V, V_{min} = 1 V when terminated by unknown load. Find VSWR, Reflection Coefficient & Load impedance.

d) Write Short note on: Skin effect

e) Define Transmission line & Explain Primary constant of transmission lines.

Q.5 Attempt any TWO. **12**

a) State & derive Poynting Theorem.

b) Calculate the intrinsic impedance, Propagation Constant & Wave Velocity for conducting medium in which σ = 58 Ms/m, μ_r = 1 at frequency f = 100 MHz.

c) Explain Smith Chart in detail with proper diagram.

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electromagnetic Field Theory (BTN06501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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7) A transmission line whose characteristic resistance is pure resistance must be _____.
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8) Identify the correct Statement.
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10) The Value of unit vector is _____.

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11) Total flux through a closed surface held in magnetic field is _____.

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13) Identify which of the following is the unit of Electric flux density _____.

a) $\mathrm{C/m^3}$ b) Volt

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14) For a lossy dielectric medium _____.

a) $\sigma = 0$ b) $\sigma \neq 0$

c) $\sigma = 1$ d) None of these

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electromagnetic Field Theory (BTN06501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR **16**

a) If $\bar{D} = (2Y^2 + Z)\bar{a}_x + (4XY)\bar{a}_y + X\bar{a}_z\ (c/m^2)$ find.
- i) Volume charge density at $(-1, 0, 3)$
- ii) Flux through cube defined by $0 \leq X, Y, Z \leq 1$
- iii) Total Charge enclosed by the cube.

b) Convert following points specified in cylindrical into Cartesian co-ordinate.
- i) $\left(2, \frac{5\pi}{3}, -2\right)$
- ii) $(4, \frac{\pi}{6}, 1)$

c) Find Electric field intensity at point $P_2(0,1,2)$ due to point charge Q_1 = 300nc located at P_1 (2,0,3) in free space.

d) State & explain Biot-Savart law.

e) Prove that $\bar{E} = -\nabla V$

Q.3 Attempt any TWO. **12**

a) Verify stokes theorem for the field $\bar{H} = 6xy\ \bar{a}_x - 3y^2\ \bar{a}_y$ & the rectangular path around the region, $2 \leq X \leq 5, -1 \leq Y \leq 1, Z = 0$. Let the positive direction of ds be $\bar{a}_z$

b) State Gauss law & derive any two applications of Gauss law.

c) What is Electric dipole? Derive an expression for $\bar{E}$ due to dipole.

Section – II

Q.4 Attempt any FOUR. **16**

a) Explain with suitable derivations, Maxwell equations of Harmonically Varying Fields.

b) Prove that $\bar{P} = \bar{E} \times \bar{H}$

c) Lossless transmission line of 50Ω is having V_{max} = 2.5 V, V_{min} = 1 V when terminated by unknown load. Find VSWR, Reflection Coefficient & Load impedance.

d) Write Short note on: Skin effect

e) Define Transmission line & Explain Primary constant of transmission lines.

Q.5 Attempt any TWO. **12**

a) State & derive Poynting Theorem.

b) Calculate the intrinsic impedance, Propagation Constant & Wave Velocity for conducting medium in which σ = 58 Ms/m, μ_r = 1 at frequency f = 100 MHz.

c) Explain Smith Chart in detail with proper diagram.

SLR-GF-310

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. Each question carries one mark. **14**

1) 89C51 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

2) 8051 series has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

3) When 8051 wakes up then 0x00 is loaded to which register?
a) PSW b) SP
c) PC d) None of the mentioned

4) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction?
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

5) EA bit is used to _____.
a) enable or disable external interrupts
b) enable or disable internal interrupts
c) enable or disable all the interrupts
d) none of the mentioned

6) How does the controller respond to an occurrence of the interrupt?
a) By Interrupt Service Subroutine
b) By Interrupt Status Subroutine
c) By Interrupt Structure Subroutine
d) By Interrupt System Subroutine

7) How many clock pulses are confined by each machine cycle of Peripheral-Interface Controllers?
a) 4 b) 8
c) 12 d) 16

8) What is the execution speed of instructions in PIC especially while operating at the maximum value of clock rate?
a) 0.1 μs b) 0.2 μs
c) 0.4 μs d) 0.8 μs

9) Which operational feature of PIC allows it to reset especially when the power supply drops the voltage below 4V?
a) Built-in Power-on-reset b) Brown-out reset
c) Both a & b d) None of the above

10) Which timer/s possess an ability to prevent an endless loop hanging condition of PIC along with its own on-chip RC oscillator by contributing to its reliable operation?
a) Power-Up Timer (PWRT)
b) Oscillator Start-Up Timer (OST)
c) Watchdog Timer (WDT)
d) All of the above

11) Which among the CPU registers of PIC 16C6X/7X is not 8-bit wide?
a) Status Register
b) Program Counter Latch (PCLATH) Register
c) Program Counter Low Byte (PCL) Register
d) File Selection Register (FSR)

12) PIC 16F877 Up to _____ of FLASH Program Memory.
a) 8K b) 2K
c) 4K d) 10K

13) In PIC 16F877 RA0/AN0 can also be _____ port.
a) bidirectional b) analog input0
c) none of above d) a and b

14) PIC is a High performance _____ CPU.
a) RISC b) SICS
c) non memory d) memory

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four of the following. **16**

a) Write difference between Microprocessor and Microcontroller in detail.
b) Explain the following Instructions
1) MOVX @ DPTR, A
2) MUL AB
3) RETI
4) XCHA, R0
c) Explain MCS-51 Oscillator and clock Circuit.
d) Explain steps to receive data serially in 8051 and important of RI flag.
e) Explain following Pins if 8051 Microcontroller.
1) ALE/PROG
2) RST
3) XTAL1 and XTAL2
4) PSEN

Q.3 Solve any two of the following. **12**

a) Explain various SFR's in detail.
SCON, PCON, TCON, TMOD, SBUF, IP
b) Draw and explain in detail the interfacing of MCS51 microcontroller with 4x4 Matrix keyboard.
c) Explain with suitable example different addressing modes of 8051.

Section – II

Q.4 Solve any four of the following. **16**

a) What are the features of PIC microcontroller?
b) Draw and explain functional pin diagram of PIC 16F877A.
c) Explain the SFR ADCON0 and ADCON1 Resistor.
d) What is Interrupt? List out low order and high priority interrupts in PIC.
e) Explain input output ports of PIC microcontroller

Q.5 Solve any two of the following. **12**

a) Explain the following instruction.
1) bcf f,b
2) swapf
3) clrw
4) iorlw k
5) rrf f,w
6) incfsz f,w

b) Draw and Explain Program memory and data memory organization related to PIC 16f877A.

c) What are the resistors associated with the operations of the ADC module. What are the functions of ADCON bit?

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. Each question carries one mark. **14**

1) What is the execution speed of instructions in PIC especially while operating at the maximum value of clock rate?
a) 0.1 μs b) 0.2 μs
c) 0.4 μs d) 0.8 μs

2) Which operational feature of PIC allows it to reset especially when the power supply drops the voltage below 4V?
a) Built-in Power-on-reset b) Brown-out reset
c) Both a & b d) None of the above

3) Which timer/s possess an ability to prevent an endless loop hanging condition of PIC along with its own on-chip RC oscillator by contributing to its reliable operation?
a) Power-Up Timer (PWRT)
b) Oscillator Start-Up Timer (OST)
c) Watchdog Timer (WDT)
d) All of the above

4) Which among the CPU registers of PIC 16C6X/7X is not 8-bit wide?
a) Status Register
b) Program Counter Latch (PCLATH) Register
c) Program Counter Low Byte (PCL) Register
d) File Selection Register (FSR)

5) PIC 16F877 Up to _____ of FLASH Program Memory.
a) 8K b) 2K
c) 4K d) 10K

6) In PIC 16F877 RA0/AN0 can also be _____ port.
a) bidirectional b) analog input0
c) none of above d) a and b

7) PIC is a High performance _____ CPU.
a) RISC b) SICS
c) non memory d) memory

8) 89C51 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

9) 8051 series has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

10) When 8051 wakes up then 0x00 is loaded to which register?
a) PSW b) SP
c) PC d) None of the mentioned

11) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction?
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

12) EA bit is used to _____.
a) enable or disable external interrupts
b) enable or disable internal interrupts
c) enable or disable all the interrupts
d) none of the mentioned

13) How does the controller respond to an occurrence of the interrupt?
a) By Interrupt Service Subroutine
b) By Interrupt Status Subroutine
c) By Interrupt Structure Subroutine
d) By Interrupt System Subroutine

14) How many clock pulses are confined by each machine cycle of Peripheral-Interface Controllers?
a) 4 b) 8
c) 12 d) 16

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four of the following. **16**

a) Write difference between Microprocessor and Microcontroller in detail.
b) Explain the following Instructions
1) MOVX @ DPTR, A
2) MUL AB
3) RETI
4) XCHA, R0
c) Explain MCS-51 Oscillator and clock Circuit.
d) Explain steps to receive data serially in 8051 and important of RI flag.
e) Explain following Pins if 8051 Microcontroller.
1) ALE/PROG
2) RST
3) XTAL1 and XTAL2
4) PSEN

Q.3 Solve any two of the following. **12**

a) Explain various SFR's in detail.
SCON, PCON, TCON, TMOD, SBUF, IP
b) Draw and explain in detail the interfacing of MCS51 microcontroller with 4x4 Matrix keyboard.
c) Explain with suitable example different addressing modes of 8051.

Section – II

Q.4 Solve any four of the following. **16**

a) What are the features of PIC microcontroller?
b) Draw and explain functional pin diagram of PIC 16F877A.
c) Explain the SFR ADCON0 and ADCON1 Resistor.
d) What is Interrupt? List out low order and high priority interrupts in PIC.
e) Explain input output ports of PIC microcontroller

Q.5 Solve any two of the following. **12**

a) Explain the following instruction.
1) bcf f,b
2) swapf
3) clrw
4) iorlw k
5) rrf f,w
6) incfsz f,w

b) Draw and Explain Program memory and data memory organization related to PIC 16f877A.

c) What are the resistors associated with the operations of the ADC module. What are the functions of ADCON bit?

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. Each question carries one mark. **14**

1) Which among the CPU registers of PIC 16C6X/7X is not 8-bit wide?
a) Status Register
b) Program Counter Latch (PCLATH) Register
c) Program Counter Low Byte (PCL) Register
d) File Selection Register (FSR)

2) PIC 16F877 Up to _____ of FLASH Program Memory.
a) 8K b) 2K
c) 4K d) 10K

3) In PIC 16F877 RA0/AN0 can also be _____ port.
a) bidirectional b) analog input0
c) none of above d) a and b

4) PIC is a High performance _____ CPU.
a) RISC b) SICS
c) non memory d) memory

5) 89C51 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

6) 8051 series has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

7) When 8051 wakes up then 0x00 is loaded to which register?
a) PSW b) SP
c) PC d) None of the mentioned

8) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction?
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

9) EA bit is used to _____.
a) enable or disable external interrupts
b) enable or disable internal interrupts
c) enable or disable all the interrupts
d) none of the mentioned

10) How does the controller respond to an occurrence of the interrupt?
a) By Interrupt Service Subroutine
b) By Interrupt Status Subroutine
c) By Interrupt Structure Subroutine
d) By Interrupt System Subroutine

11) How many clock pulses are confined by each machine cycle of Peripheral-Interface Controllers?
a) 4 b) 8
c) 12 d) 16

12) What is the execution speed of instructions in PIC especially while operating at the maximum value of clock rate?
a) $0.1\ \mu s$ b) $0.2\ \mu s$
c) $0.4\ \mu s$ d) $0.8\ \mu s$

13) Which operational feature of PIC allows it to reset especially when the power supply drops the voltage below 4V?
a) Built-in Power-on-reset b) Brown-out reset
c) Both a & b d) None of the above

14) Which timer/s possess an ability to prevent an endless loop hanging condition of PIC along with its own on-chip RC oscillator by contributing to its reliable operation?
a) Power-Up Timer (PWRT)
b) Oscillator Start-Up Timer (OST)
c) Watchdog Timer (WDT)
d) All of the above

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four of the following. **16**

a) Write difference between Microprocessor and Microcontroller in detail.
b) Explain the following Instructions
1) MOVX @ DPTR, A
2) MUL AB
3) RETI
4) XCHA, R0
c) Explain MCS-51 Oscillator and clock Circuit.
d) Explain steps to receive data serially in 8051 and important of RI flag.
e) Explain following Pins if 8051 Microcontroller.
1) ALE/PROG
2) RST
3) XTAL1 and XTAL2
4) PSEN

Q.3 Solve any two of the following. **12**

a) Explain various SFR's in detail.
SCON, PCON, TCON, TMOD, SBUF, IP
b) Draw and explain in detail the interfacing of MCS51 microcontroller with 4x4 Matrix keyboard.
c) Explain with suitable example different addressing modes of 8051.

Section – II

Q.4 Solve any four of the following. **16**

a) What are the features of PIC microcontroller?
b) Draw and explain functional pin diagram of PIC 16F877A.
c) Explain the SFR ADCON0 and ADCON1 Resistor.
d) What is Interrupt? List out low order and high priority interrupts in PIC.
e) Explain input output ports of PIC microcontroller

Q.5 Solve any two of the following. **12**

a) Explain the following instruction.
1) bcf f,b
2) swapf
3) clrw
4) iorlw k
5) rrf f,w
6) incfsz f,w

b) Draw and Explain Program memory and data memory organization related to PIC 16f877A.

c) What are the resistors associated with the operations of the ADC module. What are the functions of ADCON bit?

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. Each question carries one mark. **14**

1) How does the controller respond to an occurrence of the interrupt?
a) By Interrupt Service Subroutine
b) By Interrupt Status Subroutine
c) By Interrupt Structure Subroutine
d) By Interrupt System Subroutine

2) How many clock pulses are confined by each machine cycle of Peripheral-Interface Controllers?
a) 4 b) 8
c) 12 d) 16

3) What is the execution speed of instructions in PIC especially while operating at the maximum value of clock rate?
a) 0.1 μs b) 0.2 μs
c) 0.4 μs d) 0.8 μs

4) Which operational feature of PIC allows it to reset especially when the power supply drops the voltage below 4V?
a) Built-in Power-on-reset b) Brown-out reset
c) Both a & b d) None of the above

5) Which timer/s possess an ability to prevent an endless loop hanging condition of PIC along with its own on-chip RC oscillator by contributing to its reliable operation?
a) Power-Up Timer (PWRT)
b) Oscillator Start-Up Timer (OST)
c) Watchdog Timer (WDT)
d) All of the above

6) Which among the CPU registers of PIC 16C6X/7X is not 8-bit wide?
a) Status Register
b) Program Counter Latch (PCLATH) Register
c) Program Counter Low Byte (PCL) Register
d) File Selection Register (FSR)

7) PIC 16F877 Up to _____ of FLASH Program Memory.
a) 8K b) 2K
c) 4K d) 10K

8) In PIC 16F877 RA0/AN0 can also be _____ port.
a) bidirectional b) analog input0
c) none of above d) a and b

9) PIC is a High performance _____ CPU.
a) RISC b) SICS
c) non memory d) memory

10) 89C51 has RAM of _____.
a) 128 bytes b) 256 bytes
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11) 8051 series has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

12) When 8051 wakes up then 0x00 is loaded to which register?
a) PSW b) SP
c) PC d) None of the mentioned

13) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction?
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

14) EA bit is used to _____.
a) enable or disable external interrupts
b) enable or disable internal interrupts
c) enable or disable all the interrupts
d) none of the mentioned

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Microcontrollers and Applications (BTN06502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four of the following. **16**

a) Write difference between Microprocessor and Microcontroller in detail.
b) Explain the following Instructions
1) MOVX @ DPTR, A
2) MUL AB
3) RETI
4) XCHA, R0
c) Explain MCS-51 Oscillator and clock Circuit.
d) Explain steps to receive data serially in 8051 and important of RI flag.
e) Explain following Pins if 8051 Microcontroller.
1) ALE/PROG
2) RST
3) XTAL1 and XTAL2
4) PSEN

Q.3 Solve any two of the following. **12**

a) Explain various SFR's in detail.
SCON, PCON, TCON, TMOD, SBUF, IP
b) Draw and explain in detail the interfacing of MCS51 microcontroller with 4x4 Matrix keyboard.
c) Explain with suitable example different addressing modes of 8051.

Section – II

Q.4 Solve any four of the following. **16**

a) What are the features of PIC microcontroller?
b) Draw and explain functional pin diagram of PIC 16F877A.
c) Explain the SFR ADCON0 and ADCON1 Resistor.
d) What is Interrupt? List out low order and high priority interrupts in PIC.
e) Explain input output ports of PIC microcontroller

Q.5 Solve any two of the following. **12**

a) Explain the following instruction.
1) bcf f,b
2) swapf
3) clrw
4) iorlw k
5) rrf f,w
6) incfsz f,w

b) Draw and Explain Program memory and data memory organization related to PIC 16f877A.

c) What are the resistors associated with the operations of the ADC module. What are the functions of ADCON bit?

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The methods to calculate filtering of long duration sequences is _____.
a) Overlap save b) Overlap add
c) FIR and IIR d) Both a and b

2) Circular convolution of the sequences $x(n) = \{1,4,3\}$ and $h(n) = \{1,2,3\}$ is _____.
a) $\{1,2,3\}$ b) $\{14,15,19\}$
c) $\{19,15,14\}$ d) $\{1,4,3\}$

3) IDFT of $Y(k) = \{6,0,0,0\}$ is _____.
a) $\{1,1,1,1\}$ b) $\{1.5,0,1.5,0\}$
c) $\{0,1.5,0,1.5\}$ d) $\{1.5,1.5,1.5,1.5\}$

4) In the direct evaluation $N = 2$, DFT requires _____ complex additions.
a) 6 b) 4
c) 2 d) 1.5

5) DFT is applied to _____.
a) Infinite sequences b) Finite discrete sequence
c) Continuous infinite signals d) Continuous finite signals

6) The circular convolution of two sequences in time domain is equivalent to _____.
a) Summation of DFTs of two sequences
b) Multiplication of DFTs of two sequences
c) Difference of DFTs of two sequences
d) All above

7) The DFT is preferred for _____.
a) Its ability to determine the frequency component of the signal
b) Removal of noise
c) Quantization of signal
d) None

8) IIR digital filters are of the nature _____.
a) non reversive b) non recursive
c) reversive d) recursive

9) FIR filter is also known as _____.
a) Cascade Structure Filter b) Transversal Filter
c) ARMA Filter d) AR Filter

10) The mapping for bilinear transformation is _____.
a) many to many mapping b) many to one mapping
c) one to one mapping d) none of above

11) The mapping for Impulse Invariance Method is _____.
a) many to many mapping b) many to one mapping
c) one to one mapping d) none of above

12) Specify the correct equation for hanning window _____.
a) $\omega_R(n) = 1$
b) $\omega(n) = 0.5 + 0.5\cos\left({}^{2\pi n}/_{N-1}\right)$
c) $\omega(n) = 0.46 + 0.54\cos\left({}^{2\pi n}/_{N-1}\right)$
d) $\omega(n) = 0.54 + 0.46\cos\left({}^{2\pi n}/_{N-1}\right)$

13) Given that H(z) is a causal and stable IIR filter, if z in $H(z)$ is replaced by -z, the resulting filter will be _____.
a) neither stable nor causal b) stable but non causal
c) unstable but causal d) both stable & causal

14) Properties of butter worth low pass filter is given by _____.
a) The poles of butter worth filter lies on a circle
b) The poles of butter worth filter lies outside the a circle
c) The poles of butter worth filter lies inside the a circle
d) Not a real sequence

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Attempt any four **16**

a) Compare FIR and IIR Filters?

b) Perform circular convolution using concentric circle method for $x_1(n) = \{3,5,3,1\}$ and $x_2(n) = \{2,0,0,2\}$

c) Derive the relation between DFT and Z Transform?

d) Compute four point DFT of a sequence $x(n) = \{4,2,3,1\}$ using DIT-FFT algorithm.

e) Find DFT of $x(n) = \{1,5,2,7\}$

Q.3 Attempt any two **12**

a) Find circular convolution of the following sequences $x(n) = \{1,5,3,7\}$; $h(n) = \{1,4,3,5\}$ using DFT and IDFT method.

b) Perform linear convolution of finite duration sequences $h(n) = \{1,2,1\}$ and $x(n) = \{1, 2, -1, -3, 0, 2, 5, 3, 2, 5, 2, 1\}$ by overlap save method.

c) Obtain the IDFT $x(n)$ using DIF FFT algorithm for

$X(k) = \{6, -0.7071 - 1.7071j, 1 - 1j, 0.7071 + 0.2929j, 0, 0.7071 - 0.2929j,$
$1 + j, -0.7071 + 1.7071j\}$

Section – II

Q.4 Attempt any four **16**

a) Realize the IIR system function cascade form

$$H(z) = \frac{1}{(1 + az^{-1})(1 - bz^{-1})}$$

b) Determine the order of low pass Butterworth filter that has a 3 dB attenuation at 500 Hz and an attenuation of 40 dB at 1000 Hz?

c) Sketch the direct form I, II realization for the system function given by

$$H(z) = \frac{1 - 0.6z^{-1} + 1.2z^{-2}}{1 + 0.15z^{-1} - 0.64z^{-2}}$$

d) What is warping effect? What is its effect on magnitude and phase response?

e) Explain the application of DSP in audio Processing?

Q.5 Attempt any two **12**

a) Design an ideal high pass filter with a frequency response.

$Hd(e^{j\omega}) = 1$ for $\frac{\pi}{4} \leq |\omega| \leq \pi$

$= 0$ for $|\omega| \leq \frac{\pi}{4}$

Find the values of $h(n)$ for $N = 11, H(z)$ and $H^l(z)$

b) Apply bilinear transformation to $H(s) = \frac{2}{(s+1)(s+2)}$ with $T = 1$ Sec find $H(z)$.

c) Apply impulse invariant method and find $H(z)$ for $H(s) = \frac{10}{S^2+7s+10}$ for $T = 0.2\ Sec$

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) IIR digital filters are of the nature _____.
a) non reversive b) non recursive
c) reversive d) recursive

2) FIR filter is also known as _____.
a) Cascade Structure Filter b) Transversal Filter
c) ARMA Filter d) AR Filter

3) The mapping for bilinear transformation is _____.
a) many to many mapping b) many to one mapping
c) one to one mapping d) none of above

4) The mapping for Impulse Invariance Method is _____.
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5) Specify the correct equation for hanning window _____.
a) $\omega_R(n) = 1$
b) $\omega(n) = 0.5 + 0.5\cos\left({}^{2\pi n}/_{N-1}\right)$
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6) Given that H(z) is a causal and stable IIR filter, if z in $H(z)$ is replaced by -z, the resulting filter will be _____.
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c) unstable but causal d) both stable & causal

7) Properties of butter worth low pass filter is given by _____.
a) The poles of butter worth filter lies on a circle
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8) The methods to calculate filtering of long duration sequences is _____.
a) Overlap save
b) Overlap add
c) FIR and IIR
d) Both a and b

9) Circular convolution of the sequences $x(n) = \{1,4,3\}$ and $h(n) = \{1,2,3\}$ is _____.
a) $\{1,2,3\}$
b) $\{14,15,19\}$
c) $\{19,15,14\}$
d) $\{1,4,3\}$

10) IDFT of $Y(k) = \{6, 0, 0, 0\}$ is _____.
a) $\{1, 1, 1, 1\}$
b) $\{1.5, 0, 1.5, 0\}$
c) $\{0, 1.5, 0, 1.5\}$
d) $\{1.5, 1.5, 1.5, 1.5\}$

11) In the direct evaluation $N = 2$, DFT requires _____ complex additions.
a) 6
b) 4
c) 2
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12) DFT is applied to _____.
a) Infinite sequences
b) Finite discrete sequence
c) Continuous infinite signals
d) Continuous finite signals

13) The circular convolution of two sequences in time domain is equivalent to _____.
a) Summation of DFTs of two sequences
b) Multiplication of DFTs of two sequences
c) Difference of DFTs of two sequences
d) All above

14) The DFT is preferred for _____.
a) Its ability to determine the frequency component of the signal
b) Removal of noise
c) Quantization of signal
d) None

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section –I

Q.2 Attempt any four **16**

a) Compare FIR and IIR Filters?

b) Perform circular convolution using concentric circle method for $x_1(n) = \{3,5,3,1\}$ and $x_2(n) = \{2,0,0,2\}$

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e) Find DFT of $x(n) = \{1,5,2,7\}$

Q.3 Attempt any two **12**

a) Find circular convolution of the following sequences $x(n) = \{1,5,3,7\}$; $h(n) = \{1,4,3,5\}$ using DFT and IDFT method.

b) Perform linear convolution of finite duration sequences $h(n) = \{1,2,1\}$ and $x(n) = \{1, 2, -1, -3, 0, 2, 5, 3, 2, 5, 2, 1\}$ by overlap save method.

c) Obtain the IDFT $x(n)$ using DIF FFT algorithm for

$X(k) = \{6, -0.7071 - 1.7071j, 1 - 1j, 0.7071 + 0.2929j, 0, 0.7071 - 0.2929j, 1 + j, -0.7071 + 1.7071j\}$

Section – II

Q.4 Attempt any four **16**

a) Realize the IIR system function cascade form

$$H(z) = \frac{1}{(1 + az^{-1})(1 - bz^{-1})}$$

b) Determine the order of low pass Butterworth filter that has a 3 dB attenuation at 500 Hz and an attenuation of 40 dB at 1000 Hz?

c) Sketch the direct form I, II realization for the system function given by

$$H(z) = \frac{1 - 0.6z^{-1} + 1.2z^{-2}}{1 + 0.15z^{-1} - 0.64z^{-2}}$$

d) What is warping effect? What is its effect on magnitude and phase response?

e) Explain the application of DSP in audio Processing?

Q.5 Attempt any two **12**

a) Design an ideal high pass filter with a frequency response.

$Hd(e^{j\omega}) = 1$ for $\frac{\pi}{4} \leq |\omega| \leq \pi$

$= 0$ for $|\omega| \leq \frac{\pi}{4}$

Find the values of $h(n)$ for $N = 11, H(z)$ and $H^l(z)$

b) Apply bilinear transformation to $H(s) = \frac{2}{(s+1)(s+2)}$ with $T = 1$ Sec find $H(z)$.

c) Apply impulse invariant method and find $H(z)$ for $H(s) = \frac{10}{S^2+7s+10}$ for $T = 0.2\ Sec$

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The mapping for Impulse Invariance Method is _____.
a) many to many mapping b) many to one mapping
c) one to one mapping d) none of above

2) Specify the correct equation for hanning window _____.
a) $\omega_R(n) = 1$
b) $\omega(n) = 0.5 + 0.5\cos\left({}^{2\pi n}/_{N-1}\right)$
c) $\omega(n) = 0.46 + 0.54\cos\left({}^{2\pi n}/_{N-1}\right)$
d) $\omega(n) = 0.54 + 0.46\cos\left({}^{2\pi n}/_{N-1}\right)$

3) Given that H(z) is a causal and stable IIR filter, if z in $H(z)$ is replaced by -z, the resulting filter will be _____.
a) neither stable nor causal b) stable but non causal
c) unstable but causal d) both stable & causal

4) Properties of butter worth low pass filter is given by _____.
a) The poles of butter worth filter lies on a circle
b) The poles of butter worth filter lies outside the a circle
c) The poles of butter worth filter lies inside the a circle
d) Not a real sequence

5) The methods to calculate filtering of long duration sequences is _____.
a) Overlap save b) Overlap add
c) FIR and IIR d) Both a and b

6) Circular convolution of the sequences $x(n) = \{1,4,3\}$ and $h(n) = \{1,2,3\}$ is _____.
a) $\{1,2,3\}$ b) $\{14,15,19\}$
c) $\{19,15,14\}$ d) $\{1,4,3\}$

7) IDFT of $Y(k) = \{6,0,0,0\}$ is _____.
a) $\{1,1,1,1\}$ b) $\{1.5,0,1.5,0\}$
c) $\{0,1.5,0,1.5\}$ d) $\{1.5,1.5,1.5,1.5\}$

8) In the direct evaluation $N = 2$, DFT requires _____ complex additions.
a) 6 b) 4
c) 2 d) 1.5

9) DFT is applied to _____.
a) Infinite sequences b) Finite discrete sequence
c) Continuous infinite signals d) Continuous finite signals

10) The circular convolution of two sequences in time domain is equivalent to _____.
a) Summation of DFTs of two sequences
b) Multiplication of DFTs of two sequences
c) Difference of DFTs of two sequences
d) All above

11) The DFT is preferred for _____.
a) Its ability to determine the frequency component of the signal
b) Removal of noise
c) Quantization of signal
d) None

12) IIR digital filters are of the nature _____.
a) non reversive b) non recursive
c) reversive d) recursive

13) FIR filter is also known as _____.
a) Cascade Structure Filter b) Transversal Filter
c) ARMA Filter d) AR Filter

14) The mapping for bilinear transformation is _____.
a) many to many mapping b) many to one mapping
c) one to one mapping d) none of above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Attempt any four **16**

a) Compare FIR and IIR Filters?

b) Perform circular convolution using concentric circle method for $x_1(n) = \{3,5,3,1\}$ and $x_2(n) = \{2,0,0,2\}$

c) Derive the relation between DFT and Z Transform?

d) Compute four point DFT of a sequence $x(n) = \{4,2,3,1\}$ using DIT-FFT algorithm.

e) Find DFT of $x(n) = \{1,5,2,7\}$

Q.3 Attempt any two **12**

a) Find circular convolution of the following sequences $x(n) = \{1,5,3,7\}$; $h(n) = \{1,4,3,5\}$ using DFT and IDFT method.

b) Perform linear convolution of finite duration sequences $h(n) = \{1,2,1\}$ and $x(n) = \{1, 2, -1, -3, 0, 2, 5, 3, 2, 5, 2, 1\}$ by overlap save method.

c) Obtain the IDFT $x(n)$ using DIF FFT algorithm for

$X(k) = \{6, -0.7071 - 1.7071j, 1 - 1j, 0.7071 + 0.2929j, 0, 0.7071 - 0.2929j,$
$1 + j, -0.7071 + 1.7071j\}$

Section – II

Q.4 Attempt any four **16**

a) Realize the IIR system function cascade form

$$H(z) = \frac{1}{(1 + az^{-1})(1 - bz^{-1})}$$

b) Determine the order of low pass Butterworth filter that has a 3 dB attenuation at 500 Hz and an attenuation of 40 dB at 1000 Hz?

c) Sketch the direct form I, II realization for the system function given by

$$H(z) = \frac{1 - 0.6z^{-1} + 1.2z^{-2}}{1 + 0.15z^{-1} - 0.64z^{-2}}$$

d) What is warping effect? What is its effect on magnitude and phase response?

e) Explain the application of DSP in audio Processing?

Q.5 Attempt any two **12**

a) Design an ideal high pass filter with a frequency response.

$Hd(e^{j\omega}) = 1$ for $\frac{\pi}{4} \leq |\omega| \leq \pi$

$= 0$ for $|\omega| \leq \frac{\pi}{4}$

Find the values of $h(n)$ for $N = 11, H(z)$ and $H^l(z)$

b) Apply bilinear transformation to $H(s) = \frac{2}{(s+1)(s+2)}$ with $T = 1$ Sec find $H(z)$.

c) Apply impulse invariant method and find $H(z)$ for $H(s) = \frac{10}{S^2+7s+10}$ for $T = 0.2\ Sec$

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The circular convolution of two sequences in time domain is equivalent to _____.
a) Summation of DFTs of two sequences
b) Multiplication of DFTs of two sequences
c) Difference of DFTs of two sequences
d) All above

2) The DFT is preferred for _____.
a) Its ability to determine the frequency component of the signal
b) Removal of noise
c) Quantization of signal
d) None

3) IIR digital filters are of the nature _____.
a) non reversive b) non recursive
c) reversive d) recursive

4) FIR filter is also known as _____.
a) Cascade Structure Filter b) Transversal Filter
c) ARMA Filter d) AR Filter

5) The mapping for bilinear transformation is _____.
a) many to many mapping b) many to one mapping
c) one to one mapping d) none of above

6) The mapping for Impulse Invariance Method is _____.
a) many to many mapping b) many to one mapping
c) one to one mapping d) none of above

7) Specify the correct equation for hanning window _____.
a) $\omega_R(n) = 1$
b) $\omega(n) = 0.5 + 0.5\cos\left({}^{2\pi n}/_{N-1}\right)$
c) $\omega(n) = 0.46 + 0.54\cos\left({}^{2\pi n}/_{N-1}\right)$
d) $\omega(n) = 0.54 + 0.46\cos\left({}^{2\pi n}/_{N-1}\right)$

8) Given that H(z) is a causal and stable IIR filter, if z in $H(z)$ is replaced by -z, the resulting filter will be _____.

a) neither stable nor causal
b) stable but non causal
c) unstable but causal
d) both stable & causal

9) Properties of butter worth low pass filter is given by _____.

a) The poles of butter worth filter lies on a circle
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c) The poles of butter worth filter lies inside the a circle
d) Not a real sequence

10) The methods to calculate filtering of long duration sequences is _____.

a) Overlap save
b) Overlap add
c) FIR and IIR
d) Both a and b

11) Circular convolution of the sequences $x(n) = \{1,4,3\}$ and $h(n) = \{1,2,3\}$ is _____.

a) $\{1,2,3\}$
b) $\{14,15,19\}$
c) $\{19,15,14\}$
d) $\{1,4,3\}$

12) IDFT of $Y(k) = \{6, 0, 0, 0\}$ is _____.

a) $\{1, 1, 1, 1\}$
b) $\{1.5, 0, 1.5, 0\}$
c) $\{0, 1.5, 0, 1.5\}$
d) $\{1.5, 1.5, 1.5, 1.5\}$

13) In the direct evaluation $N = 2$, DFT requires _____ complex additions.

a) 6
b) 4
c) 2
d) 1.5

14) DFT is applied to _____.

a) Infinite sequences
b) Finite discrete sequence
c) Continuous infinite signals
d) Continuous finite signals

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Digital Signal Processing (BTN06503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Attempt any four **16**

a) Compare FIR and IIR Filters?

b) Perform circular convolution using concentric circle method for $x_1(n) = \{3,5,3,1\}$ and $x_2(n) = \{2,0,0,2\}$

c) Derive the relation between DFT and Z Transform?

d) Compute four point DFT of a sequence $x(n) = \{4,2,3,1\}$ using DIT-FFT algorithm.

e) Find DFT of $x(n) = \{1,5,2,7\}$

Q.3 Attempt any two **12**

a) Find circular convolution of the following sequences $x(n) = \{1,5,3,7\}$; $h(n) = \{1,4,3,5\}$ using DFT and IDFT method.

b) Perform linear convolution of finite duration sequences $h(n) = \{1,2,1\}$ and $x(n) = \{1, 2, -1, -3, 0, 2, 5, 3, 2, 5, 2, 1\}$ by overlap save method.

c) Obtain the IDFT $x(n)$ using DIF FFT algorithm for

$X(k) = \{6, -0.7071 - 1.7071j, 1 - 1j, 0.7071 + 0.2929j, 0, 0.7071 - 0.2929j,$
$1 + j, -0.7071 + 1.7071j\}$

Section – II

Q.4 Attempt any four **16**

a) Realize the IIR system function cascade form

$$H(z) = \frac{1}{(1 + az^{-1})(1 - bz^{-1})}$$

b) Determine the order of low pass Butterworth filter that has a 3 dB attenuation at 500 Hz and an attenuation of 40 dB at 1000 Hz?

c) Sketch the direct form I, II realization for the system function given by

$$H(z) = \frac{1 - 0.6z^{-1} + 1.2z^{-2}}{1 + 0.15z^{-1} - 0.64z^{-2}}$$

d) What is warping effect? What is its effect on magnitude and phase response?

e) Explain the application of DSP in audio Processing?

Q.5 Attempt any two **12**

a) Design an ideal high pass filter with a frequency response.

$Hd(e^{j\omega}) = 1$ for $\frac{\pi}{4} \leq |\omega| \leq \pi$

$= 0$ for $|\omega| \leq \frac{\pi}{4}$

Find the values of $h(n)$ for $N = 11, H(z)$ and $H^l(z)$

b) Apply bilinear transformation to $H(s) = \frac{2}{(s+1)(s+2)}$ with $T = 1$ Sec find $H(z)$.

c) Apply impulse invariant method and find $H(z)$ for $H(s) = \frac{10}{S^2+7s+10}$ for $T = 0.2\ Sec$

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives. **14**

1) Firms under perfectly competitive markets generally are
a) Price makers b) Price givers
c) Price taker d) None of these

2) The effect on sales of an increase in price is a decrease in:
a) the quantity demanded b) demand
c) supply d) the quantity supplied

3) Surplus is a condition of:
a) excess supply b) a deficiency in supply
c) market equilibrium d) excess demand

4) Variable costs are _____.
a) sunk costs
b) multiplies by fixed costs
c) costs that change with the level of production
d) defined as the change in total cost resulting from the production of an additional unit of output.

5) Implicit costs are:
a) Equal to total fixed costs.
b) Comprised entirely of variable costs.
c) "Payments" for self-employed resources.
d) Always greater in the short run than in the long run.

6) If the quantity of a commodity demanded remains unchanged as its price changes, the coefficient of price elasticity of demand is
a) Greater than 1 b) Equal to 1
c) Less than 1 d) Zero

7) Cross elasticity of demand between tea and sugar is
a) Positive b) Zero
c) Infinity d) Negative

8) The elasticity of demand for a product will be higher:
a) The more available are substitutes for that product
b) The more its buyers demand loyalty
c) The more the product is considered a necessity by its buyers
d) All of the above

9) The utility may be defined as:
a) The desire for a commodity
b) The usefulness of a commodity
c) The necessity of a commodity
d) The power of a commodity to satisfy wants

10) Demand for a commodity is elastic when it has:
a) Only one use
b) Uses which cannot be postponed
c) Many uses
d) Uses very essential for the consumer

11) The product under monopolistic competition are
a) Differentiated with close substitute
b) Perfect substitute
c) Differentiated without close substitute
d) Homogeneous

12) Perfect competition is characterized by
a) Large number of buyers and sellers
b) Homogeneous product
c) Free entry and exit of firms
d) All the above

13) In the case of perfect elasticity, the demand curve is
a) Vertical b) Horizontal
c) Flat d) Steep

14) Firms in an oligopoly
a) Are independent of each other's action
b) Can each influence the market price
c) Charge a price equal to marginal revenue
d) All of these

SLR-GF-312

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four questions. **16**

a) Define Managerial Economics. Explain its scope and importance for managerial decisions.
b) Explain the concept of 'Price Elasticity of Demand'.
c) State and explain the law of demand and law of supply.
d) Explain the price - demand relationship with suitable examples.
e) What are determinants of demand? List the various determinants of demand.

Q.3 Attempt any Two questions. **12**

a) "Managerial economics is both Micro and Macro-. Discuss.
b) What is Market Equilibrium. Explain Price ceiling and Price floors.
c) Explain any three types of elasticity of demand.

Section - II

Q.4 Attempt any Four questions: **16**

a) What is Demand Forecasting? Explain its objectives.
b) Explain Linear Regression method of demand forecasting.
c) What is production function? Explain with an example.
d) What is cost function? Explain the cost concepts- TC, AC, MC
e) Explain Monopolistic and Perfect Competition type of market structures.

Q.5 Attempt any Two questions: **12**

a) Explain any two demand forecasting methods in detail.
b) Draw and explain break even analysis curve. What is profit margin of safety.
c) What is Pricing? Explain significance of pricing decisions under perfect competition.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives. **14**

1) The elasticity of demand for a product will be higher:
a) The more available are substitutes for that product
b) The more its buyers demand loyalty
c) The more the product is considered a necessity by its buyers
d) All of the above

2) The utility may be defined as:
a) The desire for a commodity
b) The usefulness of a commodity
c) The necessity of a commodity
d) The power of a commodity to satisfy wants

3) Demand for a commodity is elastic when it has:
a) Only one use
b) Uses which cannot be postponed
c) Many uses
d) Uses very essential for the consumer

4) The product under monopolistic competition are
a) Differentiated with close substitute
b) Perfect substitute
c) Differentiated without close substitute
d) Homogeneous

5) Perfect competition is characterized by
a) Large number of buyers and sellers
b) Homogeneous product
c) Free entry and exit of firms
d) All the above

6) In the case of perfect elasticity, the demand curve is
a) Vertical b) Horizontal
c) Flat d) Steep

7) Firms in an oligopoly
a) Are independent of each other's action
b) Can each influence the market price
c) Charge a price equal to marginal revenue
d) All of these

8) Firms under perfectly competitive markets generally are
a) Price makers
b) Price givers
c) Price taker
d) None of these

9) The effect on sales of an increase in price is a decrease in:
a) the quantity demanded
b) demand
c) supply
d) the quantity supplied

10) Surplus is a condition of:
a) excess supply
b) a deficiency in supply
c) market equilibrium
d) excess demand

11) Variable costs are _____.
a) sunk costs
b) multiplies by fixed costs
c) costs that change with the level of production
d) defined as the change in total cost resulting from the production of an additional unit of output.

12) Implicit costs are:
a) Equal to total fixed costs.
b) Comprised entirely of variable costs.
c) "Payments" for self-employed resources.
d) Always greater in the short run than in the long run.

13) If the quantity of a commodity demanded remains unchanged as its price changes, the coefficient of price elasticity of demand is
a) Greater than 1
b) Equal to 1
c) Less than 1
d) Zero

14) Cross elasticity of demand between tea and sugar is
a) Positive
b) Zero
c) Infinity
d) Negative

SLR-GF-312

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four questions. **16**

a) Define Managerial Economics. Explain its scope and importance for managerial decisions.
b) Explain the concept of 'Price Elasticity of Demand'.
c) State and explain the law of demand and law of supply.
d) Explain the price - demand relationship with suitable examples.
e) What are determinants of demand? List the various determinants of demand.

Q.3 Attempt any Two questions. **12**

a) "Managerial economics is both Micro and Macro-. Discuss.
b) What is Market Equilibrium. Explain Price ceiling and Price floors.
c) Explain any three types of elasticity of demand.

Section - II

Q.4 Attempt any Four questions: **16**

a) What is Demand Forecasting? Explain its objectives.
b) Explain Linear Regression method of demand forecasting.
c) What is production function? Explain with an example.
d) What is cost function? Explain the cost concepts- TC, AC, MC
e) Explain Monopolistic and Perfect Competition type of market structures.

Q.5 Attempt any Two questions: **12**

a) Explain any two demand forecasting methods in detail.
b) Draw and explain break even analysis curve. What is profit margin of safety.
c) What is Pricing? Explain significance of pricing decisions under perfect competition.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives. **14**

1) The product under monopolistic competition are
a) Differentiated with close substitute
b) Perfect substitute
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2) Perfect competition is characterized by
a) Large number of buyers and sellers
b) Homogeneous product
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3) In the case of perfect elasticity, the demand curve is
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d) The power of a commodity to satisfy wants

14) Demand for a commodity is elastic when it has:
a) Only one use
b) Uses which cannot be postponed
c) Many uses
d) Uses very essential for the consumer

SLR-GF-312

Seat No.	

Set R

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four questions. **16**

a) Define Managerial Economics. Explain its scope and importance for managerial decisions.
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d) Explain the price - demand relationship with suitable examples.
e) What are determinants of demand? List the various determinants of demand.

Q.3 Attempt any Two questions. **12**

a) "Managerial economics is both Micro and Macro-. Discuss.
b) What is Market Equilibrium. Explain Price ceiling and Price floors.
c) Explain any three types of elasticity of demand.

Section - II

Q.4 Attempt any Four questions: **16**

a) What is Demand Forecasting? Explain its objectives.
b) Explain Linear Regression method of demand forecasting.
c) What is production function? Explain with an example.
d) What is cost function? Explain the cost concepts- TC, AC, MC
e) Explain Monopolistic and Perfect Competition type of market structures.

Q.5 Attempt any Two questions: **12**

a) Explain any two demand forecasting methods in detail.
b) Draw and explain break even analysis curve. What is profit margin of safety.
c) What is Pricing? Explain significance of pricing decisions under perfect competition.

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives. **14**

1) If the quantity of a commodity demanded remains unchanged as its price changes, the coefficient of price elasticity of demand is
a) Greater than 1 b) Equal to 1
c) Less than 1 d) Zero

2) Cross elasticity of demand between tea and sugar is
a) Positive b) Zero
c) Infinity d) Negative

3) The elasticity of demand for a product will be higher:
a) The more available are substitutes for that product
b) The more its buyers demand loyalty
c) The more the product is considered a necessity by its buyers
d) All of the above

4) The utility may be defined as:
a) The desire for a commodity
b) The usefulness of a commodity
c) The necessity of a commodity
d) The power of a commodity to satisfy wants

5) Demand for a commodity is elastic when it has:
a) Only one use
b) Uses which cannot be postponed
c) Many uses
d) Uses very essential for the consumer

6) The product under monopolistic competition are
a) Differentiated with close substitute
b) Perfect substitute
c) Differentiated without close substitute
d) Homogeneous

7) Perfect competition is characterized by
a) Large number of buyers and sellers
b) Homogeneous product
c) Free entry and exit of firms
d) All the above

8) In the case of perfect elasticity, the demand curve is
a) Vertical b) Horizontal
c) Flat d) Steep

9) Firms in an oligopoly
a) Are independent of each other's action
b) Can each influence the market price
c) Charge a price equal to marginal revenue
d) All of these

10) Firms under perfectly competitive markets generally are
a) Price makers b) Price givers
c) Price taker d) None of these

11) The effect on sales of an increase in price is a decrease in:
a) the quantity demanded b) demand
c) supply d) the quantity supplied

12) Surplus is a condition of:
a) excess supply b) a deficiency in supply
c) market equilibrium d) excess demand

13) Variable costs are _____.
a) sunk costs
b) multiplies by fixed costs
c) costs that change with the level of production
d) defined as the change in total cost resulting from the production of an additional unit of output.

14) Implicit costs are:
a) Equal to total fixed costs.
b) Comprised entirely of variable costs.
c) "Payments" for self-employed resources.
d) Always greater in the short run than in the long run.

SLR-GF-312

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Managerial Economics (BTN06511)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four questions. **16**

a) Define Managerial Economics. Explain its scope and importance for managerial decisions.
b) Explain the concept of 'Price Elasticity of Demand'.
c) State and explain the law of demand and law of supply.
d) Explain the price - demand relationship with suitable examples.
e) What are determinants of demand? List the various determinants of demand.

Q.3 Attempt any Two questions. **12**

a) "Managerial economics is both Micro and Macro-. Discuss.
b) What is Market Equilibrium. Explain Price ceiling and Price floors.
c) Explain any three types of elasticity of demand.

Section - II

Q.4 Attempt any Four questions: **16**

a) What is Demand Forecasting? Explain its objectives.
b) Explain Linear Regression method of demand forecasting.
c) What is production function? Explain with an example.
d) What is cost function? Explain the cost concepts- TC, AC, MC
e) Explain Monopolistic and Perfect Competition type of market structures.

Q.5 Attempt any Two questions: **12**

a) Explain any two demand forecasting methods in detail.
b) Draw and explain break even analysis curve. What is profit margin of safety.
c) What is Pricing? Explain significance of pricing decisions under perfect competition.

SLR-GF-313

Seat No.		Set	P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries two marks.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) Management is about the things done
a) for the people b) with the people
c) through with the people d) none

2) The Gantt chart is used for
a) Tracking project progress
b) Knowing date of project
c) Knowing starting date of project
d) Knowing end date of project

3) Finding right person for right job
a) Coordinating b) Directing
c) Controlling d) staffing

4) Which of following is risk identification approach?
a) Network analysis b) Forward Tracking
c) Checklist d) All

5) What does a Work Breakdown Structure (WBS) "break down?"
a) Project deliverables are broken down into tasks and activities.
b) Project costs are broken down into the departments where they are charged.
c) The structural elements of the project facility and equipment are broken down for inventory and tracking purposes.
d) Don't know

6) An approach that seeks to get top management input first to create an overall project Cost allowances are passed down level-by-level, broken into allocated pieces for each task
a) Top-down Budgeting b) Bottom-Up Budgeting
c) Both d) none

7) Which statement characterizes standard form of a linear programming problem?

a) Constraints are given by inequalities of any type
b) Constraints are given by a set of linear equations
c) Constraints are given only by inequalities of >= type
d) Constraints are given only by inequalities of <= type

8) For solving an assignment problem which method is used

a) Hungarian b) American
c) German d) None

9) When do you perform Risk Identification?

a) At the beginning of a project
b) During project planning
c) During the whole lifetime of a project
d) During project execution

10) Which risk analysis should done first

a) Qualitative b) Quantitative
c) Both d) None

11) Operations Research has the characteristics it is done by a team of _____

a) Scientists b) Mathematicians
c) Academics d) All of the above

12) _____ are the representation of reality.

a) Models b) Phases
c) Both A and B d) None of the above

13) In simplex method, if there is tie between a decision variable and a slack (or surplus) variable _____ should be selected

a) Slack variable b) Surplus variable
c) Decision Solution d) None of the above

14) In graphical representation the bounded region is known as _____ region.

a) Solution b) Basic Solution
c) Feasible Solution d) Optimal

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed & mention it clearly.

Section – I

Q.2 Solve any four **16**

a) Explain Concept & need of project management
b) Explain functions of project planning.
c) Briefly explain about Concurrent Engg,
d) What is Risk, What are its categories?
e) Explain in brief about visualization process of GANTT Chart.

Q.3 Solve any Two **12**

a) Explain stages of project life cycle with chart.
b) Explain with Case study on Work Breakdown structure
c) Define Risk management Explain in detail Risk planning with different stages.

Section – II

Q.4 Solve any four **16**

Note: Question b is compulsory

a) Write in brief on application & advantages of Operational Research.
b) What is Replacement Model, state it's need & Explain Categories of replacement problems.
c) A person wants to decide the constituents of a diet which will fulfill his daily requirements of proteins, fats and Carbohydrates at the minimum cost. The choice is to be made from four different types of foods. The yield per unit of these foods are given in below table

Food type	Yield per unit			Cost per Unit (Rs.)
	Proteins	Fats	Carbohydrates	
1	3	2	6	45
2	4	2	4	40
3	8	7	7	85
4	6	5	4	65
Minimum requirement	800	200	700	

Formulate Linear programming model for the problem

d) Solve the following by Graphical method
Maximize $Z = 6X1 + 8X2$
Subject to $5X1 + 10X2 \leq 60$,
$4X1 + 4X2 \leq 40, X1 \& X2 \geq 0$
Compute the coordinates to plot on the $X1, X2$ Plane

e) Explain Plant Layout Procedure.

Q.5 Solve any two: **12**

Note: Question C is compulsory

a) What are the factors that influence the selection of location for plant?

b) What is Operational Research? Explain in brief the models of Operational Research

c) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. solve assignment problem by using Hungarian method

Sub Assembly	**Supply**			
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Seat No.		Set	Q

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries two marks.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) For solving an assignment problem which method is used
a) Hungarian b) American
c) German d) None

2) When do you perform Risk Identification?
a) At the beginning of a project
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4) Operations Research has the characteristics it is done by a team of _____
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5) _____ are the representation of reality.
a) Models b) Phases
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6) In simplex method, if there is tie between a decision variable and a slack (or surplus) variable _____ should be selected
a) Slack variable b) Surplus variable
c) Decision Solution d) None of the above

7) In graphical representation the bounded region is known as _____ region.
a) Solution b) Basic Solution
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a) Tracking project progress
b) Knowing date of project
c) Knowing starting date of project
d) Knowing end date of project

10) Finding right person for right job
a) Coordinating b) Directing
c) Controlling d) staffing

11) Which of following is risk identification approach?
a) Network analysis b) Forward Tracking
c) Checklist d) All

12) What does a Work Breakdown Structure (WBS) “break down?”
a) Project deliverables are broken down into tasks and activities.
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d) Don’t know

13) An approach that seeks to get top management input first to create an overall project Cost allowances are passed down level-by-level, broken into allocated pieces for each task
a) Top-down Budgeting b) Bottom-Up Budgeting
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14) Which statement characterizes standard form of a linear programming problem?
a) Constraints are given by inequalities of any type
b) Constraints are given by a set of linear equations
c) Constraints are given only by inequalities of >= type
d) Constraints are given only by inequalities of <= type

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed & mention it clearly.

Section – I

Q.2 Solve any four **16**

a) Explain Concept & need of project management
b) Explain functions of project planning.
c) Briefly explain about Concurrent Engg,
d) What is Risk, What are its categories?
e) Explain in brief about visualization process of GANTT Chart.

Q.3 Solve any Two **12**

a) Explain stages of project life cycle with chart.
b) Explain with Case study on Work Breakdown structure
c) Define Risk management Explain in detail Risk planning with different stages.

Section – II

Q.4 Solve any four **16**

Note: Question b is compulsory

a) Write in brief on application & advantages of Operational Research.
b) What is Replacement Model, state it's need & Explain Categories of replacement problems.
c) A person wants to decide the constituents of a diet which will fulfill his daily requirements of proteins, fats and Carbohydrates at the minimum cost. The choice is to be made from four different types of foods. The yield per unit of these foods are given in below table

Food type	Yield per unit			Cost per Unit (Rs.)
	Proteins	Fats	Carbohydrates	
1	3	2	6	45
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3	8	7	7	85
4	6	5	4	65
Minimum requirement	800	200	700	

Formulate Linear programming model for the problem

d) Solve the following by Graphical method
Maximize $Z = 6X1 + 8X2$
Subject to $5X1 + 10X2 \leq 60$,
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Compute the coordinates to plot on the $X1, X2$ Plane

e) Explain Plant Layout Procedure.

Q.5 Solve any two: **12**

Note: Question C is compulsory

a) What are the factors that influence the selection of location for plant?

b) What is Operational Research? Explain in brief the models of Operational Research

c) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. solve assignment problem by using Hungarian method

Sub Assembly	**Supply**			
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries two marks.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) Operations Research has the characteristics it is done by a team of _____
a) Scientists b) Mathematicians
c) Academics d) All of the above

2) _____ are the representation of reality.
a) Models b) Phases
c) Both A and B d) None of the above

3) In simplex method, if there is tie between a decision variable and a slack (or surplus) variable _____ should be selected
a) Slack variable b) Surplus variable
c) Decision Solution d) None of the above

4) In graphical representation the bounded region is known as _____ region.
a) Solution b) Basic Solution
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5) Management is about the things done
a) for the people b) with the people
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6) The Gantt chart is used for
a) Tracking project progress
b) Knowing date of project
c) Knowing starting date of project
d) Knowing end date of project

7) Finding right person for right job
a) Coordinating b) Directing
c) Controlling d) staffing

8) Which of following is risk identification approach?
a) Network analysis b) Forward Tracking
c) Checklist d) All

9) What does a Work Breakdown Structure (WBS) "break down?"
a) Project deliverables are broken down into tasks and activities.
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10) An approach that seeks to get top management input first to create an overall project Cost allowances are passed down level-by-level, broken into allocated pieces for each task
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11) Which statement characterizes standard form of a linear programming problem?
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a) Hungarian b) American
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13) When do you perform Risk Identification?
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d) During project execution

14) Which risk analysis should done first
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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Solve any four **16**

a) Explain Concept & need of project management
b) Explain functions of project planning.
c) Briefly explain about Concurrent Engg,
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e) Explain in brief about visualization process of GANTT Chart.

Q.3 Solve any Two **12**

a) Explain stages of project life cycle with chart.
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Section – II

Q.4 Solve any four **16**

Note: Question b is compulsory

a) Write in brief on application & advantages of Operational Research.
b) What is Replacement Model, state it's need & Explain Categories of replacement problems.
c) A person wants to decide the constituents of a diet which will fulfill his daily requirements of proteins, fats and Carbohydrates at the minimum cost. The choice is to be made from four different types of foods. The yield per unit of these foods are given in below table

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Note: Question C is compulsory

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries two marks.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

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d) Don’t know

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Project Management and Operation Research (BTN06512)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed & mention it clearly.

Section – I

Q.2 Solve any four **16**

a) Explain Concept & need of project management
b) Explain functions of project planning.
c) Briefly explain about Concurrent Engg,
d) What is Risk, What are its categories?
e) Explain in brief about visualization process of GANTT Chart.

Q.3 Solve any Two **12**

a) Explain stages of project life cycle with chart.
b) Explain with Case study on Work Breakdown structure
c) Define Risk management Explain in detail Risk planning with different stages.

Section – II

Q.4 Solve any four **16**

Note: Question b is compulsory

a) Write in brief on application & advantages of Operational Research.
b) What is Replacement Model, state it's need & Explain Categories of replacement problems.
c) A person wants to decide the constituents of a diet which will fulfill his daily requirements of proteins, fats and Carbohydrates at the minimum cost. The choice is to be made from four different types of foods. The yield per unit of these foods are given in below table

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3	8	7	7	85
4	6	5	4	65
Minimum requirement	800	200	700	

Formulate Linear programming model for the problem

d) Solve the following by Graphical method
Maximize $Z = 6X1 + 8X2$
Subject to $5X1 + 10X2 \leq 60$,
$4X1 + 4X2 \leq 40, X1 \,\&\, X2 \geq 0$
Compute the coordinates to plot on the $X1, X2$ Plane

e) Explain Plant Layout Procedure.

Q.5 Solve any two: **12**

Note: Question C is compulsory

a) What are the factors that influence the selection of location for plant?

b) What is Operational Research? Explain in brief the models of Operational Research

c) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. solve assignment problem by using Hungarian method

Sub Assembly	**Supply**			
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4	15	17	14	16

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Business Ethics (BTN06514)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. Each question carries one mark. **14**

1) _____ is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
a) Accountability b) Sustainability
c) Globalization d) All of these

2) Which is a stage of Ethical Decision Making?
a) Make Moral Judgement b) Individual Factors
c) Situational Factors d) All of these

3) In _____ the degree to which one is autonomous and driven primarily to act for the benefit of ones self, contrasted with a more social orientation that emphasize group working and community goals.
a) Individualism/Collectivism b) Power Distance
c) Uncertainty Avoidance d) Masculine Approach.

4) _____ is managing any area of business, whether it is production, marketing, accounting, human resources or any other functions constitute a whole range of activities covering formal and informal means of planning, implementing and control.
a) Business Decisions b) Business Ethics
c) Business Situations d) Business Ethics Management

5) _____ commit organization, industries or professionals to specific beliefs, values and actions that set our appropriate ethical behavior for employees.
a) Code of ethics b) Code of conduct
c) Business Situations d) Business Ethics

6) What is Full Form Of CSR?
a) Corporate Social Reporting
b) Corporate Social Research
c) Corporate Social Responsibility
d) None of these

7) Which responsibility makes corporations to do what is right and fair even when they are not compelled to do so by the legal framework?
a) Ethical Responsibility b) Legal Responsibility
c) Philanthropic Responsibility d) Economic Responsibility

8) _____ the application of rules and procedures to people in a consistent way and avoiding arbitrarily decision-making and without discrimination on bases other than merit.
a) Discrimination b) Employees' Privacy
c) Rights and Duties d) Due Process and Lay off

9) _____ is just one aspect of marketing communications.
a) Advertisement b) Product Policy
c) Marketing Management d) None of these

10) CSO stands for what?
a) Civil society organization b) Consumer Society organization
c) Central Statistics office d) None of these

11) _____ is an attempt by one or more parties to achieve certain objectives by urging individual consumers to refrain from making selected purchases in the marketplace.
a) Boycott b) Demonstrations and marches
c) Protests d) Occupations

12) Customer is a stakeholder of organization.
a) True b) False

13) _____ is the long- term maintenance of the system according to environmental and economical and Social consideration.
a) Security b) Sustainability
c) Business Ethics d) None of above

14) Functions of Civil Society are _____.
a) Protection b) Monitoring
c) Social Cohesion d) AII of above

SLR-GF-315

Seat No.	

Set P

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Business Ethics (BTN06514)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any four of the following. **16**
- **a)** Explain sustainability – a key Context for Business Ethics.
- **b)** Illustrate the methods of assessing ethical performance.
- **c)** Explain the stages in ethical decision making.
- **d)** Explain concept of corporate citizenship & its 3 perspectives.
- **e)** What are key features of corporate?

Q.3 Solve any two of the following **12**
- **a)** Explain the components of business ethics management.
- **b)** Explain 4 port model of CSR.
- **c)** Explain normative ethical theories.

Section - II

Q.4 Solve any four of the following. **16**
- **a)** Write a short note on marketing & consumer.
- **b)** Define environmental ethics & explain environmental responsibilities.
- **c)** Explain the functions of CSO.
- **d)** Explain the ethical issues in firm-employee relationship.
- **e)** Explain IT code of conduct.

Q.5 Solve any two of the following. **12**
- **a)** Explain the Ethics of pollution control.
- **b)** Define CSO & explain the ethical issues in CSO.
- **c)** Define stakeholders & explain who are stakeholders of any business.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Business Ethics (BTN06514)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. Each question carries one mark. **14**

1) _____ the application of rules and procedures to people in a consistent way and avoiding arbitrarily decision-making and without discrimination on bases other than merit.
a) Discrimination b) Employees' Privacy
c) Rights and Duties d) Due Process and Lay off

2) _____ is just one aspect of marketing communications.
a) Advertisement b) Product Policy
c) Marketing Management d) None of these

3) CSO stands for what?
a) Civil society organization b) Consumer Society organization
c) Central Statistics office d) None of these

4) _____ is an attempt by one or more parties to achieve certain objectives by urging individual consumers to refrain from making selected purchases in the marketplace.
a) Boycott b) Demonstrations and marches
c) Protests d) Occupations

5) Customer is a stakeholder of organization.
a) True b) False

6) _____ is the long- term maintenance of the system according to environmental and economical and Social consideration.
a) Security b) Sustainability
c) Business Ethics d) None of above

7) Functions of Civil Society are _____.
a) Protection b) Monitoring
c) Social Cohesion d) AII of above

8) _____ is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
a) Accountability b) Sustainability
c) Globalization d) All of these

9) Which is a stage of Ethical Decision Making?
a) Make Moral Judgement b) Individual Factors
c) Situational Factors d) All of these

10) In _____ the degree to which one is autonomous and driven primarily to act for the benefit of ones self, contrasted with a more social orientation that emphasize group working and community goals.
a) Individualism/Collectivism b) Power Distance
c) Uncertainty Avoidance d) Masculine Approach.

11) _____ is managing any area of business, whether it is production, marketing, accounting, human resources or any other functions constitute a whole range of activities covering formal and informal means of planning, implementing and control.
a) Business Decisions b) Business Ethics
c) Business Situations d) Business Ethics Management

12) _____ commit organization, industries or professionals to specific beliefs, values and actions that set our appropriate ethical behavior for employees.
a) Code of ethics b) Code of conduct
c) Business Situations d) Business Ethics

13) What is Full Form Of CSR?
a) Corporate Social Reporting
b) Corporate Social Research
c) Corporate Social Responsibility
d) None of these

14) Which responsibility makes corporations to do what is right and fair even when they are not compelled to do so by the legal framework?
a) Ethical Responsibility b) Legal Responsibility
c) Philanthropic Responsibility d) Economic Responsibility

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Business Ethics (BTN06514)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any four of the following. **16**
- **a)** Explain sustainability – a key Context for Business Ethics.
- **b)** Illustrate the methods of assessing ethical performance.
- **c)** Explain the stages in ethical decision making.
- **d)** Explain concept of corporate citizenship & its 3 perspectives.
- **e)** What are key features of corporate?

Q.3 Solve any two of the following **12**
- **a)** Explain the components of business ethics management.
- **b)** Explain 4 port model of CSR.
- **c)** Explain normative ethical theories.

Section - II

Q.4 Solve any four of the following. **16**
- **a)** Write a short note on marketing & consumer.
- **b)** Define environmental ethics & explain environmental responsibilities.
- **c)** Explain the functions of CSO.
- **d)** Explain the ethical issues in firm-employee relationship.
- **e)** Explain IT code of conduct.

Q.5 Solve any two of the following. **12**
- **a)** Explain the Ethics of pollution control.
- **b)** Define CSO & explain the ethical issues in CSO.
- **c)** Define stakeholders & explain who are stakeholders of any business.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Business Ethics (BTN06514)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. Each question carries one mark. **14**

1) _____ is an attempt by one or more parties to achieve certain objectives by urging individual consumers to refrain from making selected purchases in the marketplace.
a) Boycott b) Demonstrations and marches
c) Protests d) Occupations

2) Customer is a stakeholder of organization.
a) True b) False

3) _____ is the long- term maintenance of the system according to environmental and economical and Social consideration.
a) Security b) Sustainability
c) Business Ethics d) None of above

4) Functions of Civil Society are _____.
a) Protection b) Monitoring
c) Social Cohesion d) AII of above

5) _____ is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
a) Accountability b) Sustainability
c) Globalization d) All of these

6) Which is a stage of Ethical Decision Making?
a) Make Moral Judgement b) Individual Factors
c) Situational Factors d) All of these

7) In _____ the degree to which one is autonomous and driven primarily to act for the benefit of ones self, contrasted with a more social orientation that emphasize group working and community goals.
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c) Uncertainty Avoidance d) Masculine Approach.

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a) Business Decisions
b) Business Ethics
c) Business Situations
d) Business Ethics Management

9) _____ commit organization, industries or professionals to specific beliefs, values and actions that set our appropriate ethical behavior for employees.

a) Code of ethics
b) Code of conduct
c) Business Situations
d) Business Ethics

10) What is Full Form Of CSR?

a) Corporate Social Reporting
b) Corporate Social Research
c) Corporate Social Responsibility
d) None of these

11) Which responsibility makes corporations to do what is right and fair even when they are not compelled to do so by the legal framework?

a) Ethical Responsibility
b) Legal Responsibility
c) Philanthropic Responsibility
d) Economic Responsibility

12) _____ the application of rules and procedures to people in a consistent way and avoiding arbitrarily decision-making and without discrimination on bases other than merit.

a) Discrimination
b) Employees' Privacy
c) Rights and Duties
d) Due Process and Lay off

13) _____ is just one aspect of marketing communications.

a) Advertisement
b) Product Policy
c) Marketing Management
d) None of these

14) CSO stands for what?

a) Civil society organization
b) Consumer Society organization
c) Central Statistics office
d) None of these

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Business Ethics (BTN06514)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any four of the following. **16**
- **a)** Explain sustainability – a key Context for Business Ethics.
- **b)** Illustrate the methods of assessing ethical performance.
- **c)** Explain the stages in ethical decision making.
- **d)** Explain concept of corporate citizenship & its 3 perspectives.
- **e)** What are key features of corporate?

Q.3 Solve any two of the following **12**
- **a)** Explain the components of business ethics management.
- **b)** Explain 4 port model of CSR.
- **c)** Explain normative ethical theories.

Section - II

Q.4 Solve any four of the following. **16**
- **a)** Write a short note on marketing & consumer.
- **b)** Define environmental ethics & explain environmental responsibilities.
- **c)** Explain the functions of CSO.
- **d)** Explain the ethical issues in firm-employee relationship.
- **e)** Explain IT code of conduct.

Q.5 Solve any two of the following. **12**
- **a)** Explain the Ethics of pollution control.
- **b)** Define CSO & explain the ethical issues in CSO.
- **c)** Define stakeholders & explain who are stakeholders of any business.

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Business Ethics (BTN06514)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. Each question carries one mark. **14**

1) What is Full Form Of CSR?
a) Corporate Social Reporting
b) Corporate Social Research
c) Corporate Social Responsibility
d) None of these

2) Which responsibility makes corporations to do what is right and fair even when they are not compelled to do so by the legal framework?
a) Ethical Responsibility b) Legal Responsibility
c) Philanthropic Responsibility d) Economic Responsibility

3) _____ the application of rules and procedures to people in a consistent way and avoiding arbitrarily decision-making and without discrimination on bases other than merit.
a) Discrimination b) Employees' Privacy
c) Rights and Duties d) Due Process and Lay off

4) _____ is just one aspect of marketing communications.
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c) Marketing Management d) None of these

5) CSO stands for what?
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c) Central Statistics office d) None of these

6) _____ is an attempt by one or more parties to achieve certain objectives by urging individual consumers to refrain from making selected purchases in the marketplace.
a) Boycott b) Demonstrations and marches
c) Protests d) Occupations

7) Customer is a stakeholder of organization.
a) True b) False

8) _____ is the long- term maintenance of the system according to environmental and economical and Social consideration.

a) Security b) Sustainability
c) Business Ethics d) None of above

9) Functions of Civil Society are _____.

a) Protection b) Monitoring
c) Social Cohesion d) AII of above

10) _____ is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

a) Accountability b) Sustainability
c) Globalization d) All of these

11) Which is a stage of Ethical Decision Making?

a) Make Moral Judgement b) Individual Factors
c) Situational Factors d) All of these

12) In _____ the degree to which one is autonomous and driven primarily to act for the benefit of ones self, contrasted with a more social orientation that emphasize group working and community goals.

a) Individualism/Collectivism b) Power Distance
c) Uncertainty Avoidance d) Masculine Approach.

13) _____ is managing any area of business, whether it is production, marketing, accounting, human resources or any other functions constitute a whole range of activities covering formal and informal means of planning, implementing and control.

a) Business Decisions b) Business Ethics
c) Business Situations d) Business Ethics Management

14) _____ commit organization, industries or professionals to specific beliefs, values and actions that set our appropriate ethical behavior for employees.

a) Code of ethics b) Code of conduct
c) Business Situations d) Business Ethics

SLR-GF-315

Seat No.	

Set S

T. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Business Ethics (BTN06514)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any four of the following. **16**
- **a)** Explain sustainability – a key Context for Business Ethics.
- **b)** Illustrate the methods of assessing ethical performance.
- **c)** Explain the stages in ethical decision making.
- **d)** Explain concept of corporate citizenship & its 3 perspectives.
- **e)** What are key features of corporate?

Q.3 Solve any two of the following **12**
- **a)** Explain the components of business ethics management.
- **b)** Explain 4 port model of CSR.
- **c)** Explain normative ethical theories.

Section - II

Q.4 Solve any four of the following. **16**
- **a)** Write a short note on marketing & consumer.
- **b)** Define environmental ethics & explain environmental responsibilities.
- **c)** Explain the functions of CSO.
- **d)** Explain the ethical issues in firm-employee relationship.
- **e)** Explain IT code of conduct.

Q.5 Solve any two of the following. **12**
- **a)** Explain the Ethics of pollution control.
- **b)** Define CSO & explain the ethical issues in CSO.
- **c)** Define stakeholders & explain who are stakeholders of any business.

SLR-GF-316

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary .
5) Supplements will not be provided
6) Use of nonprogrammable calculator is permitted.
7) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game

2) Which is not the commonly used programming language for AI?
a) PROLOG b) Java
c) LISP d) Perl

3) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

4) A production rule consists of _____.
a) A set of Rule
b) A sequence of steps
c) Both (a) and (b)
d) Arbitrary representation to problem

5) Which search method takes less memory?
a) Depth-First Search b) Breadth-First search
c) Both (a) and (b) d) Linear Search

6) A heuristic is a way of trying _____.
a) To discover something or an idea embedded in a program
b) To search and measure how far a node in a search tree seems to be from a goal
c) To compare two nodes in a search tree to see if one is better than the other
d) Only (a), (b) and (c)

7) A* algorithm is based on _____.
a) Breadth-First-Search b) Depth-First-Search
c) Best-First-Search d) Hill climbing

8) Which is the best way to go for Game playing problem?
a) Linear approach b) Heuristic approach
c) Random approach d) Optimal approach

9) Which is not a property of representation of knowledge?
a) Representational Verification b) Representational Adequacy
c) Inferential Adequacy d) Inferential Efficiency

10) The core idea of develop Al is building machines and algorithms to _____.
a) functions like anything
b) perform computation tasks and functions like human brain
c) perform only arithmetic tasks
d) perform logical comparisons only

11) Which if the following most advanced form of Al?
a) Neural Network b) Machine Learning
c) Data Science d) Deep Learning

12) Procedural Domain Knowledge in a rule-based system, is in the form of?
a) Meta Rule b) Control Rule
c) Production Rule d) None of the above

13) The available ways to solve a problem of state-space-search.
a) 1 b) 2
c) 3 d) 4

14) An Al agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Supplements will not be provided
5) Use of nonprogrammable calculator is permitted.
6) Draw neat sketches wherever necessary.

Section – I

Q.2 Solve any three questions. **12**
- **a)** What is an Agent in AI? Explain types of Agents in Artificial Intelligence.
- **b)** Explain A* Algorithm.
- **c)** Explain Best First Search with example.
- **d)** Explain various approaches to knowledge Representation.

Q.3 Solve any two questions. **16**
- **a)** Differentiate between BFS and DFS in detail.
- **b)** Explain PEAS in Artificial Intelligence.
- **c)** Explain FOL in detail.

Section – II

Q.4 Solve any three questions. **12**
- **a)** Explain Bayes Rule with suitable example.
- **b)** Explain statistical Learning.
- **c)** Explain elementary game theory.
- **d)** Explain Bayesian networks.

Q.5 Solve any two questions. **16**
- **a)** State the difference between supervised and unsupervised learning.
- **b)** Justify the application of machine learning in Artificial Intelligence.
- **c)** Explain Basic of utility theory.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary .
5) Supplements will not be provided
6) Use of nonprogrammable calculator is permitted.
7) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which is the best way to go for Game playing problem?
a) Linear approach b) Heuristic approach
c) Random approach d) Optimal approach

2) Which is not a property of representation of knowledge?
a) Representational Verification b) Representational Adequacy
c) Inferential Adequacy d) Inferential Efficiency

3) The core idea of develop Al is building machines and algorithms to _____.
a) functions like anything
b) perform computation tasks and functions like human brain
c) perform only arithmetic tasks
d) perform logical comparisons only

4) Which if the following most advanced form of Al?
a) Neural Network b) Machine Learning
c) Data Science d) Deep Learning

5) Procedural Domain Knowledge in a rule-based system, is in the form of?
a) Meta Rule b) Control Rule
c) Production Rule d) None of the above

6) The available ways to solve a problem of state-space-search.
a) 1 b) 2
c) 3 d) 4

7) An Al agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

8) What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game

9) Which is not the commonly used programming language for AI?
a) PROLOG
b) Java
c) LISP
d) Perl

10) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

11) A production rule consists of _____.
a) A set of Rule
b) A sequence of steps
c) Both (a) and (b)
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12) Which search method takes less memory?
a) Depth-First Search
b) Breadth-First search
c) Both (a) and (b)
d) Linear Search

13) A heuristic is a way of trying _____.
a) To discover something or an idea embedded in a program
b) To search and measure how far a node in a search tree seems to be from a goal
c) To compare two nodes in a search tree to see if one is better than the other
d) Only (a), (b) and (c)

14) A* algorithm is based on _____.
a) Breadth-First-Search
b) Depth-First-Search
c) Best-First-Search
d) Hill climbing

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Supplements will not be provided
5) Use of nonprogrammable calculator is permitted.
6) Draw neat sketches wherever necessary.

Section – I

Q.2 Solve any three questions. **12**
- **a)** What is an Agent in AI? Explain types of Agents in Artificial Intelligence.
- **b)** Explain A* Algorithm.
- **c)** Explain Best First Search with example.
- **d)** Explain various approaches to knowledge Representation.

Q.3 Solve any two questions. **16**
- **a)** Differentiate between BFS and DFS in detail.
- **b)** Explain PEAS in Artificial Intelligence.
- **c)** Explain FOL in detail.

Section – II

Q.4 Solve any three questions. **12**
- **a)** Explain Bayes Rule with suitable example.
- **b)** Explain statistical Learning.
- **c)** Explain elementary game theory.
- **d)** Explain Bayesian networks.

Q.5 Solve any two questions. **16**
- **a)** State the difference between supervised and unsupervised learning.
- **b)** Justify the application of machine learning in Artificial Intelligence.
- **c)** Explain Basic of utility theory.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary .
5) Supplements will not be provided
6) Use of nonprogrammable calculator is permitted.
7) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which if the following most advanced form of AI?
a) Neural Network b) Machine Learning
c) Data Science d) Deep Learning

2) Procedural Domain Knowledge in a rule-based system, is in the form of?
a) Meta Rule b) Control Rule
c) Production Rule d) None of the above

3) The available ways to solve a problem of state-space-search.
a) 1 b) 2
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4) An AI agent perceives and acts upon the environment using _____.
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c) Actuators d) Both a and c

5) What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
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6) Which is not the commonly used programming language for AI?
a) PROLOG b) Java
c) LISP d) Perl

7) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

8) A production rule consists of _____.
a) A set of Rule
b) A sequence of steps
c) Both (a) and (b)
d) Arbitrary representation to problem

9) Which search method takes less memory?
a) Depth-First Search
b) Breadth-First search
c) Both (a) and (b)
d) Linear Search

10) A heuristic is a way of trying _____.
a) To discover something or an idea embedded in a program
b) To search and measure how far a node in a search tree seems to be from a goal
c) To compare two nodes in a search tree to see if one is better than the other
d) Only (a), (b) and (c)

11) A* algorithm is based on _____.
a) Breadth-First-Search
b) Depth-First-Search
c) Best-First-Search
d) Hill climbing

12) Which is the best way to go for Game playing problem?
a) Linear approach
b) Heuristic approach
c) Random approach
d) Optimal approach

13) Which is not a property of representation of knowledge?
a) Representational Verification
b) Representational Adequacy
c) Inferential Adequacy
d) Inferential Efficiency

14) The core idea of develop AI is building machines and algorithms to _____.
a) functions like anything
b) perform computation tasks and functions like human brain
c) perform only arithmetic tasks
d) perform logical comparisons only

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Supplements will not be provided
5) Use of nonprogrammable calculator is permitted.
6) Draw neat sketches wherever necessary.

Section – I

Q.2 Solve any three questions. **12**
- **a)** What is an Agent in AI? Explain types of Agents in Artificial Intelligence.
- **b)** Explain A* Algorithm.
- **c)** Explain Best First Search with example.
- **d)** Explain various approaches to knowledge Representation.

Q.3 Solve any two questions. **16**
- **a)** Differentiate between BFS and DFS in detail.
- **b)** Explain PEAS in Artificial Intelligence.
- **c)** Explain FOL in detail.

Section – II

Q.4 Solve any three questions. **12**
- **a)** Explain Bayes Rule with suitable example.
- **b)** Explain statistical Learning.
- **c)** Explain elementary game theory.
- **d)** Explain Bayesian networks.

Q.5 Solve any two questions. **16**
- **a)** State the difference between supervised and unsupervised learning.
- **b)** Justify the application of machine learning in Artificial Intelligence.
- **c)** Explain Basic of utility theory.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary .
5) Supplements will not be provided
6) Use of nonprogrammable calculator is permitted.
7) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) A heuristic is a way of trying _____.
a) To discover something or an idea embedded in a program
b) To search and measure how far a node in a search tree seems to be from a goal
c) To compare two nodes in a search tree to see if one is better than the other
d) Only (a), (b) and (c)

2) A* algorithm is based on _____.
a) Breadth-First-Search b) Depth-First-Search
c) Best-First-Search d) Hill climbing

3) Which is the best way to go for Game playing problem?
a) Linear approach b) Heuristic approach
c) Random approach d) Optimal approach

4) Which is not a property of representation of knowledge?
a) Representational Verification b) Representational Adequacy
c) Inferential Adequacy d) Inferential Efficiency

5) The core idea of develop AI is building machines and algorithms to _____.
a) functions like anything
b) perform computation tasks and functions like human brain
c) perform only arithmetic tasks
d) perform logical comparisons only

6) Which if the following most advanced form of AI?
a) Neural Network b) Machine Learning
c) Data Science d) Deep Learning

7) Procedural Domain Knowledge in a rule-based system, is in the form of?
a) Meta Rule b) Control Rule
c) Production Rule d) None of the above

8) The available ways to solve a problem of state-space-search.
a) 1 b) 2
c) 3 d) 4

9) An Al agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

10) What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game

11) Which is not the commonly used programming language for Al?
a) PROLOG b) Java
c) LISP d) Perl

12) What is state space?
a) The whole problem
b) Your Definition to a problem
c) Problem you design
d) Representing your problem with variable and parameter

13) A production rule consists of _____.
a) A set of Rule
b) A sequence of steps
c) Both (a) and (b)
d) Arbitrary representation to problem

14) Which search method takes less memory?
a) Depth-First Search b) Breadth-First search
c) Both (a) and (b) d) Linear Search

SLR-GF-316

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Artificial Intelligence (BTN06515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Supplements will not be provided
5) Use of nonprogrammable calculator is permitted.
6) Draw neat sketches wherever necessary.

Section – I

Q.2 Solve any three questions. **12**
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- **b)** Explain A* Algorithm.
- **c)** Explain Best First Search with example.
- **d)** Explain various approaches to knowledge Representation.

Q.3 Solve any two questions. **16**
- **a)** Differentiate between BFS and DFS in detail.
- **b)** Explain PEAS in Artificial Intelligence.
- **c)** Explain FOL in detail.

Section – II

Q.4 Solve any three questions. **12**
- **a)** Explain Bayes Rule with suitable example.
- **b)** Explain statistical Learning.
- **c)** Explain elementary game theory.
- **d)** Explain Bayesian networks.

Q.5 Solve any two questions. **16**
- **a)** State the difference between supervised and unsupervised learning.
- **b)** Justify the application of machine learning in Artificial Intelligence.
- **c)** Explain Basic of utility theory.

Seat No.	

Set | P

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following can be considered to be the primary source of unstructured data among the others?
a) Facebook b) Twitter
c) Internet webs d) All of the mentioned above

2) Data Analytics uses _____ to get insights from data.
a) Statistical figures b) Numerical aspects
c) Statistical Methods d) None of above

3) A ____ is normalized after it has been organized.
a) Table b) Database
c) Row d) Column

4) The process of quantifying data is referred to as _____.
a) Decoding b) Structure
c) Enumeration d) Coding

5) What does dimensionality reduction reduce?
a) stochastics b) collinearity
c) Performance d) entropy

6) _____ is a category, also called supervised machine learning methods in which the data is split on two parts.
a) Classification b) Clustering
c) Data mining d) None of the mentioned above

7) What is the use of the bin/binnary data structure?
a) to have efficient insertion b) to have efficient deletion
c) to have efficient region query d) to have efficient traversal

8) Which of the following techniques would perform better for reducing dimensions of a data set?
a) Removing columns which have too many missing values
b) Removing columns which have high variance in data
c) Removing columns with dissimilar data trends
d) None of these

9) Which of the following algorithm is most sensitive to outliers?
a) K-means clustering algorithm
b) K-medians clustering algorithm
c) K-modes clustering algorithm
d) K-medoids clustering algorithm

10) In the clustering algorithm the distance between cluster centroid to each object is calculated using _____method.
a) Euclidean distance b) Clustering distance
c) Central distance d) Cluster

11) Artificial Neural Network is _____algorithm.
a) Bio-inspired b) Head-inspired
c) human-inspired d) all of above

12) Dimensionality Reduction Techniques such as _____.
a) Principle Component Analysis b) Sampling
c) Aggregation d) All

13) The histogram of oriented gradients (HOG) is a feature descriptor used in computer vision and image processing for the purpose of _____.
a) object detection b) object classification
c) object clustering d) All of above

14) Numerical measure of how alike two data objects are _____.
a) Irrelevant b) Dissimilarity
c) Similarity d) All

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**
- **a)** What is discretization and why it is used?
- **b)** How data quality management is done?
- **c)** List down the steps of a PCA algorithm.
- **d)** What do you understand by subset selection?
- **e)** What are the limitations of LDA?

Q.3 Attempt the following (Any Two) **12**
- **a)** Explain in detail the four scales of measurements.
- **b)** Explain Linear Discriminant Analysis (LDA) method.
- **c)** Explain the three types of normalization (Feature Scaling).

Section – II

Q.4 Attempt the following (Any Four) **16**
- **a)** Explain the concept of Quantization or Binning.
- **b)** Explain models stacking.
- **c)** What are some Stopping Criteria for k-Means Clustering?
- **d)** What are the connected layers?
- **e)** What is Gradient Orientation Histogram?

Q.5 Attempt the following (Any Two) **12**
- **a)** Define the following terms Data, Task, Models, Features, Scalar, Vector and Spaces.
- **b)** Explain how deep neural networks learning the image features.
- **c)** Explain the steps of k-Means Clustering Algorithm.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following techniques would perform better for reducing dimensions of a data set?
a) Removing columns which have too many missing values
b) Removing columns which have high variance in data
c) Removing columns with dissimilar data trends
d) None of these

2) Which of the following algorithm is most sensitive to outliers?
a) K-means clustering algorithm
b) K-medians clustering algorithm
c) K-modes clustering algorithm
d) K-medoids clustering algorithm

3) In the clustering algorithm the distance between cluster centroid to each object is calculated using _____method.
a) Euclidean distance b) Clustering distance
c) Central distance d) Cluster

4) Artificial Neural Network is _____algorithm.
a) Bio-inspired b) Head-inspired
c) human-inspired d) all of above

5) Dimensionality Reduction Techniques such as _____.
a) Principle Component Analysis b) Sampling
c) Aggregation d) All

6) The histogram of oriented gradients (HOG) is a feature descriptor used in computer vision and image processing for the purpose of _____.
a) object detection b) object classification
c) object clustering d) All of above

7) Numerical measure of how alike two data objects are _____.
a) Irrelevant b) Dissimilarity
c) Similarity d) All

8) Which of the following can be considered to be the primary source of unstructured data among the others?

a) Facebook b) Twitter
c) Internet webs d) All of the mentioned above

9) Data Analytics uses _____ to get insights from data.

a) Statistical figures b) Numerical aspects
c) Statistical Methods d) None of above

10) A ____ is normalized after it has been organized.

a) Table b) Database
c) Row d) Column

11) The process of quantifying data is referred to as _____.

a) Decoding b) Structure
c) Enumeration d) Coding

12) What does dimensionality reduction reduce?

a) stochastics b) collinearity
c) Performance d) entropy

13) _____ is a category, also called supervised machine learning methods in which the data is split on two parts.

a) Classification b) Clustering
c) Data mining d) None of the mentioned above

14) What is the use of the bin/binnary data structure?

a) to have efficient insertion b) to have efficient deletion
c) to have efficient region query d) to have efficient traversal

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt the following (Any Four) **16**
- **a)** What is discretization and why it is used?
- **b)** How data quality management is done?
- **c)** List down the steps of a PCA algorithm.
- **d)** What do you understand by subset selection?
- **e)** What are the limitations of LDA?

Q.3 Attempt the following (Any Two) **12**
- **a)** Explain in detail the four scales of measurements.
- **b)** Explain Linear Discriminant Analysis (LDA) method.
- **c)** Explain the three types of normalization (Feature Scaling).

Section – II

Q.4 Attempt the following (Any Four) **16**
- **a)** Explain the concept of Quantization or Binning.
- **b)** Explain models stacking.
- **c)** What are some Stopping Criteria for k-Means Clustering?
- **d)** What are the connected layers?
- **e)** What is Gradient Orientation Histogram?

Q.5 Attempt the following (Any Two) **12**
- **a)** Define the following terms Data, Task, Models, Features, Scalar, Vector and Spaces.
- **b)** Explain how deep neural networks learning the image features.
- **c)** Explain the steps of k-Means Clustering Algorithm.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Artificial Neural Network is _____algorithm.
a) Bio-inspired b) Head-inspired
c) human-inspired d) all of above

2) Dimensionality Reduction Techniques such as _____.
a) Principle Component Analysis b) Sampling
c) Aggregation d) All

3) The histogram of oriented gradients (HOG) is a feature descriptor used in computer vision and image processing for the purpose of _____.
a) object detection b) object classification
c) object clustering d) All of above

4) Numerical measure of how alike two data objects are _____.
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5) Which of the following can be considered to be the primary source of unstructured data among the others?
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10) _____ is a category, also called supervised machine learning methods in which the data is split on two parts.

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b) K-medians clustering algorithm
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d) K-medoids clustering algorithm

14) In the clustering algorithm the distance between cluster centroid to each object is calculated using _____method.

a) Euclidean distance b) Clustering distance
c) Central distance d) Cluster

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**
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Section – II

Q.4 Attempt the following (Any Four) **16**
- **a)** Explain the concept of Quantization or Binning.
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- **e)** What is Gradient Orientation Histogram?

Q.5 Attempt the following (Any Two) **12**
- **a)** Define the following terms Data, Task, Models, Features, Scalar, Vector and Spaces.
- **b)** Explain how deep neural networks learning the image features.
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Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) _____ is a category, also called supervised machine learning methods in which the data is split on two parts.
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c) Performance d) entropy

SLR-GF-317

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Processing & Feature Engineering (BTN06516)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

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Section – II

Q.4 Attempt the following (Any Four) **16**
- **a)** Explain the concept of Quantization or Binning.
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Q.5 Attempt the following (Any Two) **12**
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- **b)** Explain how deep neural networks learning the image features.
- **c)** Explain the steps of k-Means Clustering Algorithm.

SLR-GF-318

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IoT (BTN06517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What does IIoT stand for?
a) Industrial Internet of Things
b) Internet of Industrial Technology
c) Integrated Industrial Operations
d) Intelligent Industrial Output

2) What are catalysts and precursors of IIoT?
a) Historical events that influenced IIoT development
b) Agents that accelerate or stimulate IIoT adoption
c) Chemical substances used in IIoT manufacturing
d) Precise measurements in IIoT systems

3) What does IIC stand for in the context of IIoT Reference Architecture?
a) Industrial Internet Consortium
b) International Industrial Connectivity
c) Integrated Industrial Components
d) Industrial Internet Configuration

4) Which architectural framework is associated with IIoT Reference Architecture?
a) Industrial Internet Architecture Framework (IIAF)
b) Internet of Things Architecture Framework (IoTAF)
c) Industrial Connectivity Framework (ICF)
d) Integrated Industrial Framework (IIF)

5) What is the primary focus of the Three-Tier Topology in IIoT Reference Architecture?
a) Network Security b) Data Management
c) Device Connectivity d) Wireless Communication

6) What is LoRaWAN primarily designed for in the context of IIoT?
a) High-Speed Internet Browsing
b) Long-Range, Low-Power IoT Communication
c) Augmented Reality Applications
d) Indoor Navigation Systems

7) What does AWS stand for in the context of Cloud Industrial IoT Solutions?
a) Advanced Web Services b) Amazon Web Services
c) Automated Workflow Solutions d) Agile Wireless Systems

8) Which AWS service is specifically designed for Internet of Things (IoT) applications?
a) AWS S3 b) AWS Athena
c) AWS Glue d) AWS IoT Core

9) What is the primary function of AWS S3 in Cloud Industrial IoT Solutions?
a) Real-time Analytics b) Cloud Storage
c) Querying Data d) Data Ingestion

10) What is the primary service offered by Google Cloud for managing and connecting IoT devices?
a) Google Cloud Storage b) Google Cloud IoT Core
c) Google Cloud Bigtable d) Google Cloud Analytics

11) Which Google Cloud service is designed for real-time, scalable NoSQL storage, making it suitable for IoT applications?
a) Google Cloud Storage b) Google Cloud Bigtable
c) Google Cloud Pub/Sub d) Google Cloud SQL

12) What is the primary focus of the core projects in the OpenStack ecosystem?
a) Application Development
b) Identity, Compute, Storage, and Networking
c) Monitoring and Metering
d) Elasticity and Updating

13) Which component of the OpenStack ecosystem is responsible for managing user identity and authentication?
a) Compute b) Identity
c) Storage d) Networking

14) In the context of OpenStack, what does "bare metal" refer to?
a) Virtualized Servers
b) Physical Servers without Virtualization
c) Containerized Applications
d) Dashboard Interface

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Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IoT (BTN06517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) What is the difference between a cyber-physical solution and an edge solution?
b) Discuss the telephone as a cyber-physical solution. Illustrate with an example.
c) What is one trade-off to consider when choosing between wired and wireless networking implementations in IoT solutions?
d) What is a mitigation strategy for verifying authenticity between two network devices?

Q.3 Attempt any Two. **16**

a) What are the common components of an edge solution?
b) What are three network topologies that are common in edge solutions?
c) What is the benefit of decoupling services in your edge architecture?

Section – II

Q.4 Attempt any Three. **12**

a) Discuss one use case for an edge device to receive deployments from multiple thing groups?
b) Which component of Greengrass is required to be run at the bare minimum for the device to be functional?
c) Describe in detail the design pattern name that brings together streaming and batch workflows?
d) What strategy is used to transform raw data on the cloud?

Q.5 Attempt any Two. **16**

a) Explain why can't you write to artifact files that have been loaded onto the edge device through deployment.
b) Why is it necessary to have an operational data store or a data lake/data warehouse?
c) Discuss the relevance of ETL architecture for edge computing.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IoT (BTN06517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which AWS service is specifically designed for Internet of Things (IoT) applications?
a) AWS S3 b) AWS Athena
c) AWS Glue d) AWS IoT Core

2) What is the primary function of AWS S3 in Cloud Industrial IoT Solutions?
a) Real-time Analytics b) Cloud Storage
c) Querying Data d) Data Ingestion

3) What is the primary service offered by Google Cloud for managing and connecting IoT devices?
a) Google Cloud Storage b) Google Cloud IoT Core
c) Google Cloud Bigtable d) Google Cloud Analytics

4) Which Google Cloud service is designed for real-time, scalable NoSQL storage, making it suitable for IoT applications?
a) Google Cloud Storage b) Google Cloud Bigtable
c) Google Cloud Pub/Sub d) Google Cloud SQL

5) What is the primary focus of the core projects in the OpenStack ecosystem?
a) Application Development
b) Identity, Compute, Storage, and Networking
c) Monitoring and Metering
d) Elasticity and Updating

6) Which component of the OpenStack ecosystem is responsible for managing user identity and authentication?
a) Compute b) Identity
c) Storage d) Networking

7) In the context of OpenStack, what does "bare metal" refer to?
a) Virtualized Servers
b) Physical Servers without Virtualization
c) Containerized Applications
d) Dashboard Interface

8) What does IIoT stand for?
a) Industrial Internet of Things
b) Internet of Industrial Technology
c) Integrated Industrial Operations
d) Intelligent Industrial Output

9) What are catalysts and precursors of IIoT?
a) Historical events that influenced IIoT development
b) Agents that accelerate or stimulate IIoT adoption
c) Chemical substances used in IIoT manufacturing
d) Precise measurements in IIoT systems

10) What does IIC stand for in the context of IIoT Reference Architecture?
a) Industrial Internet Consortium
b) International Industrial Connectivity
c) Integrated Industrial Components
d) Industrial Internet Configuration

11) Which architectural framework is associated with IIoT Reference Architecture?
a) Industrial Internet Architecture Framework (IIAF)
b) Internet of Things Architecture Framework (IoTAF)
c) Industrial Connectivity Framework (ICF)
d) Integrated Industrial Framework (IIF)

12) What is the primary focus of the Three-Tier Topology in IIoT Reference Architecture?
a) Network Security b) Data Management
c) Device Connectivity d) Wireless Communication

13) What is LoRaWAN primarily designed for in the context of IIoT?
a) High-Speed Internet Browsing
b) Long-Range, Low-Power IoT Communication
c) Augmented Reality Applications
d) Indoor Navigation Systems

14) What does AWS stand for in the context of Cloud Industrial IoT Solutions?
a) Advanced Web Services b) Amazon Web Services
c) Automated Workflow Solutions d) Agile Wireless Systems

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Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IoT (BTN06517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) What is the difference between a cyber-physical solution and an edge solution?
b) Discuss the telephone as a cyber-physical solution. Illustrate with an example.
c) What is one trade-off to consider when choosing between wired and wireless networking implementations in IoT solutions?
d) What is a mitigation strategy for verifying authenticity between two network devices?

Q.3 Attempt any Two. **16**

a) What are the common components of an edge solution?
b) What are three network topologies that are common in edge solutions?
c) What is the benefit of decoupling services in your edge architecture?

Section – II

Q.4 Attempt any Three. **12**

a) Discuss one use case for an edge device to receive deployments from multiple thing groups?
b) Which component of Greengrass is required to be run at the bare minimum for the device to be functional?
c) Describe in detail the design pattern name that brings together streaming and batch workflows?
d) What strategy is used to transform raw data on the cloud?

Q.5 Attempt any Two. **16**

a) Explain why can't you write to artifact files that have been loaded onto the edge device through deployment.
b) Why is it necessary to have an operational data store or a data lake/data warehouse?
c) Discuss the relevance of ETL architecture for edge computing.

Seat No.	

Set | R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IoT (BTN06517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which Google Cloud service is designed for real-time, scalable NoSQL storage, making it suitable for IoT applications?
a) Google Cloud Storage b) Google Cloud Bigtable
c) Google Cloud Pub/Sub d) Google Cloud SQL

2) What is the primary focus of the core projects in the OpenStack ecosystem?
a) Application Development
b) Identity, Compute, Storage, and Networking
c) Monitoring and Metering
d) Elasticity and Updating

3) Which component of the OpenStack ecosystem is responsible for managing user identity and authentication?
a) Compute b) Identity
c) Storage d) Networking

4) In the context of OpenStack, what does "bare metal" refer to?
a) Virtualized Servers
b) Physical Servers without Virtualization
c) Containerized Applications
d) Dashboard Interface

5) What does IIoT stand for?
a) Industrial Internet of Things
b) Internet of Industrial Technology
c) Integrated Industrial Operations
d) Intelligent Industrial Output

6) What are catalysts and precursors of IIoT?
a) Historical events that influenced IIoT development
b) Agents that accelerate or stimulate IIoT adoption
c) Chemical substances used in IIoT manufacturing
d) Precise measurements in IIoT systems

7) What does IIC stand for in the context of IIoT Reference Architecture?
a) Industrial Internet Consortium
b) International Industrial Connectivity
c) Integrated Industrial Components
d) Industrial Internet Configuration

8) Which architectural framework is associated with IIoT Reference Architecture?
a) Industrial Internet Architecture Framework (IIAF)
b) Internet of Things Architecture Framework (IoTAF)
c) Industrial Connectivity Framework (ICF)
d) Integrated Industrial Framework (IIF)

9) What is the primary focus of the Three-Tier Topology in IIoT Reference Architecture?
a) Network Security b) Data Management
c) Device Connectivity d) Wireless Communication

10) What is LoRaWAN primarily designed for in the context of IIoT?
a) High-Speed Internet Browsing
b) Long-Range, Low-Power IoT Communication
c) Augmented Reality Applications
d) Indoor Navigation Systems

11) What does AWS stand for in the context of Cloud Industrial IoT Solutions?
a) Advanced Web Services b) Amazon Web Services
c) Automated Workflow Solutions d) Agile Wireless Systems

12) Which AWS service is specifically designed for Internet of Things (IoT) applications?
a) AWS S3 b) AWS Athena
c) AWS Glue d) AWS IoT Core

13) What is the primary function of AWS S3 in Cloud Industrial IoT Solutions?
a) Real-time Analytics b) Cloud Storage
c) Querying Data d) Data Ingestion

14) What is the primary service offered by Google Cloud for managing and connecting IoT devices?
a) Google Cloud Storage b) Google Cloud IoT Core
c) Google Cloud Bigtable d) Google Cloud Analytics

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IoT (BTN06517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) What is the difference between a cyber-physical solution and an edge solution?
b) Discuss the telephone as a cyber-physical solution. Illustrate with an example.
c) What is one trade-off to consider when choosing between wired and wireless networking implementations in IoT solutions?
d) What is a mitigation strategy for verifying authenticity between two network devices?

Q.3 Attempt any Two. **16**

a) What are the common components of an edge solution?
b) What are three network topologies that are common in edge solutions?
c) What is the benefit of decoupling services in your edge architecture?

Section – II

Q.4 Attempt any Three. **12**

a) Discuss one use case for an edge device to receive deployments from multiple thing groups?
b) Which component of Greengrass is required to be run at the bare minimum for the device to be functional?
c) Describe in detail the design pattern name that brings together streaming and batch workflows?
d) What strategy is used to transform raw data on the cloud?

Q.5 Attempt any Two. **16**

a) Explain why can't you write to artifact files that have been loaded onto the edge device through deployment.
b) Why is it necessary to have an operational data store or a data lake/data warehouse?
c) Discuss the relevance of ETL architecture for edge computing.

Seat No.	

Set | S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IoT (BTN06517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) What is LoRaWAN primarily designed for in the context of IIoT?
a) High-Speed Internet Browsing
b) Long-Range, Low-Power IoT Communication
c) Augmented Reality Applications
d) Indoor Navigation Systems

2) What does AWS stand for in the context of Cloud Industrial IoT Solutions?
a) Advanced Web Services b) Amazon Web Services
c) Automated Workflow Solutions d) Agile Wireless Systems

3) Which AWS service is specifically designed for Internet of Things (IoT) applications?
a) AWS S3 b) AWS Athena
c) AWS Glue d) AWS IoT Core

4) What is the primary function of AWS S3 in Cloud Industrial IoT Solutions?
a) Real-time Analytics b) Cloud Storage
c) Querying Data d) Data Ingestion

5) What is the primary service offered by Google Cloud for managing and connecting IoT devices?
a) Google Cloud Storage b) Google Cloud IoT Core
c) Google Cloud Bigtable d) Google Cloud Analytics

6) Which Google Cloud service is designed for real-time, scalable NoSQL storage, making it suitable for IoT applications?
a) Google Cloud Storage b) Google Cloud Bigtable
c) Google Cloud Pub/Sub d) Google Cloud SQL

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b) Identity, Compute, Storage, and Networking
c) Monitoring and Metering
d) Elasticity and Updating

8) Which component of the OpenStack ecosystem is responsible for managing user identity and authentication?
a) Compute
b) Identity
c) Storage
d) Networking

9) In the context of OpenStack, what does "bare metal" refer to?
a) Virtualized Servers
b) Physical Servers without Virtualization
c) Containerized Applications
d) Dashboard Interface

10) What does IIoT stand for?
a) Industrial Internet of Things
b) Internet of Industrial Technology
c) Integrated Industrial Operations
d) Intelligent Industrial Output

11) What are catalysts and precursors of IIoT?
a) Historical events that influenced IIoT development
b) Agents that accelerate or stimulate IIoT adoption
c) Chemical substances used in IIoT manufacturing
d) Precise measurements in IIoT systems

12) What does IIC stand for in the context of IIoT Reference Architecture?
a) Industrial Internet Consortium
b) International Industrial Connectivity
c) Integrated Industrial Components
d) Industrial Internet Configuration

13) Which architectural framework is associated with IIoT Reference Architecture?
a) Industrial Internet Architecture Framework (IIAF)
b) Internet of Things Architecture Framework (IoTAF)
c) Industrial Connectivity Framework (ICF)
d) Integrated Industrial Framework (IIF)

14) What is the primary focus of the Three-Tier Topology in IIoT Reference Architecture?
a) Network Security
b) Data Management
c) Device Connectivity
d) Wireless Communication

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IoT (BTN06517)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) What is the difference between a cyber-physical solution and an edge solution?
b) Discuss the telephone as a cyber-physical solution. Illustrate with an example.
c) What is one trade-off to consider when choosing between wired and wireless networking implementations in IoT solutions?
d) What is a mitigation strategy for verifying authenticity between two network devices?

Q.3 Attempt any Two. **16**

a) What are the common components of an edge solution?
b) What are three network topologies that are common in edge solutions?
c) What is the benefit of decoupling services in your edge architecture?

Section – II

Q.4 Attempt any Three. **12**

a) Discuss one use case for an edge device to receive deployments from multiple thing groups?
b) Which component of Greengrass is required to be run at the bare minimum for the device to be functional?
c) Describe in detail the design pattern name that brings together streaming and batch workflows?
d) What strategy is used to transform raw data on the cloud?

Q.5 Attempt any Two. **16**

a) Explain why can't you write to artifact files that have been loaded onto the edge device through deployment.
b) Why is it necessary to have an operational data store or a data lake/data warehouse?
c) Discuss the relevance of ETL architecture for edge computing.

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the Same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) In a shunting signal, if the red band is inclined at 45°, it indicates _____.
a) proceed cautiously b) stop
c) do not stop d) none of these

2) In railways, the disc signals are provided for the purpose of _____.
a) dead slow movement b) indicating busy platform
c) possible danger ahead d) shunting

3) The reception signal is _____.
a) advanced starter only
b) starter only
c) both advanced stater and Starter
d) none of the other options provided

4) Semaphore-type signals are used when the maintenance or repair work is more than _____.
a) 1 week b) 4 days
c) 3 days d) 2 days

5) What is the internet?
a) Programming language
b) Network connecting computers all over the world
c) Computer program to transfer data
d) All of these

6) Which of these is a non-profit domain?
a) .com b) .in
c) .org d) All of these

7) Expansion of FTP is _____.
a) Fine Transfer Protocol b) File Transfer Protocol
c) First Transfer Protocol d) Fast Transfer Protocol

8) Which of these is not a guided media?
a) Fiber optical cable b) Coaxial cable
c) Wireless LAN d) Copper wire

9) With respect to physical media, STP cables stands for _____.
a) Shielded Twisted Pair Cable
b) Spanning Tree Protocol Cable
c) Static Transport Protocol Cable
d) Shielded Two Power Cable

10) In an autotransformer, the primary and secondary are _____ coupled.
a) Magnetically coupled
b) Electrically coupled
c) Both magnetically and electrically coupled
d) None of these

11) The noise of the transformer is primarily due to _____.
a) Mechanical vibration
b) Cooling fan
c) Magnetostriction in an iron core
d) All of the above

12) What is the cut-off current in the fuse?
a) Maximum value actually reached
b) RMS value actually reached
c) Average value actually reached
d) None of the above

13) Protective relays can be designed to respond to _____.
a) Light intensity, impedance
b) Temperature, resistance, reactance
c) Voltage and current
d) All of these

14) As compared to a constant-current system, the constant-voltage system of charging a lead acid the cell has the advantage of _____.
a) Reducing the time of charging
b) Increasing cell capacity
c) Both (a) and (b)
d) Avoiding excessive gassing

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Give a classification of Transmission media. Compare them.
b) Give the advantages & disadvantages of Optical Fiber Cables.
c) What do you mean by email? Explain the main components of email messages.
d) Explain the necessity of Fuses & classification of Fuses.
e) Explain constructional details of Transformer.

Q.3 Attempt Any Two. **12**

a) Explain Soldering & Desoldering techniques.
b) What is IP addressing? What do you mean by Physical & Logical address? Explain the components of the Internet.
c) Write a note on IC Regulators.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain different networking devices.
b) Explain Network security in Computer Network.
c) Write a short note on TELNET (Terminal Network).
d) What are the objects of signals in the Railway?
e) Give classification of signaling relays.

Q.5 Attempt Any Two. **12**

a) Give & explain the classification of Railway signals according to functions.
b) Explain DNS (Domain Name System).
c) Write a note on Railnet.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the Same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of these is not a guided media?
a) Fiber optical cable b) Coaxial cable
c) Wireless LAN d) Copper wire

2) With respect to physical media, STP cables stands for _____.
a) Shielded Twisted Pair Cable
b) Spanning Tree Protocol Cable
c) Static Transport Protocol Cable
d) Shielded Two Power Cable

3) In an autotransformer, the primary and secondary are _____ coupled.
a) Magnetically coupled
b) Electrically coupled
c) Both magnetically and electrically coupled
d) None of these

4) The noise of the transformer is primarily due to _____.
a) Mechanical vibration b) Cooling fan
c) Magnetostriction in an iron core d) All of the above

5) What is the cut-off current in the fuse?
a) Maximum value actually reached
b) RMS value actually reached
c) Average value actually reached
d) None of the above

6) Protective relays can be designed to respond to _____.
a) Light intensity, impedance
b) Temperature, resistance, reactance
c) Voltage and current
d) All of these

7) As compared to a constant-current system, the constant-voltage system of charging a lead acid the cell has the advantage of _____.
a) Reducing the time of charging b) Increasing cell capacity
c) Both (a) and (b) d) Avoiding excessive gassing

8) In a shunting signal, if the red band is inclined at 45°, it indicates _____.
a) proceed cautiously
b) stop
c) do not stop
d) none of these

9) In railways, the disc signals are provided for the purpose of _____.
a) dead slow movement
b) indicating busy platform
c) possible danger ahead
d) shunting

10) The reception signal is _____.
a) advanced starter only
b) starter only
c) both advanced stater and Starter
d) none of the other options provided

11) Semaphore-type signals are used when the maintenance or repair work is more than _____.
a) 1 week
b) 4 days
c) 3 days
d) 2 days

12) What is the internet?
a) Programming language
b) Network connecting computers all over the world
c) Computer program to transfer data
d) All of these

13) Which of these is a non-profit domain?
a) .com
b) .in
c) .org
d) All of these

14) Expansion of FTP is _____.
a) Fine Transfer Protocol
b) File Transfer Protocol
c) First Transfer Protocol
d) Fast Transfer Protocol

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Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Give a classification of Transmission media. Compare them.
b) Give the advantages & disadvantages of Optical Fiber Cables.
c) What do you mean by email? Explain the main components of email messages.
d) Explain the necessity of Fuses & classification of Fuses.
e) Explain constructional details of Transformer.

Q.3 Attempt Any Two. **12**

a) Explain Soldering & Desoldering techniques.
b) What is IP addressing? What do you mean by Physical & Logical address? Explain the components of the Internet.
c) Write a note on IC Regulators.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain different networking devices.
b) Explain Network security in Computer Network.
c) Write a short note on TELNET (Terminal Network).
d) What are the objects of signals in the Railway?
e) Give classification of signaling relays.

Q.5 Attempt Any Two. **12**

a) Give & explain the classification of Railway signals according to functions.
b) Explain DNS (Domain Name System).
c) Write a note on Railnet.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the Same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The noise of the transformer is primarily due to _____.
a) Mechanical vibration b) Cooling fan
c) Magnetostriction in an iron core d) All of the above

2) What is the cut-off current in the fuse?
a) Maximum value actually reached
b) RMS value actually reached
c) Average value actually reached
d) None of the above

3) Protective relays can be designed to respond to _____.
a) Light intensity, impedance
b) Temperature, resistance, reactance
c) Voltage and current
d) All of these

4) As compared to a constant-current system, the constant-voltage system of charging a lead acid the cell has the advantage of _____.
a) Reducing the time of charging b) Increasing cell capacity
c) Both (a) and (b) d) Avoiding excessive gassing

5) In a shunting signal, if the red band is inclined at 45°, it indicates _____.
a) proceed cautiously b) stop
c) do not stop d) none of these

6) In railways, the disc signals are provided for the purpose of _____.
a) dead slow movement b) indicating busy platform
c) possible danger ahead d) shunting

7) The reception signal is _____.
a) advanced starter only
b) starter only
c) both advanced stater and Starter
d) none of the other options provided

8) Semaphore-type signals are used when the maintenance or repair work is more than _____.
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b) 4 days
c) 3 days
d) 2 days

9) What is the internet?
a) Programming language
b) Network connecting computers all over the world
c) Computer program to transfer data
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10) Which of these is a non-profit domain?
a) .com
b) .in
c) .org
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a) Fine Transfer Protocol
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a) Fiber optical cable
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13) With respect to physical media, STP cables stands for _____.
a) Shielded Twisted Pair Cable
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c) Static Transport Protocol Cable
d) Shielded Two Power Cable

14) In an autotransformer, the primary and secondary are _____ coupled.
a) Magnetically coupled
b) Electrically coupled
c) Both magnetically and electrically coupled
d) None of these

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Give a classification of Transmission media. Compare them.
b) Give the advantages & disadvantages of Optical Fiber Cables.
c) What do you mean by email? Explain the main components of email messages.
d) Explain the necessity of Fuses & classification of Fuses.
e) Explain constructional details of Transformer.

Q.3 Attempt Any Two. **12**

a) Explain Soldering & Desoldering techniques.
b) What is IP addressing? What do you mean by Physical & Logical address? Explain the components of the Internet.
c) Write a note on IC Regulators.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain different networking devices.
b) Explain Network security in Computer Network.
c) Write a short note on TELNET (Terminal Network).
d) What are the objects of signals in the Railway?
e) Give classification of signaling relays.

Q.5 Attempt Any Two. **12**

a) Give & explain the classification of Railway signals according to functions.
b) Explain DNS (Domain Name System).
c) Write a note on Railnet.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the Same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of these is a non-profit domain?
a) .com b) .in
c) .org d) All of these

2) Expansion of FTP is _____.
a) Fine Transfer Protocol b) File Transfer Protocol
c) First Transfer Protocol d) Fast Transfer Protocol

3) Which of these is not a guided media?
a) Fiber optical cable b) Coaxial cable
c) Wireless LAN d) Copper wire

4) With respect to physical media, STP cables stands for _____.
a) Shielded Twisted Pair Cable
b) Spanning Tree Protocol Cable
c) Static Transport Protocol Cable
d) Shielded Two Power Cable

5) In an autotransformer, the primary and secondary are _____ coupled.
a) Magnetically coupled
b) Electrically coupled
c) Both magnetically and electrically coupled
d) None of these

6) The noise of the transformer is primarily due to _____.
a) Mechanical vibration b) Cooling fan
c) Magnetostriction in an iron core d) All of the above

7) What is the cut-off current in the fuse?
a) Maximum value actually reached
b) RMS value actually reached
c) Average value actually reached
d) None of the above

8) Protective relays can be designed to respond to _____.
a) Light intensity, impedance
b) Temperature, resistance, reactance
c) Voltage and current
d) All of these

9) As compared to a constant-current system, the constant-voltage system of charging a lead acid the cell has the advantage of _____.
a) Reducing the time of charging
b) Increasing cell capacity
c) Both (a) and (b)
d) Avoiding excessive gassing

10) In a shunting signal, if the red band is inclined at 45°, it indicates _____.
a) proceed cautiously
b) stop
c) do not stop
d) none of these

11) In railways, the disc signals are provided for the purpose of _____.
a) dead slow movement
b) indicating busy platform
c) possible danger ahead
d) shunting

12) The reception signal is _____.
a) advanced starter only
b) starter only
c) both advanced stater and Starter
d) none of the other options provided

13) Semaphore-type signals are used when the maintenance or repair work is more than _____.
a) 1 week
b) 4 days
c) 3 days
d) 2 days

14) What is the internet?
a) Programming language
b) Network connecting computers all over the world
c) Computer program to transfer data
d) All of these

SLR-GF-319

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Communication and Signaling in Railway (BTN06518)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Give a classification of Transmission media. Compare them.
b) Give the advantages & disadvantages of Optical Fiber Cables.
c) What do you mean by email? Explain the main components of email messages.
d) Explain the necessity of Fuses & classification of Fuses.
e) Explain constructional details of Transformer.

Q.3 Attempt Any Two. **12**

a) Explain Soldering & Desoldering techniques.
b) What is IP addressing? What do you mean by Physical & Logical address? Explain the components of the Internet.
c) Write a note on IC Regulators.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain different networking devices.
b) Explain Network security in Computer Network.
c) Write a short note on TELNET (Terminal Network).
d) What are the objects of signals in the Railway?
e) Give classification of signaling relays.

Q.5 Attempt Any Two. **12**

a) Give & explain the classification of Railway signals according to functions.
b) Explain DNS (Domain Name System).
c) Write a note on Railnet.

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

2) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

3) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

4) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

5) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

6) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

7) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

8) Which of the following is international trade?

a) Trade between countries
b) Trade between regions
c) Trade between provinces
d) Both (b) and (c)

9) Who is the 'lender of the last resort' in the banking structure of India?

a) State Bank of India
b) Reserve Bank of India
c) EXIM Bank of India
d) Union Bank of India

10) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

SLR-GF-321

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

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c) EXIM Bank of India d) Union Bank of India

5) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

6) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
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7) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
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c) None
d) Bothe (a) public and (b) private

SLR-GF-321

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
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Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

SLR-GF-321

Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Who is the 'lender of the last resort' in the banking structure of India?
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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

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SLR-GF-321

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Economics (BTN06505)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
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SLR-GF-322

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) The term 'Intellectual Property Rights' covers _____.
a) Copyrights b) Know-how
c) Trade dress d) All of these

2) The following cannot be exploited by assigning or by licensing the rights to others _____.
a) Patents b) Designs
c) Trademark d) All of these

3) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

4) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

5) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

6) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

7) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

8) What is the term of Patent?

a) 35 years b) 25 years

c) 20 years d) 15 years

9) Statutory requirement of “Abstract” is provided in _____ of Indian patents act,1970 and rules 2003.

a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)

c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

10) The following can be patented _____.

a) Machine b) Process

c) Composition of matter d) All of these

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

SLR-GF-322

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Who fills the invention disclosure form (IDF)?
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c) Assignee d) Patent Searcher

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a) Film work b) Books
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4) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
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c) may include shapes of goods or combination of colors
d) All of the above

10) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
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Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

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a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

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c) 40 years after the death of author
d) 60 years after the death of author

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b) Patent Attorney
c) Assignee
d) Patent Searcher

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b) 25 years
c) 20 years
d) 15 years

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN06506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

2) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

3) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

4) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

5) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

6) What is the term of Patent?
a) 35 years b) 25 years
c) 20 years d) 15 years

7) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

8) The following can be patented _____.

a) Machine b) Process
c) Composition of matter d) All of these

9) The term 'Intellectual Property Rights' covers _____.

a) Copyrights b) Know-how
c) Trade dress d) All of these

10) The following cannot be exploited by assigning or by licensing the rights to others _____.

a) Patents b) Designs
c) Trademark d) All of these

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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a) Copy rights
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e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Introduction to Sociology (BTN06507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The term sociology was coined by _____
a) Herbert Spencer b) August Comte
c) Karl Marx d) Max Weber

2) _____ and role are interrelated and inter-depended.
a) Position b) Status
c) Role d) Person

3) Rural society is _____.
a) Heterogeneous b) Homogeneous
c) Cultural d) Normative

4) Urban family is _____ unit.
a) Monogamous b) Polygamous
c) Mono-lateral d) Unilateral

5) Castes hierarchy is supposed to be _____.
a) Manual b) Formal
c) Divine d) Legal

6) The term Modernization was given by _____.
a) Ghurye b) Dr. Ambedkar
c) Shakespeare d) Srinivas

7) The two directions of social change are _____
a) uncertain - uncertain b) linear - cyclical
c) formal - informal d) negative - positive

8) _____ legalizes the sexual relation between man and woman
a) leaders b) Industry
c) Marriage d) Ideology

9) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

10) Environmental science is the study of _____.

a) nature
b) society
c) diversity
d) surroundings

SLR-GF-323

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Introduction to Sociology (BTN06507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 **Write answer on any four of the following.** **16**

a) Explain the meaning and elements of social structure.
b) Discuss on the conventional feature of marriage in India.
c) Elucidate nature and types of social institutions.
d) Explain the nature and process of social change.
e) Give and account of nature and types of social movements.
f) What is social mobility?

Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
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Seat No.		Set	R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Introduction to Sociology (BTN06507)

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SLR-GF-323

Seat No.	

Set S

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ELECTRONICS & TELECOMMUNICATION ENGINEERING
Introduction to Sociology (BTN06507)

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SLR-GF-324

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Stress and Coping (BTN06508)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Which factors improve coping?
a) Social support b) Optimism
c) Perceived control d) All of the above

2) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

3) Which of the following statements is true?
a) The stress response is nonspecific
b) Different kinds of stressors produce exactly the same response
c) Different people respond to the same stressor differently
d) All of the above

4) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
b) When he expects a positive outcome
c) When he thinks he does not have control over the situation
d) When he has a good social support network

5) Aches, shallow breathing and sweating, frequent colds are _____.
a) Physical symptoms of stress
b) Behavioral symptoms of stress
c) Emotional symptoms of stress
d) Cognitive symptoms of stress

6) What thoughts come to the mind when you're under negative stress?
a) You think that you can cope with the situation
b) You think that you cannot cope with the situation
c) You think that everything will get fine eventually
d) You think that you will get help immediately

7) Which of the following are the physical symptoms of anxiety?

a) Racing heart
b) Sweaty palms
c) Flushed cheeks
d) All of the above

8) Which of the following is true about 'deep breathing relaxation technique'?

a) It can be self-taught
b) It releases tension from the body and clears your mind
c) You have to do this under-water
d) Only 'a' & 'b' are true

9) Which of the following are stress busters?

a) Trying to find something funny in a difficult situation
b) Developing a support network
c) Taking a mindful walk
d) All of the above

10) When danger or stress is perceived/experienced, this response occurs in the body _____.

a) Exhaustion
b) Adaption
c) Fight-or-flight
d) Resistance

SLR-GF-324

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Stress and Coping (BTN06508)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

Seat No.	

Set **Q**

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ELECTRONICS & TELECOMMUNICATION ENGINEERING
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MCQ/Objective Type Questions

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9) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
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Seat No.	

Set **Q**

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ELECTRONICS & TELECOMMUNICATION ENGINEERING
Stress and Coping (BTN06508)

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Seat No.	

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Q.7 Explain the role of social support in mitigating stress with example. **10**

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Seat No.		Set	S

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4) What thoughts come to the mind when you're under negative stress?
a) You think that you can cope with the situation
b) You think that you cannot cope with the situation
c) You think that everything will get fine eventually
d) You think that you will get help immediately

5) Which of the following are the physical symptoms of anxiety?
a) Racing heart b) Sweaty palms
c) Flushed cheeks d) All of the above

6) Which of the following is true about 'deep breathing relaxation technique'?
a) It can be self-taught
b) It releases tension from the body and clears your mind
c) You have to do this under-water
d) Only 'a' & 'b' are true

7) Which of the following are stress busters?
a) Trying to find something funny in a difficult situation
b) Developing a support network
c) Taking a mindful walk
d) All of the above

8) When danger or stress is perceived/experienced, this response occurs in the body _____.
a) Exhaustion
b) Adaption
c) Fight-or-flight
d) Resistance

9) Which factors improve coping?
a) Social support
b) Optimism
c) Perceived control
d) All of the above

10) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

SLR-GF-324

Seat No.	

Set S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Stress and Coping (BTN06508)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

SLR-GF-325

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics & Human Value (BTN06509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

2) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

3) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

4) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

5) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

6) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

7) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

8) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

9) Human values are essential for _____.

a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

10) _____ is defined as the duty, obligation or even authority.

a) Work
b) Responsibility
c) Democracy
d) authority

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics & Human Value (BTN06509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics & Human Value (BTN06509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

2) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

3) _____ are the basic Human aspirations.
a) Money b) Relationship without money
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4) Human values are essential for _____.
a) living in harmony with self, each other and nature
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c) living with family and friends
d) making money to fulfill desires

5) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

6) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

7) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

8) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

9) What is Integrity?

a) Unity of thought
b) Word and deed
c) Open mindedness
d) All of these

10) Ethical issues that can affect an engineer's professional and personal life are termed as _____.

a) Macro ethics
b) Micro ethics
c) Morals
d) Rights

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics & Human Value (BTN06509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.		Set	R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics & Human Value (BTN06509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

2) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

3) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

4) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

5) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

6) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

7) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

8) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

9) Value and skills should go hand in hand _____.

a) True b) False
c) Cannot tell d) Wrong question

10) _____ are the basic Human aspirations.

a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics & Human Value (BTN06509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics & Human Value (BTN06509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

2) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

3) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

4) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

5) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

6) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

7) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

8) _____ is defined as the duty, obligation or even authority.

a) Work b) Responsibility
c) Democracy d) authority

9) Many complex social problems exist in the _____.

a) Industry/ Business b) Society
c) Home d) None of the above

10) Ethics is the word that refers to _____.

a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

SLR-GF-325

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Professional Ethics & Human Value (BTN06509)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

SLR-GF-326

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) If the length of the dipole decreases, then the radiation resistance will _____.
a) increase
b) decrease
c) depends on current distribution
d) not change

2) What is the directive gain when the magnitude of radiation intensity equals to average radiation intensity?
a) 4π b) ∞
c) 1 d) 0

3) The array factor depends on the following parameters
i) Geometrical arrangement ii) Spacing
iii) Number of elements iv) Unit pattern
a) i & ii only b) ii & iv only
c) I, ii & iii only d) i, ii, iii & iv

4) In broadside array, all the elements in the array should have similar _____ excitation along with similar amplitude excitation for maximum radiation.
a) Phase b) Frequency
c) Current d) Voltage

5) Dipole antennas are fed _____?
a) At Right Side b) At Left Side
c) At Center d) All Mentioned Above

6) In which of the following band the slot antenna operates?
a) UHF and SHF b) SHF and VLF
c) VLF and MF d) UHF and EHF

7) What is the pitch angle of the helical antenna to become a loop antenna?
a) 90 b) 0
c) 45 d) 60

8) For a horn antenna, in which flaring is done only in one direction is _____.
a) Conical antenna
b) Sectoral antenna
c) Pyramidal horn antenna
d) Exponential horn antenna

9) Which of the following is used as a secondary antenna in the reflector antenna?
a) Horn
b) Feed antenna
c) Parabolic
d) Dipole

10) In which of the following type of antenna a patch is created during fabrication?
a) Microstrip antenna
b) Horn antenna
c) Wire antenna
d) Lens antenna

11) Which of the following statements is false?
a) Log periodic antenna is a broadband antenna
b) The active region doesn't change with the change in frequency in Log Periodic Antenna
c) The geometry structure of the dipole changes proportional to the wavelength in LPDA
d) Impedance is function of logarithmic of frequency

12) Which of the following best suits to describe the impedance of a log periodic antenna?
a) It is function of anti-logarithmic of frequency
b) It is dependent on frequency directly
c) It is a function of logarithmic of inverse frequency
d) It is a function of logarithmic of frequency

13) Sky wave propagation reflects the frequencies _____.
a) 2 MHz
b) 2 MHz to 30 MHz
c) 2 GHz to 30 GHz
d) 30 GHz to 50 GHz

14) The height at a point above the earth's surface at which the wave bends down to the earth is called _____.
a) Actual height
b) Virtual height
c) Skip distance
d) Distance of separation between transmitter and antenna

SLR-GF-326

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 **Attempt any three.** **12**

a) Explain following antenna parameters.
1) Beam width
2) Directive gain
3) Radiation resistance
4) Directivity

b) Draw and explain helical antenna.

c) What is the principle of pattern multiplication? Write its advantages and disadvantages.

d) Explain Babinet's principle with its features.

Q.3 **Attempt any two.** **16**

a) Define pattern multiplication and derive the expressions for field pattern of end-fire array of n point sources, of equal amplitude and spacing.

b) Explain slot antenna in detail. What is the difference between slot antenna and its complementary antenna?

c) Derive the expression for the field quantities radiated from a $\lambda/2$ dipole and prove the radiation resistance equal to 73Ω.

Section – II

Q.4 **Attempt the following.** **12**

a) In case of Log periodic antenna how its name is derived? With neat diagram explain its working.

b) How the antenna gain can be measured by using Absolute method.

OR

c) How the radiation pattern of an antenna is measured?

d) What do you mean by Spiral antenna? Write the equations for frequencies defined to design spiral antenna.

Q.5 **Attempt any two.** **16**

a) Draw and explain various feeding mechanism of microstrip antenna.

b) Define critical frequency. Derive the equation for critical frequency for EM wave propagation.

c) Explain different types of Horn antenna. Write the applications of Horn antenna.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) For a horn antenna, in which flaring is done only in one direction is _____.
a) Conical antenna b) Sectoral antenna
c) Pyramidal horn antenna d) Exponential horn antenna

2) Which of the following is used as a secondary antenna in the reflector antenna?
a) Horn b) Feed antenna
c) Parabolic d) Dipole

3) In which of the following type of antenna a patch is created during fabrication?
a) Microstrip antenna b) Horn antenna
c) Wire antenna d) Lens antenna

4) Which of the following statements is false?
a) Log periodic antenna is a broadband antenna
b) The active region doesn't change with the change in frequency in Log Periodic Antenna
c) The geometry structure of the dipole changes proportional to the wavelength in LPDA
d) Impedance is function of logarithmic of frequency

5) Which of the following best suits to describe the impedance of a log periodic antenna?
a) It is function of anti-logarithmic of frequency
b) It is dependent on frequency directly
c) It is a function of logarithmic of inverse frequency
d) It is a function of logarithmic of frequency

6) Sky wave propagation reflects the frequencies _____.
a) 2 MHz b) 2 MHz to 30 MHz
c) 2 GHz to 30 GHz d) 30 GHz to 50 GHz

7) The height at a point above the earth's surface at which the wave bends down to the earth is called _____.
a) Actual height
b) Virtual height
c) Skip distance
d) Distance of separation between transmitter and antenna

8) If the length of the dipole decreases, then the radiation resistance will _____.
a) increase
b) decrease
c) depends on current distribution
d) not change

9) What is the directive gain when the magnitude of radiation intensity equals to average radiation intensity?
a) 4π b) ∞
c) 1 d) 0

10) The array factor depends on the following parameters
i) Geometrical arrangement ii) Spacing
iii) Number of elements iv) Unit pattern
a) i & ii only b) ii & iv only
c) I, ii & iii only d) i, ii, iii & iv

11) In broadside array, all the elements in the array should have similar _____ excitation along with similar amplitude excitation for maximum radiation.
a) Phase b) Frequency
c) Current d) Voltage

12) Dipole antennas are fed _____?
a) At Right Side b) At Left Side
c) At Center d) All Mentioned Above

13) In which of the following band the slot antenna operates?
a) UHF and SHF b) SHF and VLF
c) VLF and MF d) UHF and EHF

14) What is the pitch angle of the helical antenna to become a loop antenna?
a) 90 b) 0
c) 45 d) 60

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 **Attempt any three.** **12**

a) Explain following antenna parameters.
1) Beam width
2) Directive gain
3) Radiation resistance
4) Directivity

b) Draw and explain helical antenna.

c) What is the principle of pattern multiplication? Write its advantages and disadvantages.

d) Explain Babinet's principle with its features.

Q.3 **Attempt any two.** **16**

a) Define pattern multiplication and derive the expressions for field pattern of end-fire array of n point sources, of equal amplitude and spacing.

b) Explain slot antenna in detail. What is the difference between slot antenna and its complementary antenna?

c) Derive the expression for the field quantities radiated from a $\lambda/2$ dipole and prove the radiation resistance equal to 73Ω.

Section – II

Q.4 **Attempt the following.** **12**

a) In case of Log periodic antenna how its name is derived? With neat diagram explain its working.

b) How the antenna gain can be measured by using Absolute method.

OR

c) How the radiation pattern of an antenna is measured?

d) What do you mean by Spiral antenna? Write the equations for frequencies defined to design spiral antenna.

Q.5 **Attempt any two.** **16**

a) Draw and explain various feeding mechanism of microstrip antenna.

b) Define critical frequency. Derive the equation for critical frequency for EM wave propagation.

c) Explain different types of Horn antenna. Write the applications of Horn antenna.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following statements is false?
a) Log periodic antenna is a broadband antenna
b) The active region doesn't change with the change in frequency in Log Periodic Antenna
c) The geometry structure of the dipole changes proportional to the wavelength in LPDA
d) Impedance is function of logarithmic of frequency

2) Which of the following best suits to describe the impedance of a log periodic antenna?
a) It is function of anti-logarithmic of frequency
b) It is dependent on frequency directly
c) It is a function of logarithmic of inverse frequency
d) It is a function of logarithmic of frequency

3) Sky wave propagation reflects the frequencies _____.
a) 2 MHz b) 2 MHz to 30 MHz
c) 2 GHz to 30 GHz d) 30 GHz to 50 GHz

4) The height at a point above the earth's surface at which the wave bends down to the earth is called _____.
a) Actual height
b) Virtual height
c) Skip distance
d) Distance of separation between transmitter and antenna

5) If the length of the dipole decreases, then the radiation resistance will _____.
a) increase
b) decrease
c) depends on current distribution
d) not change

6) What is the directive gain when the magnitude of radiation intensity equals to average radiation intensity?
a) 4π b) ∞
c) 1 d) 0

7) The array factor depends on the following parameters

i) Geometrical arrangement ii) Spacing
iii) Number of elements iv) Unit pattern

a) i & ii only b) ii & iv only
c) I, ii & iii only d) i, ii, iii & iv

8) In broadside array, all the elements in the array should have similar _____ excitation along with similar amplitude excitation for maximum radiation.

a) Phase b) Frequency
c) Current d) Voltage

9) Dipole antennas are fed _____?

a) At Right Side b) At Left Side
c) At Center d) All Mentioned Above

10) In which of the following band the slot antenna operates?

a) UHF and SHF b) SHF and VLF
c) VLF and MF d) UHF and EHF

11) What is the pitch angle of the helical antenna to become a loop antenna?

a) 90 b) 0
c) 45 d) 60

12) For a horn antenna, in which flaring is done only in one direction is _____.

a) Conical antenna b) Sectoral antenna
c) Pyramidal horn antenna d) Exponential horn antenna

13) Which of the following is used as a secondary antenna in the reflector antenna?

a) Horn b) Feed antenna
c) Parabolic d) Dipole

14) In which of the following type of antenna a patch is created during fabrication?

a) Microstrip antenna b) Horn antenna
c) Wire antenna d) Lens antenna

SLR-GF-326

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 **Attempt any three.** **12**

a) Explain following antenna parameters.
1) Beam width
2) Directive gain
3) Radiation resistance
4) Directivity

b) Draw and explain helical antenna.

c) What is the principle of pattern multiplication? Write its advantages and disadvantages.

d) Explain Babinet's principle with its features.

Q.3 **Attempt any two.** **16**

a) Define pattern multiplication and derive the expressions for field pattern of end-fire array of n point sources, of equal amplitude and spacing.

b) Explain slot antenna in detail. What is the difference between slot antenna and its complementary antenna?

c) Derive the expression for the field quantities radiated from a $\lambda/2$ dipole and prove the radiation resistance equal to 73Ω.

Section – II

Q.4 **Attempt the following.** **12**

a) In case of Log periodic antenna how its name is derived? With neat diagram explain its working.

b) How the antenna gain can be measured by using Absolute method.

OR

c) How the radiation pattern of an antenna is measured?

d) What do you mean by Spiral antenna? Write the equations for frequencies defined to design spiral antenna.

Q.5 **Attempt any two.** **16**

a) Draw and explain various feeding mechanism of microstrip antenna.

b) Define critical frequency. Derive the equation for critical frequency for EM wave propagation.

c) Explain different types of Horn antenna. Write the applications of Horn antenna.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In which of the following band the slot antenna operates?
a) UHF and SHF b) SHF and VLF
c) VLF and MF d) UHF and EHF

2) What is the pitch angle of the helical antenna to become a loop antenna?
a) 90 b) 0
c) 45 d) 60

3) For a horn antenna, in which flaring is done only in one direction is _____.
a) Conical antenna b) Sectoral antenna
c) Pyramidal horn antenna d) Exponential horn antenna

4) Which of the following is used as a secondary antenna in the reflector antenna?
a) Horn b) Feed antenna
c) Parabolic d) Dipole

5) In which of the following type of antenna a patch is created during fabrication?
a) Microstrip antenna b) Horn antenna
c) Wire antenna d) Lens antenna

6) Which of the following statements is false?
a) Log periodic antenna is a broadband antenna
b) The active region doesn't change with the change in frequency in Log Periodic Antenna
c) The geometry structure of the dipole changes proportional to the wavelength in LPDA
d) Impedance is function of logarithmic of frequency

7) Which of the following best suits to describe the impedance of a log periodic antenna?
a) It is function of anti-logarithmic of frequency
b) It is dependent on frequency directly
c) It is a function of logarithmic of inverse frequency
d) It is a function of logarithmic of frequency

8) Sky wave propagation reflects the frequencies _____.

a) 2 MHz
b) 2 MHz to 30 MHz
c) 2 GHz to 30 GHz
d) 30 GHz to 50 GHz

9) The height at a point above the earth's surface at which the wave bends down to the earth is called _____.

a) Actual height
b) Virtual height
c) Skip distance
d) Distance of separation between transmitter and antenna

10) If the length of the dipole decreases, then the radiation resistance will _____.

a) increase
b) decrease
c) depends on current distribution
d) not change

11) What is the directive gain when the magnitude of radiation intensity equals to average radiation intensity?

a) 4π
b) ∞
c) 1
d) 0

12) The array factor depends on the following parameters

i) Geometrical arrangement
ii) Spacing
iii) Number of elements
iv) Unit pattern

a) i & ii only
b) ii & iv only
c) I, ii & iii only
d) i, ii, iii & iv

13) In broadside array, all the elements in the array should have similar _____ excitation along with similar amplitude excitation for maximum radiation.

a) Phase
b) Frequency
c) Current
d) Voltage

14) Dipole antennas are fed _____?

a) At Right Side
b) At Left Side
c) At Center
d) All Mentioned Above

SLR-GF-326

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (BTN06601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) Explain following antenna parameters.
1) Beam width
2) Directive gain
3) Radiation resistance
4) Directivity

b) Draw and explain helical antenna.

c) What is the principle of pattern multiplication? Write its advantages and disadvantages.

d) Explain Babinet's principle with its features.

Q.3 Attempt any two. **16**

a) Define pattern multiplication and derive the expressions for field pattern of end-fire array of n point sources, of equal amplitude and spacing.

b) Explain slot antenna in detail. What is the difference between slot antenna and its complementary antenna?

c) Derive the expression for the field quantities radiated from a $\lambda/2$ dipole and prove the radiation resistance equal to 73Ω.

Section – II

Q.4 Attempt the following. **12**

a) In case of Log periodic antenna how its name is derived? With neat diagram explain its working.

b) How the antenna gain can be measured by using Absolute method.

OR

c) How the radiation pattern of an antenna is measured?

d) What do you mean by Spiral antenna? Write the equations for frequencies defined to design spiral antenna.

Q.5 Attempt any two. **16**

a) Draw and explain various feeding mechanism of microstrip antenna.

b) Define critical frequency. Derive the equation for critical frequency for EM wave propagation.

c) Explain different types of Horn antenna. Write the applications of Horn antenna.

SLR-GF-327

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The ARM7TDMI-S supports _____, _____ and _____ data types.
a) char, int, float b) char, int, byte
c) byte, half-word, word d) int, char, word

2) Address space in ARM is _____.
a) $2^{\wedge}24$ b) $2^{\wedge}64$
c) $2^{\wedge}16$ d) $2^{\wedge}32$

3) When there is a failed attempt to memory access then processor enters _____ mode.
a) Abort b) Supervisor
c) User d) Fast Interrupt Request

4) Exception priorities are in the following descending order
a) Reset, Data, Abort, FIQ, IRQ, Pre Fetch Abort, SWI or Undef
b) SWI or Undef, Pre Fetch Abort, IRQ, FIQ, Abort, Data, Reset
c) FIQ, IRQ, Data, Abort, Pre Fetch Abort, SWI or Undef, Reset
d) None of the above

5) Each instruction in ARM machine is encoded into _____.
a) 2 byte b) 3 byte
c) 4 byte d) 8 byte

6) In LPC 2148 _____ pin select register is used to configure port pins P0.0 to P0.15.
a) PINSEL0 b) PINSEL1
c) PINSEL2 d) IO0DIR

7) ASR in instruction stands for _____.
a) Automatic Shift Right b) Always Shift Right
c) Arithmetic Shift Right d) Add & Shift Right

8) The _____ is the part of the kernel responsible for determining which task will run next.
a) Scheduler b) Semaphore
c) Mailbox d) Mutex

9) _____ is a kernel object that one or more threads of execution can release for the purposes of synchronization.

a) Interrupt b) Acquire
c) Semaphore d) Mutual exclusion

10) Concurrent and independent threads of execution that can compete for CPU execution time is called _____.

a) Semaphore b) Task
c) Threading d) None of the above

11) A semaphore is a protocol mechanism used to _____.

a) control access to a shared resource
b) signal the occurrence of an event
c) allow two task to synchronize their activities
d) all of the above

12) Which is the core of OS?

a) Kernel b) Semaphore
c) Shell d) Scheduler

13) Binary, Mutual exclusion, Counting are the types of _____.

a) pipes b) mailboxes
c) queues d) semaphores

14) Medical devices often run a _____ operating system.

a) Real time b) Single user
c) Multi user d) Network

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) What are the challenges in embedded system design & how to meet these challenges?
b) Explain the concept of WDT in LPC 2148 in detail.
c) Explain the pipelining Concept of ARM 7TDMI in detail.
d) What are the recent trends in embedded system? Explain each in detail.
e) Explain the concept of Interrupt controller for LPC2148.

Q.3 Attempt any two of the following questions. **12**

a) With the suitable diagram explain ARM 7TDMI core architecture in detail.
b) Describe operation with examples of following ARM instructions.
1) MOV
2) ADD
3) BLX
4) LDR
5) STR
6) MSR
c) Explain in detail memory management system of embedded system.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Write different features of RTOS.
b) Explain concept of semaphore with example.
c) Draw and explain architecture of kernel.
d) Explain task states associated with RTOS.
e) Explain embedded system used in digital camera.

Q.5 Attempt any two of the following questions. **12**

a) Explain the following kernel objects in RTOS.
1) Mailbox
2) Pipe
b) What are the types of scheduling algorithm. Explain any two types of scheduling algorithm in RTOS.
c) Draw interfacing diagram of 7 segment with LPC2148. Write an embedded C program to display 0 to 9 number on 7 segment.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The _____ is the part of the kernel responsible for determining which task will run next.
a) Scheduler b) Semaphore
c) Mailbox d) Mutex

2) _____ is a kernel object that one or more threads of execution can release for the purposes of synchronization.
a) Interrupt b) Acquire
c) Semaphore d) Mutual exclusion

3) Concurrent and independent threads of execution that can compete for CPU execution time is called _____.
a) Semaphore b) Task
c) Threading d) None of the above

4) A semaphore is a protocol mechanism used to _____.
a) control access to a shared resource
b) signal the occurrence of an event
c) allow two task to synchronize their activities
d) all of the above

5) Which is the core of OS?
a) Kernel b) Semaphore
c) Shell d) Scheduler

6) Binary, Mutual exclusion, Counting are the types of _____.
a) pipes b) mailboxes
c) queues d) semaphores

7) Medical devices often run a _____ operating system.
a) Real time b) Single user
c) Multi user d) Network

8) The ARM7TDMI-S supports _____, _____ and _____ data types.
a) char, int, float b) char, int, byte
c) byte, half-word, word d) int, char, word

9) Address space in ARM is _____.
a) 2^24 b) 2^64
c) 2^16 d) 2^32

10) When there is a failed attempt to memory access then processor enters _____ mode.
a) Abort b) Supervisor
c) User d) Fast Interrupt Request

11) Exception priorities are in the following descending order
a) Reset, Data, Abort, FIQ, IRQ, Pre Fetch Abort, SWI or Undef
b) SWI or Undef, Pre Fetch Abort, IRQ, FIQ, Abort, Data, Reset
c) FIQ, IRQ, Data, Abort, Pre Fetch Abort, SWI or Undef, Reset
d) None of the above

12) Each instruction in ARM machine is encoded into _____.
a) 2 byte b) 3 byte
c) 4 byte d) 8 byte

13) In LPC 2148 _____ pin select register is used to configure port pins P0.0 to P0.15.
a) PINSEL0 b) PINSEL1
c) PINSEL2 d) IO0DIR

14) ASR in instruction stands for _____.
a) Automatic Shift Right b) Always Shift Right
c) Arithmetic Shift Right d) Add & Shift Right

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) What are the challenges in embedded system design & how to meet these challenges?
b) Explain the concept of WDT in LPC 2148 in detail.
c) Explain the pipelining Concept of ARM 7TDMI in detail.
d) What are the recent trends in embedded system? Explain each in detail.
e) Explain the concept of Interrupt controller for LPC2148.

Q.3 Attempt any two of the following questions. **12**

a) With the suitable diagram explain ARM 7TDMI core architecture in detail.
b) Describe operation with examples of following ARM instructions.
1) MOV
2) ADD
3) BLX
4) LDR
5) STR
6) MSR
c) Explain in detail memory management system of embedded system.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Write different features of RTOS.
b) Explain concept of semaphore with example.
c) Draw and explain architecture of kernel.
d) Explain task states associated with RTOS.
e) Explain embedded system used in digital camera.

Q.5 Attempt any two of the following questions. **12**

a) Explain the following kernel objects in RTOS.
1) Mailbox
2) Pipe
b) What are the types of scheduling algorithm. Explain any two types of scheduling algorithm in RTOS.
c) Draw interfacing diagram of 7 segment with LPC2148. Write an embedded C program to display 0 to 9 number on 7 segment.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A semaphore is a protocol mechanism used to _____.
a) control access to a shared resource
b) signal the occurrence of an event
c) allow two task to synchronize their activities
d) all of the above

2) Which is the core of OS?
a) Kernel b) Semaphore
c) Shell d) Scheduler

3) Binary, Mutual exclusion, Counting are the types of _____.
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5) The ARM7TDMI-S supports _____, _____ and _____ data types.
a) char, int, float b) char, int, byte
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a) $2^{\wedge}24$ b) $2^{\wedge}64$
c) $2^{\wedge}16$ d) $2^{\wedge}32$

7) When there is a failed attempt to memory access then processor enters _____ mode.
a) Abort b) Supervisor
c) User d) Fast Interrupt Request

8) Exception priorities are in the following descending order
a) Reset, Data, Abort, FIQ, IRQ, Pre Fetch Abort, SWI or Undef
b) SWI or Undef, Pre Fetch Abort, IRQ, FIQ, Abort, Data, Reset
c) FIQ, IRQ, Data, Abort, Pre Fetch Abort, SWI or Undef, Reset
d) None of the above

9) Each instruction in ARM machine is encoded into _____.
a) 2 byte b) 3 byte
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c) Semaphore d) Mutual exclusion

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a) Semaphore b) Task
c) Threading d) None of the above

SLR-GF-327

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) What are the challenges in embedded system design & how to meet these challenges?
b) Explain the concept of WDT in LPC 2148 in detail.
c) Explain the pipelining Concept of ARM 7TDMI in detail.
d) What are the recent trends in embedded system? Explain each in detail.
e) Explain the concept of Interrupt controller for LPC2148.

Q.3 Attempt any two of the following questions. **12**

a) With the suitable diagram explain ARM 7TDMI core architecture in detail.
b) Describe operation with examples of following ARM instructions.
1) MOV
2) ADD
3) BLX
4) LDR
5) STR
6) MSR
c) Explain in detail memory management system of embedded system.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Write different features of RTOS.
b) Explain concept of semaphore with example.
c) Draw and explain architecture of kernel.
d) Explain task states associated with RTOS.
e) Explain embedded system used in digital camera.

Q.5 Attempt any two of the following questions. **12**

a) Explain the following kernel objects in RTOS.
1) Mailbox
2) Pipe
b) What are the types of scheduling algorithm. Explain any two types of scheduling algorithm in RTOS.
c) Draw interfacing diagram of 7 segment with LPC2148. Write an embedded C program to display 0 to 9 number on 7 segment.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In LPC 2148 _____ pin select register is used to configure port pins P0.0 to P0.15.
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2) ASR in instruction stands for _____.
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3) The _____ is the part of the kernel responsible for determining which task will run next.
a) Scheduler b) Semaphore
c) Mailbox d) Mutex

4) _____ is a kernel object that one or more threads of execution can release for the purposes of synchronization.
a) Interrupt b) Acquire
c) Semaphore d) Mutual exclusion

5) Concurrent and independent threads of execution that can compete for CPU execution time is called _____.
a) Semaphore b) Task
c) Threading d) None of the above

6) A semaphore is a protocol mechanism used to _____.
a) control access to a shared resource
b) signal the occurrence of an event
c) allow two task to synchronize their activities
d) all of the above

7) Which is the core of OS?
a) Kernel b) Semaphore
c) Shell d) Scheduler

8) Binary, Mutual exclusion, Counting are the types of _____.
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c) queues d) semaphores

9) Medical devices often run a _____ operating system.
a) Real time b) Single user
c) Multi user d) Network

10) The ARM7TDMI-S supports _____, _____ and _____ data types.
a) char, int, float b) char, int, byte
c) byte, half-word, word d) int, char, word

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a) $2\text{^}24$ b) $2\text{^}64$
c) $2\text{^}16$ d) $2\text{^}32$

12) When there is a failed attempt to memory access then processor enters _____ mode.
a) Abort b) Supervisor
c) User d) Fast Interrupt Request

13) Exception priorities are in the following descending order
a) Reset, Data, Abort, FIQ, IRQ, Pre Fetch Abort, SWI or Undef
b) SWI or Undef, Pre Fetch Abort, IRQ, FIQ, Abort, Data, Reset
c) FIQ, IRQ, Data, Abort, Pre Fetch Abort, SWI or Undef, Reset
d) None of the above

14) Each instruction in ARM machine is encoded into _____.
a) 2 byte b) 3 byte
c) 4 byte d) 8 byte

SLR-GF-327

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (BTN06602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) What are the challenges in embedded system design & how to meet these challenges?
b) Explain the concept of WDT in LPC 2148 in detail.
c) Explain the pipelining Concept of ARM 7TDMI in detail.
d) What are the recent trends in embedded system? Explain each in detail.
e) Explain the concept of Interrupt controller for LPC2148.

Q.3 Attempt any two of the following questions. **12**

a) With the suitable diagram explain ARM 7TDMI core architecture in detail.
b) Describe operation with examples of following ARM instructions.
1) MOV
2) ADD
3) BLX
4) LDR
5) STR
6) MSR
c) Explain in detail memory management system of embedded system.

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Write different features of RTOS.
b) Explain concept of semaphore with example.
c) Draw and explain architecture of kernel.
d) Explain task states associated with RTOS.
e) Explain embedded system used in digital camera.

Q.5 Attempt any two of the following questions. **12**

a) Explain the following kernel objects in RTOS.
1) Mailbox
2) Pipe
b) What are the types of scheduling algorithm. Explain any two types of scheduling algorithm in RTOS.
c) Draw interfacing diagram of 7 segment with LPC2148. Write an embedded C program to display 0 to 9 number on 7 segment.

SLR-GF-328

Seat No.	

Set P

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) If addition of $\alpha 1$ and $\alpha 2$ reaches unity then anode current will reach _____ (w.r.t. two transistor analogy of SCR).
a) zero b) infinity
c) negative d) None

2) In case of converter, maximum DC voltage is obtained for firing angle _____.
a) $\alpha < 0°$ b) $\alpha > 0°$
c) $\alpha = 0°$ d) None of these

3) Turn ON time of SCR is _____ than its turn-OFF time.
a) greater b) less
c) equal d) none

4) During forward blocking state, current flowing through SCR is _____ and voltage is _____.
a) large, low b) less, high
c) high, medium d) medium, high

5) For PLL 565, R1=10K. What should be the value in order to have center frequency of VCO to be 3000Hz.
a) $0.1\ \mu f$ b) $0.01\ \mu f$
c) $1\ \mu f$ d) $10\ \mu f$

6) The firing angle α value ranges from _____.
a) 0 to π b) 0 to 2π
c) 0 to $\pi/2$ d) none of these

7) Which of the following PNPN device are bidirectional?
a) TRIAC b) SCR
c) DIAC d) Both a & c
e) both a & b

8) The IC XR 2240 consist of _____.

a) 8 bit Counter b) 4 bit Counter

c) 8 digit Counter d) 4 digit Counter

9) For input voltage range of 0-4 V, t2 = 4000, required size of DVM is _____.

a) 12 bit b) 13 bit

c) 14 bit d) 19 bit

10) J type thermocouple is used in temp Range of _____.

a) -190 to 760 ^{o}C b) -200 to 371 ^{o}C

c) -190 to 1260 ^{o}C d) None

11) The sensitivity of LM 35 is _____.

a) 10 mV/^{o}C b) 50 mV/^{o}C

c) 1 mV/^{o}C d) 100 mV/^{o}C

12) Effect of Noise is less in _____ controller.

a) ON-OFF b) ON-OFF with Hysteris

c) Proportional d) PID

13) For proportional controller with P.B. = 50% Max Error = 6 V, Full Scale o/p = 12 V, the gain is _____.

a) 2.5 b) 2.97

c) 2.98 d) 4

14) In logic controllers, each rung of Ladder diagram is evaluated _____.

a) Parallel b) Randomly

c) From top to bottom d) From bottom to top

Seat No.	

Set | P

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt Any Four of the following. **16**

a) Explain working principle of SCR. Describe regions of operations of SCR.
b) Explain CLASS B commutation method of SCR.
c) Explain and draw V-I characteristics of TRIAC. Also draw schematic construction.
d) Explain use of PLL565 as FSK Detector.
e) Draw and explain the internal schematic of Balanced Modulator IC1596.

Q.3 Attempt Any Two of the following: **12**

a) Explain single phase half wave-controlled rectifier with inductive load. What is the effect of freewheeling diode in it? Explain with the help of circuit diagram, waveforms.
b) Explain AC power control using DIAC and TRIAC with the help of circuit diagram and waveforms.
c) Design a frequency synthesizer to generate a frequency range from 1Hz to 999.9Hz using PLL 565 and suitable TTL ICs.

Section – II

Q.4 Attempt Any Four of the following. **16**

a) Draw and explain block diagram of PLC.
b) Explain advantages and disadvantages of thermocouple.
c) What is dead band and why dead band is require in ON-OFF controller.
d) Design floating load I to V converter where input current range is 4 mA to 20 mA and output voltage required is 0 to 10v.
e) Draw and explain block diagram of IC74926.

Q.5 Attempt Any Two of the following: **12**

a) Explain with suitable diagram controlling of bottle filling plant using PLC.
b) Design DVM by using dual slope technique for Vin = 2V and 1MHz clock is used. Assume suitable data.
c) Design proportional controller to meet following specifications.
Proportional Band = 67% error max = ± 3V Full scale output = 12V
Zero error causes 25% controller output.

Seat No.	

Set **Q**

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The IC XR 2240 consist of _____.
a) 8 bit Counter b) 4 bit Counter
c) 8 digit Counter d) 4 digit Counter

2) For input voltage range of 0-4 V, t2 = 4000, required size of DVM is _____.
a) 12 bit b) 13 bit
c) 14 bit d) 19 bit

3) J type thermocouple is used in temp Range of _____.
a) -190 to 760 ^oC b) -200 to 371 ^oC
c) -190 to 1260 ^oC d) None

4) The sensitivity of LM 35 is _____.
a) 10 mV/^oC b) 50 mV/^oC
c) 1 mV/^oC d) 100 mV/^oC

5) Effect of Noise is less in _____ controller.
a) ON-OFF b) ON-OFF with Hysteris
c) Proportional d) PID

6) For proportional controller with P.B. = 50% Max Error = 6 V, Full Scale o/p = 12 V, the gain is _____.
a) 2.5 b) 2.97
c) 2.98 d) 4

7) In logic controllers, each rung of Ladder diagram is evaluated _____.
a) Parallel b) Randomly
c) From top to bottom d) From bottom to top

8) If addition of $\alpha 1$ and $\alpha 2$ reaches unity then anode current will reach _____ (w.r.t. two transistor analogy of SCR).
a) zero b) infinity
c) negative d) None

9) In case of converter, maximum DC voltage is obtained for firing angle _____.
a) $\alpha < 0°$ b) $\alpha > 0°$
c) $\alpha = 0°$ d) None of these

10) Turn ON time of SCR is _____ than its turn-OFF time.
a) greater b) less
c) equal d) none

11) During forward blocking state, current flowing through SCR is _____ and voltage is _____.
a) large, low b) less, high
c) high, medium d) medium, high

12) For PLL 565, R1=10K. What should be the value in order to have center frequency of VCO to be 3000Hz.
a) $0.1\ \mu f$ b) $0.01\ \mu f$
c) $1\ \mu f$ d) $10\ \mu f$

13) The firing angle α value ranges from _____.
a) 0 to π b) 0 to 2π
c) 0 to $\pi/2$ d) none of these

14) Which of the following PNPN device are bidirectional?
a) TRIAC b) SCR
c) DIAC d) Both a & c
e) both a & b

Seat No.	

Set | Q

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt Any Four of the following. **16**

a) Explain working principle of SCR. Describe regions of operations of SCR.
b) Explain CLASS B commutation method of SCR.
c) Explain and draw V-I characteristics of TRIAC. Also draw schematic construction.
d) Explain use of PLL565 as FSK Detector.
e) Draw and explain the internal schematic of Balanced Modulator IC1596.

Q.3 Attempt Any Two of the following: **12**

a) Explain single phase half wave-controlled rectifier with inductive load. What is the effect of freewheeling diode in it? Explain with the help of circuit diagram, waveforms.
b) Explain AC power control using DIAC and TRIAC with the help of circuit diagram and waveforms.
c) Design a frequency synthesizer to generate a frequency range from 1Hz to 999.9Hz using PLL 565 and suitable TTL ICs.

Section – II

Q.4 Attempt Any Four of the following. **16**

a) Draw and explain block diagram of PLC.
b) Explain advantages and disadvantages of thermocouple.
c) What is dead band and why dead band is require in ON-OFF controller.
d) Design floating load I to V converter where input current range is 4 mA to 20 mA and output voltage required is 0 to 10v.
e) Draw and explain block diagram of IC74926.

Q.5 Attempt Any Two of the following: **12**

a) Explain with suitable diagram controlling of bottle filling plant using PLC.
b) Design DVM by using dual slope technique for Vin = 2V and 1MHz clock is used. Assume suitable data.
c) Design proportional controller to meet following specifications.
Proportional Band = 67% error max = ± 3V Full scale output = 12V
Zero error causes 25% controller output.

Seat No.		Set	R

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The sensitivity of LM 35 is _____.
a) 10 mV/°C b) 50 mV/°C
c) 1 mV/°C d) 100 mV/°C

2) Effect of Noise is less in _____ controller.
a) ON-OFF b) ON-OFF with Hysteris
c) Proportional d) PID

3) For proportional controller with P.B. = 50% Max Error = 6 V, Full Scale o/p = 12 V, the gain is _____.
a) 2.5 b) 2.97
c) 2.98 d) 4

4) In logic controllers, each rung of Ladder diagram is evaluated _____.
a) Parallel b) Randomly
c) From top to bottom d) From bottom to top

5) If addition of $\alpha 1$ and $\alpha 2$ reaches unity then anode current will reach _____ (w.r.t. two transistor analogy of SCR).
a) zero b) infinity
c) negative d) None

6) In case of converter, maximum DC voltage is obtained for firing angle _____.
a) $\alpha < 0°$ b) $\alpha > 0°$
c) $\alpha = 0°$ d) None of these

7) Turn ON time of SCR is _____ than its turn-OFF time.
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c) equal d) none

8) During forward blocking state, current flowing through SCR is _____ and voltage is _____.
a) large, low b) less, high
c) high, medium d) medium, high

9) For PLL 565, R1=10K. What should be the value in order to have center frequency of VCO to be 3000Hz.

a) $0.1\ \mu f$ b) $0.01\ \mu f$
c) $1\ \mu f$ d) $10\ \mu f$

10) The firing angle α value ranges from _____.

a) 0 to π b) 0 to 2π
c) 0 to $\pi/2$ d) none of these

11) Which of the following PNPN device are bidirectional?

a) TRIAC b) SCR
c) DIAC d) Both a & c
e) both a & b

12) The IC XR 2240 consist of _____.

a) 8 bit Counter b) 4 bit Counter
c) 8 digit Counter d) 4 digit Counter

13) For input voltage range of 0-4 V, t2 = 4000, required size of DVM is _____.

a) 12 bit b) 13 bit
c) 14 bit d) 19 bit

14) J type thermocouple is used in temp Range of _____.

a) -190 to 760 ^oC b) -200 to 371 ^oC
c) -190 to 1260 ^oC d) None

Seat No.	

Set **R**

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt Any Four of the following. **16**

a) Explain working principle of SCR. Describe regions of operations of SCR.
b) Explain CLASS B commutation method of SCR.
c) Explain and draw V-I characteristics of TRIAC. Also draw schematic construction.
d) Explain use of PLL565 as FSK Detector.
e) Draw and explain the internal schematic of Balanced Modulator IC1596.

Q.3 Attempt Any Two of the following: **12**

a) Explain single phase half wave-controlled rectifier with inductive load. What is the effect of freewheeling diode in it? Explain with the help of circuit diagram, waveforms.
b) Explain AC power control using DIAC and TRIAC with the help of circuit diagram and waveforms.
c) Design a frequency synthesizer to generate a frequency range from 1Hz to 999.9Hz using PLL 565 and suitable TTL ICs.

Section – II

Q.4 Attempt Any Four of the following. **16**

a) Draw and explain block diagram of PLC.
b) Explain advantages and disadvantages of thermocouple.
c) What is dead band and why dead band is require in ON-OFF controller.
d) Design floating load I to V converter where input current range is 4 mA to 20 mA and output voltage required is 0 to 10v.
e) Draw and explain block diagram of IC74926.

Q.5 Attempt Any Two of the following: **12**

a) Explain with suitable diagram controlling of bottle filling plant using PLC.
b) Design DVM by using dual slope technique for Vin = 2V and 1MHz clock is used. Assume suitable data.
c) Design proportional controller to meet following specifications.
Proportional Band = 67% error max = ± 3V Full scale output = 12V
Zero error causes 25% controller output.

Seat No.		Set	S

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The firing angle α value ranges from _____.
a) 0 to π b) 0 to 2π
c) 0 to $\pi/2$ d) none of these

2) Which of the following PNPN device are bidirectional?
a) TRIAC b) SCR
c) DIAC d) Both a & c
e) both a & b

3) The IC XR 2240 consist of _____.
a) 8 bit Counter b) 4 bit Counter
c) 8 digit Counter d) 4 digit Counter

4) For input voltage range of 0-4 V, t2 = 4000, required size of DVM is _____.
a) 12 bit b) 13 bit
c) 14 bit d) 19 bit

5) J type thermocouple is used in temp Range of _____.
a) -190 to 760 ^oC b) -200 to 371 ^oC
c) -190 to 1260 ^oC d) None

6) The sensitivity of LM 35 is _____.
a) 10 mV/^{o}C b) 50 mV/^{o}C
c) 1 mV/^{o}C d) 100 mV/^{o}C

7) Effect of Noise is less in _____ controller.
a) ON-OFF b) ON-OFF with Hysteris
c) Proportional d) PID

8) For proportional controller with P.B. = 50% Max Error = 6 V, Full Scale o/p = 12 V, the gain is _____.
a) 2.5 b) 2.97
c) 2.98 d) 4

9) In logic controllers, each rung of Ladder diagram is evaluated _____.
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10) If addition of $\alpha 1$ and $\alpha 2$ reaches unity then anode current will reach _____ (w.r.t. two transistor analogy of SCR).

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a) $\alpha < 0°$ b) $\alpha > 0°$
c) $\alpha = 0°$ d) None of these

12) Turn ON time of SCR is _____ than its turn-OFF time.

a) greater b) less
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13) During forward blocking state, current flowing through SCR is _____ and voltage is _____.

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c) high, medium d) medium, high

14) For PLL 565, R1=10K. What should be the value in order to have center frequency of VCO to be 3000Hz.

a) $0.1\ \mu f$ b) $0.01\ \mu f$
c) $1\ \mu f$ d) $10\ \mu f$

SLR-GF-328

Seat No.		Set	S

T.Y. (B. Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (BTN06603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt Any Four of the following. **16**

a) Explain working principle of SCR. Describe regions of operations of SCR.
b) Explain CLASS B commutation method of SCR.
c) Explain and draw V-I characteristics of TRIAC. Also draw schematic construction.
d) Explain use of PLL565 as FSK Detector.
e) Draw and explain the internal schematic of Balanced Modulator IC1596.

Q.3 Attempt Any Two of the following: **12**

a) Explain single phase half wave-controlled rectifier with inductive load. What is the effect of freewheeling diode in it? Explain with the help of circuit diagram, waveforms.
b) Explain AC power control using DIAC and TRIAC with the help of circuit diagram and waveforms.
c) Design a frequency synthesizer to generate a frequency range from 1Hz to 999.9Hz using PLL 565 and suitable TTL ICs.

Section – II

Q.4 Attempt Any Four of the following. **16**

a) Draw and explain block diagram of PLC.
b) Explain advantages and disadvantages of thermocouple.
c) What is dead band and why dead band is require in ON-OFF controller.
d) Design floating load I to V converter where input current range is 4 mA to 20 mA and output voltage required is 0 to 10v.
e) Draw and explain block diagram of IC74926.

Q.5 Attempt Any Two of the following: **12**

a) Explain with suitable diagram controlling of bottle filling plant using PLC.
b) Design DVM by using dual slope technique for Vin = 2V and 1MHz clock is used. Assume suitable data.
c) Design proportional controller to meet following specifications.
Proportional Band = 67% error max = ± 3V Full scale output = 12V
Zero error causes 25% controller output.

SLR-GF-329

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) The maximum angle to the axis at which light may enter the fiber in order to be propagated is referred to as _____.
a) Acceptance angle b) Incident angle
c) Critical Angle d) Numerical aperture

2) When the angle of incidence is _____ the critical angle, the light beam bends along the interface.
a) more than b) less than
c) equal to d) None of the above

3) Absorption losses due to atomic defects mainly include _____.
a) Radiation
b) Missing molecules, oxygen defects in glass
c) Impurities in fiber material
d) Interaction with other components of core

4) The scattering resulting from fiber imperfections like core-cladding RI differences, diameter fluctuations, strains, and bubbles is?
a) Rayleigh scattering b) Mie scattering
c) Stimulated Brillouin scattering d) Stimulated Raman scattering

5) Attenuation in Number of decibels (dB) _____.
a) 10 log10 Pi * Po b) 10 log10 Po/Pi
c) 10 log10 Pi / Po d) None

6) A common technique involved in the introduction of the stripe geometry to the structure to provide optical confinement in _____ plane.
a) Horizontal b) Vertical
c) Both a b d) All Directions

7) Which among the following characteristics of Laser light specifies the precise movement of all individual light waves together through time and space?
a) Monochromatic b) Directional
c) Coherent d) Brightness

8) Stimulated emission by recombination of injected carriers is encouraged in _____.
a) Semiconductor injection laser b) Gas laser
c) Chemist laser d) Dye

9) Impact ionization phenomenon occur in _____.
a) p-n photodiode b) Avalanche photodiode
c) p-i-n photodiode d) None of the above

10) The basic performance criteria or a WDM Technique are _____.
a) Insertion loss b) Channel width
c) Both d) None of these

11) Optical fiber is acting as a _____.
a) Electrical Circular Waveguide
b) Electrical Rectangular Waveguide
c) Dielectrical Circular Waveguide
d) Dielectrical Rectangular Waveguide.

12) FDDI uses which technology?
a) Ring b) Bus
c) Star d) All of above

13) The electronic bottle neck arises because _____.
a) Speed limitation of digital integrated circuits
b) Speed limitation of high power low noise amplifier
c) All the above
d) None of the above

14) The Ethernet LAN operate on _____.
a) CSMA concept b) CSMA/CD concept
c) AII the above d) None of the above

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four: **16**

a) Explain the block diagram of Optical fiber communication system. List it's advantages & disadvantages.
b) Explain bend losses in OFC.
c) Explain fiber splices.
d) Explain the structure Surface emitting LED.
e) When the mean optical power launched into an 8 km length of fiber is 120 μ W the mean optical power at the fiber output is 3 μ W
Determine
a) Overall signal attenuation or loss in decibel through the fiber assuming there are no connectors or splices
b) The signal attenuation per kilometer for the fiber
c) The overall signal attenuation for a 10 km optical link using the same fiber with splices at 1 km interval each giving an attenuation of 1 dB
d) The numerical input/output power ratio in (c)

Q.3 Solve Any Two: **12**

a) Derive relation between Numerical aperture & Refractive index difference.
b) What is Dispersion? Compare the dispersion observed in different type of Optical fiber cables.
c) Explain the structure of the semiconductor injection LASER. Explain its characteristics.

Section – II

Q.4 Solve Any Four: **16**

a) Write a note on Photo Transistor.
b) A photo diode has a quantum efficiency of 65% when photons of energy 1.5×10^{-19} J are incident upon it.
1) At what wavelength is the photo diode operating?
2) Calculate the incident optical power required to obtain a photo current of 2.5 μ A. When the photo diode is operating as described above
c) Explain concept of Optical network terminology.
d) Explain Receiver design in fiber optical communication system.
e) Write a note on FDDI.

Q.5 Solve Any Two. **12**

a) Explain working of PiN photo diode, which factors limits the speed of response of photo diode.

b) Explain SONET, give its advantages.

c) Explain concept of optical time division multiplexing (OTDM).

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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a) Horizontal b) Vertical
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14) Which among the following characteristics of Laser light specifies the precise movement of all individual light waves together through time and space?

a) Monochromatic b) Directional
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Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four: **16**

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b) Explain bend losses in OFC.
c) Explain fiber splices.
d) Explain the structure Surface emitting LED.
e) When the mean optical power launched into an 8 km length of fiber is 120 μ W the mean optical power at the fiber output is 3 μ W
Determine
a) Overall signal attenuation or loss in decibel through the fiber assuming there are no connectors or splices
b) The signal attenuation per kilometer for the fiber
c) The overall signal attenuation for a 10 km optical link using the same fiber with splices at 1 km interval each giving an attenuation of 1 dB
d) The numerical input/output power ratio in (c)

Q.3 Solve Any Two: **12**

a) Derive relation between Numerical aperture & Refractive index difference.
b) What is Dispersion? Compare the dispersion observed in different type of Optical fiber cables.
c) Explain the structure of the semiconductor injection LASER. Explain its characteristics.

Section – II

Q.4 Solve Any Four: **16**

a) Write a note on Photo Transistor.
b) A photo diode has a quantum efficiency of 65% when photons of energy 1.5×10^{-19} J are incident upon it.
1) At what wavelength is the photo diode operating?
2) Calculate the incident optical power required to obtain a photo current of 2.5 μ A. When the photo diode is operating as described above
c) Explain concept of Optical network terminology.
d) Explain Receiver design in fiber optical communication system.
e) Write a note on FDDI.

Q.5 Solve Any Two. **12**

a) Explain working of PiN photo diode, which factors limits the speed of response of photo diode.

b) Explain SONET, give its advantages.

c) Explain concept of optical time division multiplexing (OTDM).

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Optical fiber is acting as a _____.
a) Electrical Circular Waveguide
b) Electrical Rectangular Waveguide
c) Dielectrical Circular Waveguide
d) Dielectrical Rectangular Waveguide.

2) FDDI uses which technology?
a) Ring b) Bus
c) Star d) All of above

3) The electronic bottle neck arises because _____.
a) Speed limitation of digital integrated circuits
b) Speed limitation of high power low noise amplifier
c) All the above
d) None of the above

4) The Ethernet LAN operate on _____.
a) CSMA concept b) CSMA/CD concept
c) AII the above d) None of the above

5) The maximum angle to the axis at which light may enter the fiber in order to be propagated is referred to as _____.
a) Acceptance angle b) Incident angle
c) Critical Angle d) Numerical aperture

6) When the angle of incidence is _____ the critical angle, the light beam bends along the interface.
a) more than b) less than
c) equal to d) None of the above

7) Absorption losses due to atomic defects mainly include _____.
a) Radiation
b) Missing molecules, oxygen defects in glass
c) Impurities in fiber material
d) Interaction with other components of core

8) The scattering resulting from fiber imperfections like core-cladding RI differences, diameter fluctuations, strains, and bubbles is?

a) Rayleigh scattering b) Mie scattering
c) Stimulated Brillouin scattering d) Stimulated Raman scattering

9) Attenuation in Number of decibels (dB) _____.

a) 10 log10 Pi * Po b) 10 log10 Po/Pi
c) 10 log10 Pi / Po d) None

10) A common technique involved in the introduction of the stripe geometry to the structure to provide optical confinement in _____ plane.

a) Horizontal b) Vertical
c) Both a b d) All Directions

11) Which among the following characteristics of Laser light specifies the precise movement of all individual light waves together through time and space?

a) Monochromatic b) Directional
c) Coherent d) Brightness

12) Stimulated emission by recombination of injected carriers is encouraged in _____.

a) Semiconductor injection laser b) Gas laser
c) Chemist laser d) Dye

13) Impact ionization phenomenon occur in _____.

a) p-n photodiode b) Avalanche photodiode
c) p-i-n photodiode d) None of the above

14) The basic performance criteria or a WDM Technique are _____.

a) Insertion loss b) Channel width
c) Both d) None of these

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four: **16**

a) Explain the block diagram of Optical fiber communication system. List it's advantages & disadvantages.
b) Explain bend losses in OFC.
c) Explain fiber splices.
d) Explain the structure Surface emitting LED.
e) When the mean optical power launched into an 8 km length of fiber is 120 μ W the mean optical power at the fiber output is 3 μ W
Determine
a) Overall signal attenuation or loss in decibel through the fiber assuming there are no connectors or splices
b) The signal attenuation per kilometer for the fiber
c) The overall signal attenuation for a 10 km optical link using the same fiber with splices at 1 km interval each giving an attenuation of 1 dB
d) The numerical input/output power ratio in (c)

Q.3 Solve Any Two: **12**

a) Derive relation between Numerical aperture & Refractive index difference.
b) What is Dispersion? Compare the dispersion observed in different type of Optical fiber cables.
c) Explain the structure of the semiconductor injection LASER. Explain its characteristics.

Section – II

Q.4 Solve Any Four: **16**

a) Write a note on Photo Transistor.
b) A photo diode has a quantum efficiency of 65% when photons of energy 1.5×10^{-19} J are incident upon it.
1) At what wavelength is the photo diode operating?
2) Calculate the incident optical power required to obtain a photo current of 2.5 μ A. When the photo diode is operating as described above
c) Explain concept of Optical network terminology.
d) Explain Receiver design in fiber optical communication system.
e) Write a note on FDDI.

Q.5 Solve Any Two. **12**

a) Explain working of PiN photo diode, which factors limits the speed of response of photo diode.

b) Explain SONET, give its advantages.

c) Explain concept of optical time division multiplexing (OTDM).

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

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a) Horizontal b) Vertical
c) Both a b d) All Directions

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b) 10 log10 Po/Pi
c) 10 log10 Pi / Po
d) None

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Optical Fiber Communication (BTN06609)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Solve Any Four: **16**

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b) Explain bend losses in OFC.
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c) Explain the structure of the semiconductor injection LASER. Explain its characteristics.

Section – II

Q.4 Solve Any Four: **16**

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b) A photo diode has a quantum efficiency of 65% when photons of energy 1.5×10^{-19} J are incident upon it.
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2) Calculate the incident optical power required to obtain a photo current of 2.5 μ A. When the photo diode is operating as described above
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d) Explain Receiver design in fiber optical communication system.
e) Write a note on FDDI.

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b) Explain SONET, give its advantages.

c) Explain concept of optical time division multiplexing (OTDM).

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Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) For Image Enhancement a general-approach is to use a function of values of f (input image) in a predefined neighborhood of (x, y) to determine the value of g (output image) at (x, y). The techniques that use such approaches are called _____.
a) Contouring b) Contrast stretching
c) Mask processing d) None of the mentioned

2) In 4-neighbours of a pixel p, how far are each of the neighbours located from p?
a) one pixel apart b) four pixels apart
c) alternating pixels d) None or the Mentioned

3) The distance between pixels p and q, the pixels have a distance less than or equal to some value of radius r, form a diamond centred at (x, y) is called: _____.
a) Euclidean distance b) Chessboard distance
c) City-Block distance d) None of the Mentioned

4) Which of the following color model is suitable from the perception point of view?
a) RGB b) HIS
c) CMY d) CMYK

5) If the images are displayed using 8-bits, then, what is the range of the value of an image if the image is a result of subtraction operation?
a) 0 to 255 b) 0 to 511
c) -255 to 0 d) None of the mentioned

6) What is the full form of CDF?
a) Cumulative density function b) Contour derived function
c) Cumulative distribution function d) None of the mentioned

7) In digital image of M rows and N columns and L discrete gray levels, calculate the bits required to store a digitized image for M=N=32 and L=16.
a) 16384 b) 4096
c) 8192 d) 512

8) Histogram matching is also called as _____.
a) Histogram equalization b) Contrast stretching
c) Histogram specification d) None of the above

9) What does the total number of pixels in the region defines?
a) Perimeter b) Area
c) Intensity d) Brightness

10) Which of the following second order operator is most robust to noise in edge filtering?
a) Sobel operator b) Laplacian operator
c) Laplacian of Gaussian operator d) Prewitt operator

11) Full color image means _____.
a) 8-bit b) 24-bit
c) 16-bit d) 4-bit

12) Block motion model can't handle _____ motion.
a) Translational b) Rotational
c) Translational and rotational d) None of above

13) Which of the following is method of estimating the degradation function?
a) Image observation b) Experimentation
c) Mathematical modeling d) All of above

14) 2-D motion, also called _____.
a) Rejected motion b) Projected motion
c) Optical flow motion d) None

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Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data whenever needed and mention it clearly.

Section – I

Q.2 Attempt any four. (Each carries 4 marks) **16**

a) Explain color images, RGB, HSI and other model.
b) Explain basic relationship between pixels.
c) What are applications of Dilation and Erosion in image morphology?
d) Explain Gaussian and Butterworth filters for smoothening and sharpening.
e) Explain log transform and power law transform.

Q.3 Attempt any two. (Each carries 6 marks) **12**

a) Explain Histogram equalization and histogram specification
b) Explain the following edge detection operators
1) Gradient operator
2) Pewits' operator
3) Soble operator
c) Explain in detail Discrete Cosine Transform.

Section – II

Q.4 Attempt any four. (Each carries 4 marks) **16**

a) Draw block diagram of image degradation/restoration model and explain.
b) Explain interlaced scanning in video signals.
c) What are I, P & B frames in digital video?
d) Explain Gaussian Noise and Rayleigh noise mode.
e) Explain ITU-RBT 601 Digital Video formats.

Q.5 Attempt any two. (Each carries 6 marks) **12**

a) What is image restoration? How image restoration is done using Weiner filter?
b) What is Block matching method for motion estimation?
c) Explain optical flow equation.

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Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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4) Assume suitable data whenever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Histogram matching is also called as _____.
a) Histogram equalization b) Contrast stretching
c) Histogram specification d) None of the above

2) What does the total number of pixels in the region defines?
a) Perimeter b) Area
c) Intensity d) Brightness

3) Which of the following second order operator is most robust to noise in edge filtering?
a) Sobel operator b) Laplacian operator
c) Laplacian of Gaussian operator d) Prewitt operator

4) Full color image means _____.
a) 8-bit b) 24-bit
c) 16-bit d) 4-bit

5) Block motion model can't handle _____ motion.
a) Translational b) Rotational
c) Translational and rotational d) None of above

6) Which of the following is method of estimating the degradation function?
a) Image observation b) Experimentation
c) Mathematical modeling d) All of above

7) 2-D motion, also called _____.
a) Rejected motion b) Projected motion
c) Optical flow motion d) None

8) For Image Enhancement a general-approach is to use a function of values of f (input image) in a predefined neighborhood of (x, y) to determine the value of g (output image) at (x, y). The techniques that use such approaches are called _____.
a) Contouring b) Contrast stretching
c) Mask processing d) None of the mentioned

9) In 4-neighbours of a pixel p, how far are each of the neighbours located from p?

a) one pixel apart
b) four pixels apart
c) alternating pixels
d) None or the Mentioned

10) The distance between pixels p and q, the pixels have a distance less than or equal to some value of radius r, form a diamond centred at (x, y) is called: _____.

a) Euclidean distance
b) Chessboard distance
c) City-Block distance
d) None of the Mentioned

11) Which of the following color model is suitable from the perception point of view?

a) RGB
b) HIS
c) CMY
d) CMYK

12) If the images are displayed using 8-bits, then, what is the range of the value of an image if the image is a result of subtraction operation?

a) 0 to 255
b) 0 to 511
c) -255 to 0
d) None of the mentioned

13) What is the full form of CDF?

a) Cumulative density function
b) Contour derived function
c) Cumulative distribution function
d) None of the mentioned

14) In digital image of M rows and N columns and L discrete gray levels, calculate the bits required to store a digitized image for M=N=32 and L=16.

a) 16384
b) 4096
c) 8192
d) 512

SLR-GF-330

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four. (Each carries 4 marks) **16**

a) Explain color images, RGB, HSI and other model.
b) Explain basic relationship between pixels.
c) What are applications of Dilation and Erosion in image morphology?
d) Explain Gaussian and Butterworth filters for smoothening and sharpening.
e) Explain log transform and power law transform.

Q.3 Attempt any two. (Each carries 6 marks) **12**

a) Explain Histogram equalization and histogram specification
b) Explain the following edge detection operators
1) Gradient operator
2) Pewits' operator
3) Soble operator
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Section – II

Q.4 Attempt any four. (Each carries 4 marks) **16**

a) Draw block diagram of image degradation/restoration model and explain.
b) Explain interlaced scanning in video signals.
c) What are I, P & B frames in digital video?
d) Explain Gaussian Noise and Rayleigh noise mode.
e) Explain ITU-RBT 601 Digital Video formats.

Q.5 Attempt any two. (Each carries 6 marks) **12**

a) What is image restoration? How image restoration is done using Weiner filter?
b) What is Block matching method for motion estimation?
c) Explain optical flow equation.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Full color image means _____.
a) 8-bit b) 24-bit
c) 16-bit d) 4-bit

2) Block motion model can't handle _____ motion.
a) Translational b) Rotational
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3) Which of the following is method of estimating the degradation function?
a) Image observation b) Experimentation
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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Set **S**

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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c) -255 to 0
d) None of the mentioned

SLR-GF-330

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image and Video Processing (BTN06610)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data whenever needed and mention it clearly.

Section – I

Q.2 Attempt any four. (Each carries 4 marks) **16**

a) Explain color images, RGB, HSI and other model.
b) Explain basic relationship between pixels.
c) What are applications of Dilation and Erosion in image morphology?
d) Explain Gaussian and Butterworth filters for smoothening and sharpening.
e) Explain log transform and power law transform.

Q.3 Attempt any two. (Each carries 6 marks) **12**

a) Explain Histogram equalization and histogram specification
b) Explain the following edge detection operators
1) Gradient operator
2) Pewits' operator
3) Soble operator
c) Explain in detail Discrete Cosine Transform.

Section – II

Q.4 Attempt any four. (Each carries 4 marks) **16**

a) Draw block diagram of image degradation/restoration model and explain.
b) Explain interlaced scanning in video signals.
c) What are I, P & B frames in digital video?
d) Explain Gaussian Noise and Rayleigh noise mode.
e) Explain ITU-RBT 601 Digital Video formats.

Q.5 Attempt any two. (Each carries 6 marks) **12**

a) What is image restoration? How image restoration is done using Weiner filter?
b) What is Block matching method for motion estimation?
c) Explain optical flow equation.

SLR-GF-331

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Unit of amount of substance is _____.
a) Kg b) Newton
c) Mole d) None of these

2) Smallest change which a sensor can detect is _____.
a) Resolution b) Accuracy
c) Scale d) Drift

3) Thermocouple generate output voltage according to _____.
a) Voltage b) Current
c) Inductance d) Temperature

4) Hall Effect transducer can be used to measure _____.
a) Magnetic Field b) Angular Displacement
c) Linear Displacement d) All of the mentioned

5) The capacitance C is charged through a resistor R. The time constant of the charging circuit is given by _____.
a) C/R b) RC
c) 1/RC d) R/C

6) Identify which of the following is the unit of magnetic flux density?
a) Farad b) Weber
c) Weber meter d) Tesla

7) _____ is the closeness to true value.
a) Zero stability b) Sensitivity
c) Accuracy d) Linearity

8) Arduino Uno consists of _____ analog inputs.
a) 04 pins b) 06 pins
c) 10 pins d) 14 pins

9) In Arduino Uno _____ microcontroller is used.
a) 8051 b) PIC16F877
c) Atmega2560 d) Atmega328

10) In Arduino IDE delay (50) indicates _____ holding time period.
a) 50 Nanoseconds b) 50 Microseconds
c) 50 Milliseconds d) 50 Seconds

11) While interfacing LCD with Arduino if we write LiquidCrystalled(12, 11, 5, 4, 3, 2); this statement 5, 4, 3, 2 indicates- _____.
a) Data pins of LCD b) Control pins of LCD
c) Address bus of Arduino d) None of these

12) Raspberry Pi-3 supports inbuild _____.
a) HDMI connector b) USB Connectors
c) Micro SD Slot d) All of the mentioned

13) To interface digital video and audio output with Raspberry Pi _____ is used.
a) SD card slot b) HDMI connector
c) USB connector d) None of these

14) Raspberry Pi uses _____ processors.
a) 8086 b) PIC
c) ARM d) All of these

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Explain following terms in details-
i) Hysteresis ii) Calibration

b) Describe various modes of heat transfer in detail. State examples of sensors used to detect heat.

c) Define sensor. Compare sensor w.r.t. transducer.

d) Describe Piezoelectric effect and Hall effect. State applications of each in sensing various parameters for measurement.

e) Explain Successive-Approximation type ADC with block diagram.

Q.3 Attempt any Two. **12**

a) Describe Operational amplifier as-
i) Voltage follower
ii) Instrumentation amplifier
iii) Charge amplifier

b) Explain-
i) Two Wire Transmission
ii) Four Wire Sensing
iii) Six Wire Sensing

c) Describe bridge Null-balanced & Unbalanced circuits. State types of batteries used for low power sensors.

Section – II

Q.4 Attempt any Four. **16**

a) Blink alternate LEDs connected to Arduino Uno board with 01 second delay. Draw appropriate interfacing diagram,

b) Draw block diagram of Raspberry Pi board with peripherals. Explain each peripheral with specifications.

c) Write a code to welcome a human being at door on LCD using Arduino Uno. Draw appropriate interfacing diagram with input output pins.

d) Write a code to control brightness of an LED using PWM from Raspberry Pi. Draw appropriate interfacing diagram with input output pins.

e) Design a circuit and write a program to measure soil moisture using Arduino. What is the difference between analog input and digital input of an Arduino?

Q.5 Attempt any Two. **12**

a) Write a program and draw connection diagram to interface servo Motor to Raspberry Pi board. Define Duty Cycle. State applications of servo motor**.**

b) Design circuit and write a program to detect obstacle using PIR sensor and Raspberry Pi. Compare Arduino w.r.t. Raspberry Pi.

c) Display distance of an obstacle present in front of a person using interfacing of ultrasonic sensor with Arduino Uno. Compare sensors w.r.t. actuators.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Arduino Uno consists of _____ analog inputs.
a) 04 pins b) 06 pins
c) 10 pins d) 14 pins

2) In Arduino Uno _____ microcontroller is used.
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c) Atmega2560 d) Atmega328

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a) 50 Nanoseconds b) 50 Microseconds
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4) While interfacing LCD with Arduino if we write LiquidCrystalled(12, 11, 5, 4, 3, 2); this statement 5, 4, 3, 2 indicates- _____.
a) Data pins of LCD b) Control pins of LCD
c) Address bus of Arduino d) None of these

5) Raspberry Pi-3 supports inbuild _____.
a) HDMI connector b) USB Connectors
c) Micro SD Slot d) All of the mentioned

6) To interface digital video and audio output with Raspberry Pi _____ is used.
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c) USB connector d) None of these

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a) 8086 b) PIC
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8) Unit of amount of substance is _____.
a) Kg b) Newton
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9) Smallest change which a sensor can detect is _____.
a) Resolution b) Accuracy
c) Scale d) Drift

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a) Voltage b) Current
c) Inductance d) Temperature

11) Hall Effect transducer can be used to measure _____.
a) Magnetic Field b) Angular Displacement
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12) The capacitance C is charged through a resistor R. The time constant of the charging circuit is given by _____.
a) C/R b) RC
c) 1/RC d) R/C

13) Identify which of the following is the unit of magnetic flux density?
a) Farad b) Weber
c) Weber meter d) Tesla

14) _____ is the closeness to true value.
a) Zero stability b) Sensitivity
c) Accuracy d) Linearity

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Explain following terms in details-
i) Hysteresis ii) Calibration

b) Describe various modes of heat transfer in detail. State examples of sensors used to detect heat.

c) Define sensor. Compare sensor w.r.t. transducer.

d) Describe Piezoelectric effect and Hall effect. State applications of each in sensing various parameters for measurement.

e) Explain Successive-Approximation type ADC with block diagram.

Q.3 Attempt any Two. **12**

a) Describe Operational amplifier as-
i) Voltage follower
ii) Instrumentation amplifier
iii) Charge amplifier

b) Explain-
i) Two Wire Transmission
ii) Four Wire Sensing
iii) Six Wire Sensing

c) Describe bridge Null-balanced & Unbalanced circuits. State types of batteries used for low power sensors.

Section – II

Q.4 Attempt any Four. **16**

a) Blink alternate LEDs connected to Arduino Uno board with 01 second delay. Draw appropriate interfacing diagram,

b) Draw block diagram of Raspberry Pi board with peripherals. Explain each peripheral with specifications.

c) Write a code to welcome a human being at door on LCD using Arduino Uno. Draw appropriate interfacing diagram with input output pins.

d) Write a code to control brightness of an LED using PWM from Raspberry Pi. Draw appropriate interfacing diagram with input output pins.

e) Design a circuit and write a program to measure soil moisture using Arduino. What is the difference between analog input and digital input of an Arduino?

Q.5 Attempt any Two. **12**

a) Write a program and draw connection diagram to interface servo Motor to Raspberry Pi board. Define Duty Cycle. State applications of servo motor**.**

b) Design circuit and write a program to detect obstacle using PIR sensor and Raspberry Pi. Compare Arduino w.r.t. Raspberry Pi.

c) Display distance of an obstacle present in front of a person using interfacing of ultrasonic sensor with Arduino Uno. Compare sensors w.r.t. actuators.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) While interfacing LCD with Arduino if we write LiquidCrystalled(12, 11, 5, 4, 3, 2); this statement 5, 4, 3, 2 indicates- _____.
a) Data pins of LCD b) Control pins of LCD
c) Address bus of Arduino d) None of these

2) Raspberry Pi-3 supports inbuild _____.
a) HDMI connector b) USB Connectors
c) Micro SD Slot d) All of the mentioned

3) To interface digital video and audio output with Raspberry Pi _____ is used.
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c) USB connector d) None of these

4) Raspberry Pi uses _____ processors.
a) 8086 b) PIC
c) ARM d) All of these

5) Unit of amount of substance is _____.
a) Kg b) Newton
c) Mole d) None of these

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a) Resolution b) Accuracy
c) Scale d) Drift

7) Thermocouple generate output voltage according to _____.
a) Voltage b) Current
c) Inductance d) Temperature

8) Hall Effect transducer can be used to measure _____.
a) Magnetic Field b) Angular Displacement
c) Linear Displacement d) All of the mentioned

9) The capacitance C is charged through a resistor R. The time constant of the charging circuit is given by _____.
a) C/R b) RC
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10) Identify which of the following is the unit of magnetic flux density?
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11) _____ is the closeness to true value.
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c) Accuracy d) Linearity

12) Arduino Uno consists of _____ analog inputs.
a) 04 pins b) 06 pins
c) 10 pins d) 14 pins

13) In Arduino Uno _____ microcontroller is used.
a) 8051 b) PIC16F877
c) Atmega2560 d) Atmega328

14) In Arduino IDE delay (50) indicates _____ holding time period.
a) 50 Nanoseconds b) 50 Microseconds
c) 50 Milliseconds d) 50 Seconds

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Explain following terms in details-
i) Hysteresis ii) Calibration

b) Describe various modes of heat transfer in detail. State examples of sensors used to detect heat.

c) Define sensor. Compare sensor w.r.t. transducer.

d) Describe Piezoelectric effect and Hall effect. State applications of each in sensing various parameters for measurement.

e) Explain Successive-Approximation type ADC with block diagram.

Q.3 Attempt any Two. **12**

a) Describe Operational amplifier as-
i) Voltage follower
ii) Instrumentation amplifier
iii) Charge amplifier

b) Explain-
i) Two Wire Transmission
ii) Four Wire Sensing
iii) Six Wire Sensing

c) Describe bridge Null-balanced & Unbalanced circuits. State types of batteries used for low power sensors.

Section – II

Q.4 Attempt any Four. **16**

a) Blink alternate LEDs connected to Arduino Uno board with 01 second delay. Draw appropriate interfacing diagram,

b) Draw block diagram of Raspberry Pi board with peripherals. Explain each peripheral with specifications.

c) Write a code to welcome a human being at door on LCD using Arduino Uno. Draw appropriate interfacing diagram with input output pins.

d) Write a code to control brightness of an LED using PWM from Raspberry Pi. Draw appropriate interfacing diagram with input output pins.

e) Design a circuit and write a program to measure soil moisture using Arduino. What is the difference between analog input and digital input of an Arduino?

Q.5 Attempt any Two. **12**

a) Write a program and draw connection diagram to interface servo Motor to Raspberry Pi board. Define Duty Cycle. State applications of servo motor**.**

b) Design circuit and write a program to detect obstacle using PIR sensor and Raspberry Pi. Compare Arduino w.r.t. Raspberry Pi.

c) Display distance of an obstacle present in front of a person using interfacing of ultrasonic sensor with Arduino Uno. Compare sensors w.r.t. actuators.

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Identify which of the following is the unit of magnetic flux density?
a) Farad b) Weber
c) Weber meter d) Tesla

2) _____ is the closeness to true value.
a) Zero stability b) Sensitivity
c) Accuracy d) Linearity

3) Arduino Uno consists of _____ analog inputs.
a) 04 pins b) 06 pins
c) 10 pins d) 14 pins

4) In Arduino Uno _____ microcontroller is used.
a) 8051 b) PIC16F877
c) Atmega2560 d) Atmega328

5) In Arduino IDE delay (50) indicates _____ holding time period.
a) 50 Nanoseconds b) 50 Microseconds
c) 50 Milliseconds d) 50 Seconds

6) While interfacing LCD with Arduino if we write LiquidCrystalled(12, 11, 5, 4, 3, 2); this statement 5, 4, 3, 2 indicates- _____.
a) Data pins of LCD b) Control pins of LCD
c) Address bus of Arduino d) None of these

7) Raspberry Pi-3 supports inbuild _____.
a) HDMI connector b) USB Connectors
c) Micro SD Slot d) All of the mentioned

8) To interface digital video and audio output with Raspberry Pi _____ is used.
a) SD card slot b) HDMI connector
c) USB connector d) None of these

9) Raspberry Pi uses _____ processors.
a) 8086 b) PIC
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10) Unit of amount of substance is _____.

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a) Resolution b) Accuracy
c) Scale d) Drift

12) Thermocouple generate output voltage according to _____.

a) Voltage b) Current
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13) Hall Effect transducer can be used to measure _____.

a) Magnetic Field b) Angular Displacement
c) Linear Displacement d) All of the mentioned

14) The capacitance C is charged through a resistor R. The time constant of the charging circuit is given by _____.

a) C/R b) RC
c) 1/RC d) R/C

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Sensors and Applications (BTN06605)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Explain following terms in details-
i) Hysteresis ii) Calibration

b) Describe various modes of heat transfer in detail. State examples of sensors used to detect heat.

c) Define sensor. Compare sensor w.r.t. transducer.

d) Describe Piezoelectric effect and Hall effect. State applications of each in sensing various parameters for measurement.

e) Explain Successive-Approximation type ADC with block diagram.

Q.3 Attempt any Two. **12**

a) Describe Operational amplifier as-
i) Voltage follower
ii) Instrumentation amplifier
iii) Charge amplifier

b) Explain-
i) Two Wire Transmission
ii) Four Wire Sensing
iii) Six Wire Sensing

c) Describe bridge Null-balanced & Unbalanced circuits. State types of batteries used for low power sensors.

Section – II

Q.4 Attempt any Four. **16**

a) Blink alternate LEDs connected to Arduino Uno board with 01 second delay. Draw appropriate interfacing diagram,

b) Draw block diagram of Raspberry Pi board with peripherals. Explain each peripheral with specifications.

c) Write a code to welcome a human being at door on LCD using Arduino Uno. Draw appropriate interfacing diagram with input output pins.

d) Write a code to control brightness of an LED using PWM from Raspberry Pi. Draw appropriate interfacing diagram with input output pins.

e) Design a circuit and write a program to measure soil moisture using Arduino. What is the difference between analog input and digital input of an Arduino?

Q.5 Attempt any Two. **12**

a) Write a program and draw connection diagram to interface servo Motor to Raspberry Pi board. Define Duty Cycle. State applications of servo motor**.**

b) Design circuit and write a program to detect obstacle using PIR sensor and Raspberry Pi. Compare Arduino w.r.t. Raspberry Pi.

c) Display distance of an obstacle present in front of a person using interfacing of ultrasonic sensor with Arduino Uno. Compare sensors w.r.t. actuators.

SLR-GF-332

Seat No.		Set	P

T. Y. (B. Tech) (Sem– II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer book page no.3. each question carries one marks.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options **14**

1) Which of the following best describes the concept of open source software?
a) Software that can only be used for non-commercial purposes
b) Software that is freely available and allows users to view, modify, and distribute its source code
c) Software that is developed exclusively by large corporations
d) Software that is restricted to a specific operating system

2) What is the primary advantage of open source software?
a) It is always free of charge
b) It is guaranteed to be bug-free
c) It allows users to customize and modify the software to meet their specific needs
d) It provides better technical support than proprietary software

3) Which of the following is a common method for installing multiple operating systems on a single computer?
a) Multitasking b) Multithreading
c) Multiboot d) Multiprocessing

4) What is the purpose of partitioning a hard disk during the installation of an operating system?
a) To allocate space for system files only
b) To separate user files from system files
c) To create multiple logical drives within a single physical disk
d) To improve disk performance and organization

5) Which task is primarily associated with system administrators in managing jobs in an open source operating system?
a) Installing new software
b) Managing user accounts
c) Monitoring system performance
d) Scheduling and controlling the execution of processes

6) In the context of an open source operating system, what does process management involve?
a) Creating new partitions on the hard disk
b) Monitoring network traffic
c) Controlling and coordinating the execution of programs
d) Setting up and managing user accounts

7) Which of the following is an example of a basic networking command in an open source operating system?
a) ls
b) cp
c) ifconfig
d) grep

8) Which open source software is commonly used for configuring Apache web servers?
a) MySQL
b) PHP
c) Apache Tomcat
d) Apache HTTP Server

9) Which shell is commonly used for Bash shell scripting in an open source operating system?
a) C shell
b) Korn shell
c) Bash shell
d) Z shell

10) What is the primary purpose of executing a shell script in an open source operating system?
a) To compile source code
b) To run system commands
c) To create user accounts
d) To configure network settings

11) What is the primary purpose of a Version Control System (VCS)?
a) Managing software licenses
b) Tracking changes to files and code
c) Distributing software updates
d) Testing software compatibility

12) What is the main difference between distributed and non-distributed VCS?
a) Distributed VCS allows offline access to repositories
b) Non-distributed VCS supports larger file sizes
c) Distributed VCS is faster in handling large codebases
d) Non-distributed VCS provides stronger data encryption

13) What command is used to initialize a local Git repository?
a) git init
b) git clone
c) git status
d) git add

14) What command is used to view the current status of the local repository?
a) git init
b) git clone
c) git status
d) git add

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem– II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks

Section – I

Q.2 Attempt any Four **16**

a) What is the need for open source software?
b) What are some common commands for file manipulation in Linux, including piping and redirection, and how do they work?
c) What are the key responsibilities of a system administrator in Linux? How do these responsibilities differ from those of a network administrator?
d) What is NFS? How can NFS be used to share files between Linux systems? Discuss key NFS configuration options and security considerations.
e) List and explain the advantages of using open source software.

Q.3 Attempt any Two **12**

a) Explain the importance of community involvement and collaboration in the development and maintenance of open source software projects.
b) What are the steps involved in installing Linux in a multiboot environment, and what considerations should be taken into account for hard disk partitioning and swap space allocation?
c) How can job and process management be used to optimize system performance in Linux? Discuss key tools and commands for monitoring and managing running processes.

Section – II

Q.4 Attempt any Four **16**

a) What is the Bash shell? Explain key features of the Bash shell, including its command-line interface, command history, and command completion.
b) What is a Version Control System (VCS), and why is it important in software development?
c) How do you create a local repository using Git? What is the purpose of the "git init" command?
d) How can you list and view existing branches in a Git repository? What is the command used to accomplish this?
e) What is the significance of the "<HEAD>" reference in Git? How does it relate to branches and the current state of the repository?

Q.5 Attempt any Two **12**

a) What is a DHCP server? How can DHCP servers be configured in Linux? Explain how DHCP can be used to automate IP address assignment and configuration for network devices.

b) How can Bash shell scripts be executed in Linux? Discuss different options for running Bash scripts, including running scripts as standalone programs and running scripts as part of a larger shell script.

c) What is the process of checking out a branch in Git? How does it switch the working directory to a different branch and what are the implications of this action?

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem– II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer book page no.3. each question carries one marks.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options **14**

1) Which open source software is commonly used for configuring Apache web servers?
a) MySQL b) PHP
c) Apache Tomcat d) Apache HTTP Server

2) Which shell is commonly used for Bash shell scripting in an open source operating system?
a) C shell b) Korn shell
c) Bash shell d) Z shell

3) What is the primary purpose of executing a shell script in an open source operating system?
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b) To run system commands
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4) What is the primary purpose of a Version Control System (VCS)?
a) Managing software licenses
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c) git status d) git add

7) What command is used to view the current status of the local repository?
a) git init b) git clone
c) git status d) git add

8) Which of the following best describes the concept of open source software?
a) Software that can only be used for non-commercial purposes
b) Software that is freely available and allows users to view, modify, and distribute its source code
c) Software that is developed exclusively by large corporations
d) Software that is restricted to a specific operating system

9) What is the primary advantage of open source software?
a) It is always free of charge
b) It is guaranteed to be bug-free
c) It allows users to customize and modify the software to meet their specific needs
d) It provides better technical support than proprietary software

10) Which of the following is a common method for installing multiple operating systems on a single computer?
a) Multitasking
b) Multithreading
c) Multiboot
d) Multiprocessing

11) What is the purpose of partitioning a hard disk during the installation of an operating system?
a) To allocate space for system files only
b) To separate user files from system files
c) To create multiple logical drives within a single physical disk
d) To improve disk performance and organization

12) Which task is primarily associated with system administrators in managing jobs in an open source operating system?
a) Installing new software
b) Managing user accounts
c) Monitoring system performance
d) Scheduling and controlling the execution of processes

13) In the context of an open source operating system, what does process management involve?
a) Creating new partitions on the hard disk
b) Monitoring network traffic
c) Controlling and coordinating the execution of programs
d) Setting up and managing user accounts

14) Which of the following is an example of a basic networking command in an open source operating system?
a) ls
b) cp
c) ifconfig
d) grep

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem– II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks

Section – I

Q.2 Attempt any Four **16**

a) What is the need for open source software?
b) What are some common commands for file manipulation in Linux, including piping and redirection, and how do they work?
c) What are the key responsibilities of a system administrator in Linux? How do these responsibilities differ from those of a network administrator?
d) What is NFS? How can NFS be used to share files between Linux systems? Discuss key NFS configuration options and security considerations.
e) List and explain the advantages of using open source software.

Q.3 Attempt any Two **12**

a) Explain the importance of community involvement and collaboration in the development and maintenance of open source software projects.
b) What are the steps involved in installing Linux in a multiboot environment, and what considerations should be taken into account for hard disk partitioning and swap space allocation?
c) How can job and process management be used to optimize system performance in Linux? Discuss key tools and commands for monitoring and managing running processes.

Section – II

Q.4 Attempt any Four **16**

a) What is the Bash shell? Explain key features of the Bash shell, including its command-line interface, command history, and command completion.
b) What is a Version Control System (VCS), and why is it important in software development?
c) How do you create a local repository using Git? What is the purpose of the "git init" command?
d) How can you list and view existing branches in a Git repository? What is the command used to accomplish this?
e) What is the significance of the "<HEAD>" reference in Git? How does it relate to branches and the current state of the repository?

Q.5 Attempt any Two **12**

a) What is a DHCP server? How can DHCP servers be configured in Linux? Explain how DHCP can be used to automate IP address assignment and configuration for network devices.

b) How can Bash shell scripts be executed in Linux? Discuss different options for running Bash scripts, including running scripts as standalone programs and running scripts as part of a larger shell script.

c) What is the process of checking out a branch in Git? How does it switch the working directory to a different branch and what are the implications of this action?

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem– II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer book page no.3. each question carries one marks.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options **14**

1) What is the primary purpose of a Version Control System (VCS)?
a) Managing software licenses
b) Tracking changes to files and code
c) Distributing software updates
d) Testing software compatibility

2) What is the main difference between distributed and non-distributed VCS?
a) Distributed VCS allows offline access to repositories
b) Non-distributed VCS supports larger file sizes
c) Distributed VCS is faster in handling large codebases
d) Non-distributed VCS provides stronger data encryption

3) What command is used to initialize a local Git repository?
a) git init b) git clone
c) git status d) git add

4) What command is used to view the current status of the local repository?
a) git init b) git clone
c) git status d) git add

5) Which of the following best describes the concept of open source software?
a) Software that can only be used for non-commercial purposes
b) Software that is freely available and allows users to view, modify, and distribute its source code
c) Software that is developed exclusively by large corporations
d) Software that is restricted to a specific operating system

6) What is the primary advantage of open source software?
a) It is always free of charge
b) It is guaranteed to be bug-free
c) It allows users to customize and modify the software to meet their specific needs
d) It provides better technical support than proprietary software

7) Which of the following is a common method for installing multiple operating systems on a single computer?
a) Multitasking b) Multithreading
c) Multiboot d) Multiprocessing

8) What is the purpose of partitioning a hard disk during the installation of an operating system?
a) To allocate space for system files only
b) To separate user files from system files
c) To create multiple logical drives within a single physical disk
d) To improve disk performance and organization

9) Which task is primarily associated with system administrators in managing jobs in an open source operating system?
a) Installing new software
b) Managing user accounts
c) Monitoring system performance
d) Scheduling and controlling the execution of processes

10) In the context of an open source operating system, what does process management involve?
a) Creating new partitions on the hard disk
b) Monitoring network traffic
c) Controlling and coordinating the execution of programs
d) Setting up and managing user accounts

11) Which of the following is an example of a basic networking command in an open source operating system?
a) ls
b) cp
c) ifconfig
d) grep

12) Which open source software is commonly used for configuring Apache web servers?
a) MySQL
b) PHP
c) Apache Tomcat
d) Apache HTTP Server

13) Which shell is commonly used for Bash shell scripting in an open source operating system?
a) C shell
b) Korn shell
c) Bash shell
d) Z shell

14) What is the primary purpose of executing a shell script in an open source operating system?
a) To compile source code
b) To run system commands
c) To create user accounts
d) To configure network settings

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem– II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks

Section – I

Q.2 Attempt any Four **16**

a) What is the need for open source software?
b) What are some common commands for file manipulation in Linux, including piping and redirection, and how do they work?
c) What are the key responsibilities of a system administrator in Linux? How do these responsibilities differ from those of a network administrator?
d) What is NFS? How can NFS be used to share files between Linux systems? Discuss key NFS configuration options and security considerations.
e) List and explain the advantages of using open source software.

Q.3 Attempt any Two **12**

a) Explain the importance of community involvement and collaboration in the development and maintenance of open source software projects.
b) What are the steps involved in installing Linux in a multiboot environment, and what considerations should be taken into account for hard disk partitioning and swap space allocation?
c) How can job and process management be used to optimize system performance in Linux? Discuss key tools and commands for monitoring and managing running processes.

Section – II

Q.4 Attempt any Four **16**

a) What is the Bash shell? Explain key features of the Bash shell, including its command-line interface, command history, and command completion.
b) What is a Version Control System (VCS), and why is it important in software development?
c) How do you create a local repository using Git? What is the purpose of the "git init" command?
d) How can you list and view existing branches in a Git repository? What is the command used to accomplish this?
e) What is the significance of the "<HEAD>" reference in Git? How does it relate to branches and the current state of the repository?

Q.5 Attempt any Two **12**

a) What is a DHCP server? How can DHCP servers be configured in Linux? Explain how DHCP can be used to automate IP address assignment and configuration for network devices.

b) How can Bash shell scripts be executed in Linux? Discuss different options for running Bash scripts, including running scripts as standalone programs and running scripts as part of a larger shell script.

c) What is the process of checking out a branch in Git? How does it switch the working directory to a different branch and what are the implications of this action?

SLR-GF-332

Seat No.		Set	S

T. Y. (B. Tech) (Sem– II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer book page no.3. each question carries one marks.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options **14**

1) In the context of an open source operating system, what does process management involve?
a) Creating new partitions on the hard disk
b) Monitoring network traffic
c) Controlling and coordinating the execution of programs
d) Setting up and managing user accounts

2) Which of the following is an example of a basic networking command in an open source operating system?
a) ls b) cp
c) ifconfig d) grep

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a) MySQL b) PHP
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c) Bash shell d) Z shell

5) What is the primary purpose of executing a shell script in an open source operating system?
a) To compile source code
b) To run system commands
c) To create user accounts
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b) git clone
c) git status
d) git add

9) What command is used to view the current status of the local repository?
a) git init
b) git clone
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d) git add

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c) Multiboot
d) Multiprocessing

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a) To allocate space for system files only
b) To separate user files from system files
c) To create multiple logical drives within a single physical disk
d) To improve disk performance and organization

14) Which task is primarily associated with system administrators in managing jobs in an open source operating system?
a) Installing new software
b) Managing user accounts
c) Monitoring system performance
d) Scheduling and controlling the execution of processes

Seat No.	

Set | S

T. Y. (B. Tech) (Sem– II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Open Source Technologies (BTN06606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks

Section – I

Q.2 Attempt any Four **16**

a) What is the need for open source software?
b) What are some common commands for file manipulation in Linux, including piping and redirection, and how do they work?
c) What are the key responsibilities of a system administrator in Linux? How do these responsibilities differ from those of a network administrator?
d) What is NFS? How can NFS be used to share files between Linux systems? Discuss key NFS configuration options and security considerations.
e) List and explain the advantages of using open source software.

Q.3 Attempt any Two **12**

a) Explain the importance of community involvement and collaboration in the development and maintenance of open source software projects.
b) What are the steps involved in installing Linux in a multiboot environment, and what considerations should be taken into account for hard disk partitioning and swap space allocation?
c) How can job and process management be used to optimize system performance in Linux? Discuss key tools and commands for monitoring and managing running processes.

Section – II

Q.4 Attempt any Four **16**

a) What is the Bash shell? Explain key features of the Bash shell, including its command-line interface, command history, and command completion.
b) What is a Version Control System (VCS), and why is it important in software development?
c) How do you create a local repository using Git? What is the purpose of the "git init" command?
d) How can you list and view existing branches in a Git repository? What is the command used to accomplish this?
e) What is the significance of the "<HEAD>" reference in Git? How does it relate to branches and the current state of the repository?

Q.5 Attempt any Two **12**

a) What is a DHCP server? How can DHCP servers be configured in Linux? Explain how DHCP can be used to automate IP address assignment and configuration for network devices.

b) How can Bash shell scripts be executed in Linux? Discuss different options for running Bash scripts, including running scripts as standalone programs and running scripts as part of a larger shell script.

c) What is the process of checking out a branch in Git? How does it switch the working directory to a different branch and what are the implications of this action?

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) While training a machine, if a white Queen is at a4 on the following 4×4 chess board, then to avoid the attack the labelled data for a black piece should be _____.

a4	b4	c4	d4
a3	b3	c3	d3
a2	b2	c2	d2
a1	b1	c1	d1

a) c3, d3, d2 b) b2, b1, c1
c) Both A and B d) only c1

2) The model learns through labelled data in case of _____.
a) Supervised learning algorithm
b) Unsupervised learning algorithm
c) Semi-supervised learning algorithm
d) Reinforcement learning algorithm

3) Let's assume the confusion matrix of the win/loss prediction of cricket match problem to be as below:

	ACTUAL WIN	ACTUAL LOSS
PREDICTED WIN	85	4
PREDICTED LOSS	2	9

The accuracy of the classification is _____.
a) 96% b) 98%
c) 94% d) 90%

4) SVM is an example of _____?
a) Linear Classifier and Maximum Margin Classifier
b) Non-linear Classifier and Maximum Margin Classifier
c) Linear Classifier and Minimum Margin Classifier
d) Non-linear Classifier and Minimum Margin Classifier

5) Let us consider two examples, say 'predicting whether a tumor is malignant or benign' and 'price prediction in the domain of real estate'. These two problems are same in nature.
a) True b) False

6) A 4-input neuron has weights 1, 2, 2 and 3. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be: _____.
a) 178 b) 188
c) 198 d) 208

7) Decision Nodes are represented by _____.
a) Disks b) Squares
c) Circles d) Triangles

8) Which layer in ANN can receive data from external sources?
a) Input b) Hidden
c) Output d) All of them

9) Random Forest has _____ as base learning models.
a) Multiple Decision Trees b) Entropy
c) Bagging d) None of these

10) Fraud Detection, Image Classification, Diagnostic, and Customer Retention are applications in which of the following?
a) Unsupervised Learning: Regression
b) Supervised Learning: Classification
c) Unsupervised Learning: Clustering
d) Reinforcement Learning

11) The principle underlying the Market Basket Analysis is known as _____.
a) Association rule b) Bisecting rule
c) k-means d) Bayes' theorem

12) Recurrent networks _____.
a) are similar to multi-layer feed forward networks
b) may have self-loops
c) have feedback loops
d) all of the above

13) A bipolar sigmoid function has range of _____.
a) (-1, +1) b) (0, -1)
c) (0, 1) d) (1, 0)

14) Early detection of mental disorders using machine learning and data science: diagnosing clinical depression, bipolar disorder, anxiety are applications of ML in: _____.
a) Image Detection b) Medical Diagnosis
c) Learning Language d) Stock Analysis

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) What is Machine Learning? Give examples of Machine Learning Problems.
b) Differentiate between Supervised and Unsupervised Learning.
c) Explain Unsupervised Learning with examples?
d) Define following terms with suitable examples:
i) Linear Regression
ii) Logistic Regression
e) Explain the Terms True positive, True Negative, False Positive and False Negative in Confusion Matrix.

Q.3 Solve any two. **12**

a) Why Random Forest Model is an ensemble method? What is bagging in Random Forest Model?
b) What are Support Vectors in SVMs? What is a Margin? How is the classification made in SVM?
c) Explain Linear and Multiple regressions with suitable examples, graphs and Equations.

Section – II

Q.4 Solve any four. **16**

a) Explain basic steps of Apriori algorithm for association rule learning.
b) Draw the simple structure of MP Neuron? Implement Logical OR GATE with suitable example.
c) Define the following Terms in DBSCAN:
i) Epsilon
ii) Core Point
iii) Minimum Points
iv) Noise
d) Explain K-Nearest Neighbor classification with an example.
e) What are the applications of unsupervised learning?

Q.5 Solve any two **12**

a) For the following given Transaction Data-set, Generate Rules using Apriori Algorithm. Consider the values as Support=50% and Confidence=75%.

Transaction ID	Items Purchased
1	Bread, Cheese, Egg, Juice
2	Bread, Cheese, Juice
3	Bread, Milk, Yogurt
4	Bread, Juice, Milk
5	Cheese, Juice, Milk

b) Explain ML application in Traffic Prediction?

c) Write a short note on Deep Learning.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which layer in ANN can receive data from external sources?
a) Input b) Hidden
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2) Random Forest has _____ as base learning models.
a) Multiple Decision Trees b) Entropy
c) Bagging d) None of these

3) Fraud Detection, Image Classification, Diagnostic, and Customer Retention are applications in which of the following?
a) Unsupervised Learning: Regression
b) Supervised Learning: Classification
c) Unsupervised Learning: Clustering
d) Reinforcement Learning

4) The principle underlying the Market Basket Analysis is known as _____.
a) Association rule b) Bisecting rule
c) k-means d) Bayes' theorem

5) Recurrent networks _____.
a) are similar to multi-layer feed forward networks
b) may have self-loops
c) have feedback loops
d) all of the above

6) A bipolar sigmoid function has range of _____.
a) (-1, +1) b) (0, -1)
c) (0, 1) d) (1, 0)

7) Early detection of mental disorders using machine learning and data science: diagnosing clinical depression, bipolar disorder, anxiety are applications of ML in: _____.
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8) While training a machine, if a white Queen is at a4 on the following 4×4 chess board, then to avoid the attack the labelled data for a black piece should be _____.

a4	b4	c4	d4
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a2	b2	c2	d2
a1	b1	c1	d1

a) c3, d3, d2 b) b2, b1, c1
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c) Semi-supervised learning algorithm
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	ACTUAL WIN	ACTUAL LOSS
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The accuracy of the classification is _____.
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12) Let us consider two examples, say 'predicting whether a tumor is malignant or benign' and 'price prediction in the domain of real estate'. These two problems are same in nature.
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13) A 4-input neuron has weights 1, 2, 2 and 3. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be: _____.
a) 178 b) 188
c) 198 d) 208

14) Decision Nodes are represented by _____.
a) Disks b) Squares
c) Circles d) Triangles

SLR-GF-335

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

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a) What is Machine Learning? Give examples of Machine Learning Problems.
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a) Why Random Forest Model is an ensemble method? What is bagging in Random Forest Model?
b) What are Support Vectors in SVMs? What is a Margin? How is the classification made in SVM?
c) Explain Linear and Multiple regressions with suitable examples, graphs and Equations.

Section – II

Q.4 Solve any four. **16**

a) Explain basic steps of Apriori algorithm for association rule learning.
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iii) Minimum Points
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d) Explain K-Nearest Neighbor classification with an example.
e) What are the applications of unsupervised learning?

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b) Explain ML application in Traffic Prediction?

c) Write a short note on Deep Learning.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The principle underlying the Market Basket Analysis is known as _____.
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a2	b2	c2	d2
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a) c3, d3, d2 b) b2, b1, c1
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d) Reinforcement learning algorithm

7) Let's assume the confusion matrix of the win/loss prediction of cricket match problem to be as below:

	ACTUAL WIN	ACTUAL LOSS
PREDICTED WIN	85	4
PREDICTED LOSS	2	9

The accuracy of the classification is _____.
a) 96% b) 98%
c) 94% d) 90%

8) SVM is an example of _____?
a) Linear Classifier and Maximum Margin Classifier
b) Non-linear Classifier and Maximum Margin Classifier
c) Linear Classifier and Minimum Margin Classifier
d) Non-linear Classifier and Minimum Margin Classifier

9) Let us consider two examples, say 'predicting whether a tumor is malignant or benign' and 'price prediction in the domain of real estate'. These two problems are same in nature.
a) True b) False

10) A 4-input neuron has weights 1, 2, 2 and 3. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be: _____.
a) 178 b) 188
c) 198 d) 208

11) Decision Nodes are represented by _____.
a) Disks b) Squares
c) Circles d) Triangles

12) Which layer in ANN can receive data from external sources?
a) Input b) Hidden
c) Output d) All of them

13) Random Forest has _____ as base learning models.
a) Multiple Decision Trees b) Entropy
c) Bagging d) None of these

14) Fraud Detection, Image Classification, Diagnostic, and Customer Retention are applications in which of the following?
a) Unsupervised Learning: Regression
b) Supervised Learning: Classification
c) Unsupervised Learning: Clustering
d) Reinforcement Learning

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) What is Machine Learning? Give examples of Machine Learning Problems.
b) Differentiate between Supervised and Unsupervised Learning.
c) Explain Unsupervised Learning with examples?
d) Define following terms with suitable examples:
i) Linear Regression
ii) Logistic Regression
e) Explain the Terms True positive, True Negative, False Positive and False Negative in Confusion Matrix.

Q.3 Solve any two. **12**

a) Why Random Forest Model is an ensemble method? What is bagging in Random Forest Model?
b) What are Support Vectors in SVMs? What is a Margin? How is the classification made in SVM?
c) Explain Linear and Multiple regressions with suitable examples, graphs and Equations.

Section – II

Q.4 Solve any four. **16**

a) Explain basic steps of Apriori algorithm for association rule learning.
b) Draw the simple structure of MP Neuron? Implement Logical OR GATE with suitable example.
c) Define the following Terms in DBSCAN:
i) Epsilon
ii) Core Point
iii) Minimum Points
iv) Noise
d) Explain K-Nearest Neighbor classification with an example.
e) What are the applications of unsupervised learning?

Q.5 Solve any two **12**

a) For the following given Transaction Data-set, Generate Rules using Apriori Algorithm. Consider the values as Support=50% and Confidence=75%.

Transaction ID	Items Purchased
1	Bread, Cheese, Egg, Juice
2	Bread, Cheese, Juice
3	Bread, Milk, Yogurt
4	Bread, Juice, Milk
5	Cheese, Juice, Milk

b) Explain ML application in Traffic Prediction?

c) Write a short note on Deep Learning.

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A 4-input neuron has weights 1, 2, 2 and 3. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be: _____.
a) 178 b) 188
c) 198 d) 208

2) Decision Nodes are represented by _____.
a) Disks b) Squares
c) Circles d) Triangles

3) Which layer in ANN can receive data from external sources?
a) Input b) Hidden
c) Output d) All of them

4) Random Forest has _____ as base learning models.
a) Multiple Decision Trees b) Entropy
c) Bagging d) None of these

5) Fraud Detection, Image Classification, Diagnostic, and Customer Retention are applications in which of the following?
a) Unsupervised Learning: Regression
b) Supervised Learning: Classification
c) Unsupervised Learning: Clustering
d) Reinforcement Learning

6) The principle underlying the Market Basket Analysis is known as _____.
a) Association rule b) Bisecting rule
c) k-means d) Bayes' theorem

7) Recurrent networks _____.
a) are similar to multi-layer feed forward networks
b) may have self-loops
c) have feedback loops
d) all of the above

8) A bipolar sigmoid function has range of _____.
a) (-1, +1) b) (0, -1)
c) (0, 1) d) (1, 0)

9) Early detection of mental disorders using machine learning and data science: diagnosing clinical depression, bipolar disorder, anxiety are applications of ML in: _____.

a) Image Detection
b) Medical Diagnosis
c) Learning Language
d) Stock Analysis

10) While training a machine, if a white Queen is at a4 on the following 4×4 chess board, then to avoid the attack the labelled data for a black piece should be _____.

a4	b4	c4	d4
a3	b3	c3	d3
a2	b2	c2	d2
a1	b1	c1	d1

a) c3, d3, d2
b) b2, b1, c1
c) Both A and B
d) only c1

11) The model learns through labelled data in case of _____.

a) Supervised learning algorithm
b) Unsupervised learning algorithm
c) Semi-supervised learning algorithm
d) Reinforcement learning algorithm

12) Let's assume the confusion matrix of the win/loss prediction of cricket match problem to be as below:

	ACTUAL WIN	ACTUAL LOSS
PREDICTED WIN	85	4
PREDICTED LOSS	2	9

The accuracy of the classification is _____.

a) 96%
b) 98%
c) 94%
d) 90%

13) SVM is an example of _____?

a) Linear Classifier and Maximum Margin Classifier
b) Non-linear Classifier and Maximum Margin Classifier
c) Linear Classifier and Minimum Margin Classifier
d) Non-linear Classifier and Minimum Margin Classifier

14) Let us consider two examples, say 'predicting whether a tumor is malignant or benign' and 'price prediction in the domain of real estate'. These two problems are same in nature.

a) True
b) False

SLR-GF-335

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI/MI -Machine Learning (BTN06612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) What is Machine Learning? Give examples of Machine Learning Problems.
b) Differentiate between Supervised and Unsupervised Learning.
c) Explain Unsupervised Learning with examples?
d) Define following terms with suitable examples:
i) Linear Regression
ii) Logistic Regression
e) Explain the Terms True positive, True Negative, False Positive and False Negative in Confusion Matrix.

Q.3 Solve any two. **12**

a) Why Random Forest Model is an ensemble method? What is bagging in Random Forest Model?
b) What are Support Vectors in SVMs? What is a Margin? How is the classification made in SVM?
c) Explain Linear and Multiple regressions with suitable examples, graphs and Equations.

Section – II

Q.4 Solve any four. **16**

a) Explain basic steps of Apriori algorithm for association rule learning.
b) Draw the simple structure of MP Neuron? Implement Logical OR GATE with suitable example.
c) Define the following Terms in DBSCAN:
i) Epsilon
ii) Core Point
iii) Minimum Points
iv) Noise
d) Explain K-Nearest Neighbor classification with an example.
e) What are the applications of unsupervised learning?

Q.5 Solve any two **12**

a) For the following given Transaction Data-set, Generate Rules using Apriori Algorithm. Consider the values as Support=50% and Confidence=75%.

Transaction ID	Items Purchased
1	Bread, Cheese, Egg, Juice
2	Bread, Cheese, Juice
3	Bread, Milk, Yogurt
4	Bread, Juice, Milk
5	Cheese, Juice, Milk

b) Explain ML application in Traffic Prediction?

c) Write a short note on Deep Learning.

Seat No.	

Set | P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) What is the term used to describe the ability to automatically scale computing resources based on demand?
a) Elasticity b) Scalability
c) Virtualization d) Agility

2) Which of the following best describes the Shared Security Responsibility Model in AWS?
a) AWS takes care of all security aspects, including customer data
b) The customer is responsible for all security aspects
c) Security responsibilities are shared between AWS and the customer
d) AWS is responsible for physical security only

3) What is the AWS root user in Identity and Access Management (IAM)?
a) The primary administrator of an AWS account
b) A user with restricted access to AWS services
c) A temporary user created for specific tasks
d) A user with read-only access to AWS resources

4) Which of the following are the elements of IAM in AWS?
a) Users, roles, and policies
b) Instances, volumes, and snapshots
c) Buckets, objects, and folders
d) Lambdas, APIs, and gateways

5) What is the purpose of the AWS Command Line Interface (CLI)?
a) Managing virtual machines in AWS
b) Monitoring AWS service usage
c) Configuring security groups in AWS
d) Interacting with AWS services using the command line

6) What does VPC stand for in the context of AWS?
a) Virtual Public Cloud
b) Virtual Private Cloud
c) Virtual Provisioning Center
d) Virtual Processing Cluster

7) What is a subnet in AWS VPC?
a) A virtual machine within a VPC
b) A group of VPC instances
c) A range of IP addresses in a VPC
d) A virtual network within a VPC

8) What does EC2 stand for in the context of AWS?
a) Elastic Computing Cloud
b) Elastic Container Cloud
c) Elastic Compute Cloud
d) Elastic Cache Cloud

9) What factors contribute to the pricing of EC2 instances?
a) Instance type, instance size, and data transfer
b) Number of VPCs, subnet size, and storage capacity
c) Availability zones, security groups, and IAM policies
d) Operating system, database engine, and web server software

10) What is Elastic Load Balancer (ELB) in AWS?
a) A service for automatically scaling EC2 instances
b) A managed service for distributing incoming application traffic
c) A tool for monitoring performance metrics of AWS resources
d) A database service for storing and retrieving data

11) What is a best practice for using Elastic Load Balancer (ELB) in AWS?
a) Deploying a single ELB for all applications and services
b) Allocating a static IP address for the ELB
c) Using SSL/TLS termination at the EC2 instances
d) Enabling access logs for ELB only during maintenance periods

12) How does Amazon CloudWatch work in AWS?
a) It collects and tracks metrics from AWS services and resources
b) It provides automated scaling based on predefined thresholds
c) It offers real-time visibility into network traffic patterns
d) It allows direct access to EC2 instances for troubleshooting

13) What does S3 stand for in the context of AWS?
a) Simple Storage Service
b) Secure Storage System
c) Structured Storage Solution
d) Scalable Storage Service

14) How can you create a bucket in Amazon S3?
a) Using the AWS CLI only
b) Using the AWS Management Console or AWS CLI
c) Creating a bucket is not possible in S3
d) Contacting AWS support to create a bucket

Seat No.	

Set | P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any Three. **12**

a) What is the history of cloud computing and how has it evolved over time?
b) Describe the differences between SaaS, PaaS, and IaaS in the context of AWS.
c) What is an IAM role? Describe how IAM roles are used to grant permissions to AWS services and resources.
d) What is VPC peering? How does it work and what are some use cases for VPC peering?

Q.3 Attempt any Two. **16**

a) Explain the key components of AWS VPC, including subnets, IP addressing, and routing tables. Describe how these components work together to create a custom network topology within VPC.
b) What are the different networking components of VPC? Explain the role of VPC endpoints, NAT gateways, and VPN connections in VPC networking.

Section – II

Q.4 Attempt any Three. **12**

a) How is the pricing structure for EC2 instances determined?
b) What are some best practices for managing EC2 instances effectively?
c) What is the difference between basic and detailed monitoring in CloudWatch?
d) How can object tagging be used in S3 for organizing and managing data?

Q.5 Attempt any Two. **16**

a) What are the different storage classes available in S3 and how do they differ in terms of durability, availability, and cost?
b) How does lifecycle management in S3 allow for the automatic transition of objects between different storage classes or deletion based on predefined rules?

Seat No.	

Set | Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) What does EC2 stand for in the context of AWS?
a) Elastic Computing Cloud b) Elastic Container Cloud
c) Elastic Compute Cloud d) Elastic Cache Cloud

2) What factors contribute to the pricing of EC2 instances?
a) Instance type, instance size, and data transfer
b) Number of VPCs, subnet size, and storage capacity
c) Availability zones, security groups, and IAM policies
d) Operating system, database engine, and web server software

3) What is Elastic Load Balancer (ELB) in AWS?
a) A service for automatically scaling EC2 instances
b) A managed service for distributing incoming application traffic
c) A tool for monitoring performance metrics of AWS resources
d) A database service for storing and retrieving data

4) What is a best practice for using Elastic Load Balancer (ELB) in AWS?
a) Deploying a single ELB for all applications and services
b) Allocating a static IP address for the ELB
c) Using SSL/TLS termination at the EC2 instances
d) Enabling access logs for ELB only during maintenance periods

5) How does Amazon CloudWatch work in AWS?
a) It collects and tracks metrics from AWS services and resources
b) It provides automated scaling based on predefined thresholds
c) It offers real-time visibility into network traffic patterns
d) It allows direct access to EC2 instances for troubleshooting

6) What does S3 stand for in the context of AWS?
a) Simple Storage Service b) Secure Storage System
c) Structured Storage Solution d) Scalable Storage Service

7) How can you create a bucket in Amazon S3?
a) Using the AWS CLI only
b) Using the AWS Management Console or AWS CLI
c) Creating a bucket is not possible in S3
d) Contacting AWS support to create a bucket

8) What is the term used to describe the ability to automatically scale computing resources based on demand?

a) Elasticity
b) Scalability
c) Virtualization
d) Agility

9) Which of the following best describes the Shared Security Responsibility Model in AWS?

a) AWS takes care of all security aspects, including customer data
b) The customer is responsible for all security aspects
c) Security responsibilities are shared between AWS and the customer
d) AWS is responsible for physical security only

10) What is the AWS root user in Identity and Access Management (IAM)?

a) The primary administrator of an AWS account
b) A user with restricted access to AWS services
c) A temporary user created for specific tasks
d) A user with read-only access to AWS resources

11) Which of the following are the elements of IAM in AWS?

a) Users, roles, and policies
b) Instances, volumes, and snapshots
c) Buckets, objects, and folders
d) Lambdas, APIs, and gateways

12) What is the purpose of the AWS Command Line Interface (CLI)?

a) Managing virtual machines in AWS
b) Monitoring AWS service usage
c) Configuring security groups in AWS
d) Interacting with AWS services using the command line

13) What does VPC stand for in the context of AWS?

a) Virtual Public Cloud
b) Virtual Private Cloud
c) Virtual Provisioning Center
d) Virtual Processing Cluster

14) What is a subnet in AWS VPC?

a) A virtual machine within a VPC
b) A group of VPC instances
c) A range of IP addresses in a VPC
d) A virtual network within a VPC

SLR-GF-336

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any Three. **12**

a) What is the history of cloud computing and how has it evolved over time?
b) Describe the differences between SaaS, PaaS, and IaaS in the context of AWS.
c) What is an IAM role? Describe how IAM roles are used to grant permissions to AWS services and resources.
d) What is VPC peering? How does it work and what are some use cases for VPC peering?

Q.3 Attempt any Two. **16**

a) Explain the key components of AWS VPC, including subnets, IP addressing, and routing tables. Describe how these components work together to create a custom network topology within VPC.
b) What are the different networking components of VPC? Explain the role of VPC endpoints, NAT gateways, and VPN connections in VPC networking.

Section – II

Q.4 Attempt any Three. **12**

a) How is the pricing structure for EC2 instances determined?
b) What are some best practices for managing EC2 instances effectively?
c) What is the difference between basic and detailed monitoring in CloudWatch?
d) How can object tagging be used in S3 for organizing and managing data?

Q.5 Attempt any Two. **16**

a) What are the different storage classes available in S3 and how do they differ in terms of durability, availability, and cost?
b) How does lifecycle management in S3 allow for the automatic transition of objects between different storage classes or deletion based on predefined rules?

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) What is a best practice for using Elastic Load Balancer (ELB) in AWS?
a) Deploying a single ELB for all applications and services
b) Allocating a static IP address for the ELB
c) Using SSL/TLS termination at the EC2 instances
d) Enabling access logs for ELB only during maintenance periods

2) How does Amazon CloudWatch work in AWS?
a) It collects and tracks metrics from AWS services and resources
b) It provides automated scaling based on predefined thresholds
c) It offers real-time visibility into network traffic patterns
d) It allows direct access to EC2 instances for troubleshooting

3) What does S3 stand for in the context of AWS?
a) Simple Storage Service b) Secure Storage System
c) Structured Storage Solution d) Scalable Storage Service

4) How can you create a bucket in Amazon S3?
a) Using the AWS CLI only
b) Using the AWS Management Console or AWS CLI
c) Creating a bucket is not possible in S3
d) Contacting AWS support to create a bucket

5) What is the term used to describe the ability to automatically scale computing resources based on demand?
a) Elasticity b) Scalability
c) Virtualization d) Agility

6) Which of the following best describes the Shared Security Responsibility Model in AWS?
a) AWS takes care of all security aspects, including customer data
b) The customer is responsible for all security aspects
c) Security responsibilities are shared between AWS and the customer
d) AWS is responsible for physical security only

7) What is the AWS root user in Identity and Access Management (IAM)?
a) The primary administrator of an AWS account
b) A user with restricted access to AWS services
c) A temporary user created for specific tasks
d) A user with read-only access to AWS resources

8) Which of the following are the elements of IAM in AWS?
a) Users, roles, and policies
b) Instances, volumes, and snapshots
c) Buckets, objects, and folders
d) Lambdas, APIs, and gateways

9) What is the purpose of the AWS Command Line Interface (CLI)?
a) Managing virtual machines in AWS
b) Monitoring AWS service usage
c) Configuring security groups in AWS
d) Interacting with AWS services using the command line

10) What does VPC stand for in the context of AWS?
a) Virtual Public Cloud
b) Virtual Private Cloud
c) Virtual Provisioning Center
d) Virtual Processing Cluster

11) What is a subnet in AWS VPC?
a) A virtual machine within a VPC
b) A group of VPC instances
c) A range of IP addresses in a VPC
d) A virtual network within a VPC

12) What does EC2 stand for in the context of AWS?
a) Elastic Computing Cloud
b) Elastic Container Cloud
c) Elastic Compute Cloud
d) Elastic Cache Cloud

13) What factors contribute to the pricing of EC2 instances?
a) Instance type, instance size, and data transfer
b) Number of VPCs, subnet size, and storage capacity
c) Availability zones, security groups, and IAM policies
d) Operating system, database engine, and web server software

14) What is Elastic Load Balancer (ELB) in AWS?
a) A service for automatically scaling EC2 instances
b) A managed service for distributing incoming application traffic
c) A tool for monitoring performance metrics of AWS resources
d) A database service for storing and retrieving data

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any Three. **12**

a) What is the history of cloud computing and how has it evolved over time?
b) Describe the differences between SaaS, PaaS, and IaaS in the context of AWS.
c) What is an IAM role? Describe how IAM roles are used to grant permissions to AWS services and resources.
d) What is VPC peering? How does it work and what are some use cases for VPC peering?

Q.3 Attempt any Two. **16**

a) Explain the key components of AWS VPC, including subnets, IP addressing, and routing tables. Describe how these components work together to create a custom network topology within VPC.
b) What are the different networking components of VPC? Explain the role of VPC endpoints, NAT gateways, and VPN connections in VPC networking.

Section – II

Q.4 Attempt any Three. **12**

a) How is the pricing structure for EC2 instances determined?
b) What are some best practices for managing EC2 instances effectively?
c) What is the difference between basic and detailed monitoring in CloudWatch?
d) How can object tagging be used in S3 for organizing and managing data?

Q.5 Attempt any Two. **16**

a) What are the different storage classes available in S3 and how do they differ in terms of durability, availability, and cost?
b) How does lifecycle management in S3 allow for the automatic transition of objects between different storage classes or deletion based on predefined rules?

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) What does VPC stand for in the context of AWS?
a) Virtual Public Cloud
b) Virtual Private Cloud
c) Virtual Provisioning Center
d) Virtual Processing Cluster

2) What is a subnet in AWS VPC?
a) A virtual machine within a VPC
b) A group of VPC instances
c) A range of IP addresses in a VPC
d) A virtual network within a VPC

3) What does EC2 stand for in the context of AWS?
a) Elastic Computing Cloud b) Elastic Container Cloud
c) Elastic Compute Cloud d) Elastic Cache Cloud

4) What factors contribute to the pricing of EC2 instances?
a) Instance type, instance size, and data transfer
b) Number of VPCs, subnet size, and storage capacity
c) Availability zones, security groups, and IAM policies
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c) A tool for monitoring performance metrics of AWS resources
d) A database service for storing and retrieving data

6) What is a best practice for using Elastic Load Balancer (ELB) in AWS?
a) Deploying a single ELB for all applications and services
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c) It offers real-time visibility into network traffic patterns
d) It allows direct access to EC2 instances for troubleshooting

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a) Simple Storage Service
b) Secure Storage System
c) Structured Storage Solution
d) Scalable Storage Service

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a) Using the AWS CLI only
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a) Elasticity
b) Scalability
c) Virtualization
d) Agility

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a) AWS takes care of all security aspects, including customer data
b) The customer is responsible for all security aspects
c) Security responsibilities are shared between AWS and the customer
d) AWS is responsible for physical security only

12) What is the AWS root user in Identity and Access Management (IAM)?
a) The primary administrator of an AWS account
b) A user with restricted access to AWS services
c) A temporary user created for specific tasks
d) A user with read-only access to AWS resources

13) Which of the following are the elements of IAM in AWS?
a) Users, roles, and policies
b) Instances, volumes, and snapshots
c) Buckets, objects, and folders
d) Lambdas, APIs, and gateways

14) What is the purpose of the AWS Command Line Interface (CLI)?
a) Managing virtual machines in AWS
b) Monitoring AWS service usage
c) Configuring security groups in AWS
d) Interacting with AWS services using the command line

SLR-GF-336

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IoT Cloud Platform (BTN06614)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any Three. **12**

a) What is the history of cloud computing and how has it evolved over time?
b) Describe the differences between SaaS, PaaS, and IaaS in the context of AWS.
c) What is an IAM role? Describe how IAM roles are used to grant permissions to AWS services and resources.
d) What is VPC peering? How does it work and what are some use cases for VPC peering?

Q.3 Attempt any Two. **16**

a) Explain the key components of AWS VPC, including subnets, IP addressing, and routing tables. Describe how these components work together to create a custom network topology within VPC.
b) What are the different networking components of VPC? Explain the role of VPC endpoints, NAT gateways, and VPN connections in VPC networking.

Section – II

Q.4 Attempt any Three. **12**

a) How is the pricing structure for EC2 instances determined?
b) What are some best practices for managing EC2 instances effectively?
c) What is the difference between basic and detailed monitoring in CloudWatch?
d) How can object tagging be used in S3 for organizing and managing data?

Q.5 Attempt any Two. **16**

a) What are the different storage classes available in S3 and how do they differ in terms of durability, availability, and cost?
b) How does lifecycle management in S3 allow for the automatic transition of objects between different storage classes or deletion based on predefined rules?

SLR-GF-337

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The safety in Railway in India is looked after by _____.
a) Ministry of Railways b) Commission of Railway Safety
c) Railway Board d) Headquarter Office

2) The number of stations on Indian Railways is _____.
a) 6000 approximately b) 7070 approximately
c) 8000 proximately d) 9000 approximately

3) What is the standard inclination on wheel flange?
a) 1 in 5 b) 1 in 2.5
c) 1 in 10 d) 1 in 20

4) Name the type of coupling used in BLC wagon?
a) CBC & Slack Less Drawbar b) HT CBC
c) Screw coupling d) Slackness drew bars

5) Codal life of Tank wagon is _____.
a) 35 year b) 45 year
c) 50 year d) 25 year

6) What is the characteristic of a good control system?
a) Insensitive to the parameter variation but sensitive to the input commands
b) Neither sensitive to parameter variations nor sensitive to input commands
c) Insensitive to the input command
d) Sensitive to parameter variation

7) Which of the following is an open loop control system'?
a) Ward Leonard control b) Metadyne
c) Stroboscope d) Field controlled D.C. motor

8) What should be the nature of bandwidth for a good control system?
a) Small b) Medium
c) Large d) All of the mentioned

9) The output of the feedback control system must be a function of _____.
a) Output and feedback signal b) Input and feedback signal
c) Reference input d) Reference

10) In a control system the output of the controller is given to _____.
a) Amplifier b) Sensor
c) Final control element d) Comparator

11) In a temperature control system, what conversion in signal takes place?
a) Error to Digital b) Error to Analog
c) Digital to Analog d) Analog to Digital

12) Which of the following control systems have unpredictable & non-repeatable?
a) Stochastic control systems b) Deterministic control systems
c) Static control systems d) Dynamic control systems

13) Which of the following is not correct for data loggers?
a) Portability b) Battery less
c) Small d) All of the mentioned

14) Data loggers contain microprocessor.
a) Ture b) False

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any FOUR. **16**

a) What is Data Loggers and give it Types?
b) Explain Servomechanism for steering of antenna.
c) Give Provisions of the Control Communication.
d) Give applications of Microprocessors and Micro-controllers.
e) Write a short note on V F Repeaters.

Q.3 Attempt any TWO. **12**

a) Explain Train Protection & Warning System.
b) What are 4 Wire/2 Wire Train Traffic Control Communication Equipment?
c) Write a note on Public Address System.

Section – II

Q.4 Attempt any FOUR. **16**

a) Give & explain Radio Propagation.
b) Explain different networking devices.
c) Write note on Introduction of IOT in Indian Railways.
d) Explain Servomechanism for steering of antenna.
e) Give the transfer function of a closed-loop system with proper equation.

Q.5 Attempt any TWO. **12**

a) What is Robotic control system?
b) Give the typical arrangements of PRS network.
c) What is Multiplexing (Analog & Digital)?

Seat No.	

Set | Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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14) Which of the following is an open loop control system'?
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b) Metadyne
c) Stroboscope
d) Field controlled D.C. motor

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any FOUR. **16**
- **a)** What is Data Loggers and give it Types?
- **b)** Explain Servomechanism for steering of antenna.
- **c)** Give Provisions of the Control Communication.
- **d)** Give applications of Microprocessors and Micro-controllers.
- **e)** Write a short note on V F Repeaters.

Q.3 Attempt any TWO. **12**
- **a)** Explain Train Protection & Warning System.
- **b)** What are 4 Wire/2 Wire Train Traffic Control Communication Equipment?
- **c)** Write a note on Public Address System.

Section – II

Q.4 Attempt any FOUR. **16**
- **a)** Give & explain Radio Propagation.
- **b)** Explain different networking devices.
- **c)** Write note on Introduction of IOT in Indian Railways.
- **d)** Explain Servomechanism for steering of antenna.
- **e)** Give the transfer function of a closed-loop system with proper equation.

Q.5 Attempt any TWO. **12**
- **a)** What is Robotic control system?
- **b)** Give the typical arrangements of PRS network.
- **c)** What is Multiplexing (Analog & Digital)?

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) In a temperature control system, what conversion in signal takes place?
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- a) Small
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13) The output of the feedback control system must be a function of _____.
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14) In a control system the output of the controller is given to _____.
- a) Amplifier
- b) Sensor
- c) Final control element
- d) Comparator

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any FOUR. **16**
- **a)** What is Data Loggers and give it Types?
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- **d)** Give applications of Microprocessors and Micro-controllers.
- **e)** Write a short note on V F Repeaters.

Q.3 Attempt any TWO. **12**
- **a)** Explain Train Protection & Warning System.
- **b)** What are 4 Wire/2 Wire Train Traffic Control Communication Equipment?
- **c)** Write a note on Public Address System.

Section – II

Q.4 Attempt any FOUR. **16**
- **a)** Give & explain Radio Propagation.
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- **c)** Write note on Introduction of IOT in Indian Railways.
- **d)** Explain Servomechanism for steering of antenna.
- **e)** Give the transfer function of a closed-loop system with proper equation.

Q.5 Attempt any TWO. **12**
- **a)** What is Robotic control system?
- **b)** Give the typical arrangements of PRS network.
- **c)** What is Multiplexing (Analog & Digital)?

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

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b) 45 year
c) 50 year
d) 25 year

SLR-GF-337

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Applications of IT and Control Engineering in Railway (BTN06615)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any FOUR. **16**
- **a)** What is Data Loggers and give it Types?
- **b)** Explain Servomechanism for steering of antenna.
- **c)** Give Provisions of the Control Communication.
- **d)** Give applications of Microprocessors and Micro-controllers.
- **e)** Write a short note on V F Repeaters.

Q.3 Attempt any TWO. **12**
- **a)** Explain Train Protection & Warning System.
- **b)** What are 4 Wire/2 Wire Train Traffic Control Communication Equipment?
- **c)** Write a note on Public Address System.

Section – II

Q.4 Attempt any FOUR. **16**
- **a)** Give & explain Radio Propagation.
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- **c)** Write note on Introduction of IOT in Indian Railways.
- **d)** Explain Servomechanism for steering of antenna.
- **e)** Give the transfer function of a closed-loop system with proper equation.

Q.5 Attempt any TWO. **12**
- **a)** What is Robotic control system?
- **b)** Give the typical arrangements of PRS network.
- **c)** What is Multiplexing (Analog & Digital)?

SLR-GF-339

Seat No.	

Set P

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) Is _____ a widely used and effective machine learning algorithm based on the idea of bagging.
a) Regression b) Classification
c) Decision Tree d) Random Forest

2) Machine learning algorithms build a model based on sample data, known as _____.
a) Training Data b) Transfer Data
c) Data Training d) None of the above

3) A Machine learning technique that helps in detecting the outliers in data _____.
a) Clustering b) Classification
c) Anomaly Detection d) All of the above

4) Which of the following is not a supervised learning?
a) PCA b) Naive Bayesian
c) Linear Regression d) Decision Tree Answer

5) What kind of learning algorithm for "Facial identities or facial expressions"?
a) Prediction b) Recognition Patterns
c) Generating Patterns d) Recognizing Anomalies Answer

6) Which of the following are not numerical functions in the various function representation of Machine Learning?
a) Neural Network b) Support Vector Machines
c) Case-based d) Linear Regression

7) What is perceptron?
a) A single layer feed-forward neural network with pre-processing
b) A neural network that contains feedback
c) A double layer auto-associative neural network
d) An auto-associative neural network

8) Which is true for neural networks?
- a) Each node computes its weighted input
- b) Node could be in excited state or non-excited state
- c) It has set of nodes and connections
- d) all of the above

9) What is the objective of back-propagation algorithm?
- a) To develop learning algorithm for multilayer feed forward neural network, so that network can be trained to capture the mapping implicitly
- b) To develop learning algorithm for multilayer feed forward neural network
- c) To develop learning algorithm for single layer feed forward neural network
- d) All of the above

10) Which of the following is true?
- a) On average, neural networks have higher computational rates than conventional computers.
- b) Neural networks learn by Neurons
- c) Neural networks mimic the way the human brain
- d) All The Above

11) Which of the following is correct about the Naive Bayes?
- a) Assumes that all the features in a dataset are independent
- b) Assumes that all the features in a dataset are equally important
- c) Both (a) & (b)
- d) None of the above

12) What are the advantages of nearest neighbor algorithm?
- a) Training is very fast
- b) Can learn complex target functions
- c) Don’t lose information
- d) All of these

13) What is/are true about Distance-weighted KNN?
- a) The weight of the neighbor is considered
- b) The distance of the neighbor is considered
- c) Both a & b
- d) None of these

14) Features of Reinforcement learning _____.
- a) Set of problem rather than set of techniques
- b) RL is training by reward and
- c) RL is learning from trial and error with the
- d) All of these

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any Four: **16**

a) Differentiate between predictive and descriptive tasks of Machine Learning?
b) Explain the different types of Machine Learning with tree diagram?
c) What is Reinforcement learning Explain with examples?
d) Explain Naïve Bayes Classifier with Examples?
e) Explain the Feature construction and Feature Transformation of Machine Learning?

Q.3 Attempt any two. **12**

a) Explain in detail the different types of databases used in ML?
b) Explain in detail about accessing Performance of Regression and Classification.
c) Explain in detail the different Characteristics of Machine Learning?

Section – II

Q.4 Attempt any three. **16**

a) Write a note on DBSCAN?
b) Explain Hierarchical Clustering With Examples.
c) Explain the architecture of Artificial Neural Network.
d) What is Associative Rule, how it is helpful in Finding Patterns?
e) Write a note on K-Mediods?

Q.5 Attempt any two. **12**

a) Explain Feed forward Network and Back Propagation Algorithm with examples?
b) Differentiate between Supervised & Un-supervised ML?
c) Explain any two applications of Machine Learning?

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any Four: **16**

a) Differentiate between predictive and descriptive tasks of Machine Learning?
b) Explain the different types of Machine Learning with tree diagram?
c) What is Reinforcement learning Explain with examples?
d) Explain Naïve Bayes Classifier with Examples?
e) Explain the Feature construction and Feature Transformation of Machine Learning?

Q.3 Attempt any two. **12**

a) Explain in detail the different types of databases used in ML?
b) Explain in detail about accessing Performance of Regression and Classification.
c) Explain in detail the different Characteristics of Machine Learning?

Section – II

Q.4 Attempt any three. **16**

a) Write a note on DBSCAN?
b) Explain Hierarchical Clustering With Examples.
c) Explain the architecture of Artificial Neural Network.
d) What is Associative Rule, how it is helpful in Finding Patterns?
e) Write a note on K-Mediods?

Q.5 Attempt any two. **12**

a) Explain Feed forward Network and Back Propagation Algorithm with examples?
b) Differentiate between Supervised & Un-supervised ML?
c) Explain any two applications of Machine Learning?

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) Which of the following is correct about the Naive Bayes?
a) Assumes that all the features in a dataset are independent
b) Assumes that all the features in a dataset are equally important
c) Both (a) & (b)
d) None of the above

2) What are the advantages of nearest neighbor algorithm?
a) Training is very fast
b) Can learn complex target functions
c) Don't lose information
d) All of these

3) What is/are true about Distance-weighted KNN?
a) The weight of the neighbor is considered
b) The distance of the neighbor is considered
c) Both a & b
d) None of these

4) Features of Reinforcement learning _____.
a) Set of problem rather than set of techniques
b) RL is training by reward and
c) RL is learning from trial and error with the
d) All of these

5) Is _____ a widely used and effective machine learning algorithm based on the idea of bagging.
a) Regression b) Classification
c) Decision Tree d) Random Forest

6) Machine learning algorithms build a model based on sample data, known as _____.
a) Training Data b) Transfer Data
c) Data Training d) None of the above

7) A Machine learning technique that helps in detecting the outliers in data _____.

a) Clustering
b) Classification
c) Anomaly Detection
d) All of the above

8) Which of the following is not a supervised learning?

a) PCA
b) Naive Bayesian
c) Linear Regression
d) Decision Tree Answer

9) What kind of learning algorithm for “Facial identities or facial expressions”?

a) Prediction
b) Recognition Patterns
c) Generating Patterns
d) Recognizing Anomalies Answer

10) Which of the following are not numerical functions in the various function representation of Machine Learning?

a) Neural Network
b) Support Vector Machines
c) Case-based
d) Linear Regression

11) What is perceptron?

a) A single layer feed-forward neural network with pre-processing
b) A neural network that contains feedback
c) A double layer auto-associative neural network
d) An auto-associative neural network

12) Which is true for neural networks?

a) Each node computes its weighted input
b) Node could be in excited state or non-excited state
c) It has set of nodes and connections
d) all of the above

13) What is the objective of back-propagation algorithm?

a) To develop learning algorithm for multilayer feed forward neural network, so that network can be trained to capture the mapping implicitly
b) To develop learning algorithm for multilayer feed forward neural network
c) To develop learning algorithm for single layer feed forward neural network
d) All of the above

14) Which of the following is true?

a) On average, neural networks have higher computational rates than conventional computers.
b) Neural networks learn by Neurons
c) Neural networks mimic the way the human brain
d) All The Above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any Four: **16**
- **a)** Differentiate between predictive and descriptive tasks of Machine Learning?
- **b)** Explain the different types of Machine Learning with tree diagram?
- **c)** What is Reinforcement learning Explain with examples?
- **d)** Explain Naïve Bayes Classifier with Examples?
- **e)** Explain the Feature construction and Feature Transformation of Machine Learning?

Q.3 Attempt any two. **12**
- **a)** Explain in detail the different types of databases used in ML?
- **b)** Explain in detail about accessing Performance of Regression and Classification.
- **c)** Explain in detail the different Characteristics of Machine Learning?

Section – II

Q.4 Attempt any three. **16**
- **a)** Write a note on DBSCAN?
- **b)** Explain Hierarchical Clustering With Examples.
- **c)** Explain the architecture of Artificial Neural Network.
- **d)** What is Associative Rule, how it is helpful in Finding Patterns?
- **e)** Write a note on K-Mediods?

Q.5 Attempt any two. **12**
- **a)** Explain Feed forward Network and Back Propagation Algorithm with examples?
- **b)** Differentiate between Supervised & Un-supervised ML?
- **c)** Explain any two applications of Machine Learning?

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) Which of the following are not numerical functions in the various function representation of Machine Learning?
a) Neural Network
b) Support Vector Machines
c) Case-based
d) Linear Regression

2) What is perceptron?
a) A single layer feed-forward neural network with pre-processing
b) A neural network that contains feedback
c) A double layer auto-associative neural network
d) An auto-associative neural network

3) Which is true for neural networks?
a) Each node computes its weighted input
b) Node could be in excited state or non-excited state
c) It has set of nodes and connections
d) all of the above

4) What is the objective of back-propagation algorithm?
a) To develop learning algorithm for multilayer feed forward neural network, so that network can be trained to capture the mapping implicitly
b) To develop learning algorithm for multilayer feed forward neural network
c) To develop learning algorithm for single layer feed forward neural network
d) All of the above

5) Which of the following is true?
a) On average, neural networks have higher computational rates than conventional computers.
b) Neural networks learn by Neurons
c) Neural networks mimic the way the human brain
d) All The Above

6) Which of the following is correct about the Naive Bayes?
a) Assumes that all the features in a dataset are independent
b) Assumes that all the features in a dataset are equally important
c) Both (a) & (b)
d) None of the above

7) What are the advantages of nearest neighbor algorithm?
a) Training is very fast
b) Can learn complex target functions
c) Don't lose information
d) All of these

8) What is/are true about Distance-weighted KNN?
a) The weight of the neighbor is considered
b) The distance of the neighbor is considered
c) Both a & b
d) None of these

9) Features of Reinforcement learning _____.
a) Set of problem rather than set of techniques
b) RL is training by reward and
c) RL is learning from trial and error with the
d) All of these

10) Is _____ a widely used and effective machine learning algorithm based on the idea of bagging.
a) Regression b) Classification
c) Decision Tree d) Random Forest

11) Machine learning algorithms build a model based on sample data, known as _____.
a) Training Data b) Transfer Data
c) Data Training d) None of the above

12) A Machine learning technique that helps in detecting the outliers in data _____.
a) Clustering b) Classification
c) Anomaly Detection d) All of the above

13) Which of the following is not a supervised learning?
a) PCA b) Naive Bayesian
c) Linear Regression d) Decision Tree Answer

14) What kind of learning algorithm for "Facial identities or facial expressions"?
a) Prediction b) Recognition Patterns
c) Generating Patterns d) Recognizing Anomalies Answer

SLR-GF-339

Seat No.	

Set S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Science Machine Learning (BTN06613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any Four: **16**
- **a)** Differentiate between predictive and descriptive tasks of Machine Learning?
- **b)** Explain the different types of Machine Learning with tree diagram?
- **c)** What is Reinforcement learning Explain with examples?
- **d)** Explain Naïve Bayes Classifier with Examples?
- **e)** Explain the Feature construction and Feature Transformation of Machine Learning?

Q.3 Attempt any two. **12**
- **a)** Explain in detail the different types of databases used in ML?
- **b)** Explain in detail about accessing Performance of Regression and Classification.
- **c)** Explain in detail the different Characteristics of Machine Learning?

Section – II

Q.4 Attempt any three. **16**
- **a)** Write a note on DBSCAN?
- **b)** Explain Hierarchical Clustering With Examples.
- **c)** Explain the architecture of Artificial Neural Network.
- **d)** What is Associative Rule, how it is helpful in Finding Patterns?
- **e)** Write a note on K-Mediods?

Q.5 Attempt any two. **12**
- **a)** Explain Feed forward Network and Back Propagation Algorithm with examples?
- **b)** Differentiate between Supervised & Un-supervised ML?
- **c)** Explain any two applications of Machine Learning?

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (197044601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) An Em wave is said to be vertically polarized when the angle between the electrical field and earth is _____.
a) 50° b) 20°
c) 90° d) 180°

2) The beam width of the antenna pattern measured at half power points is called: _____.
a) Half power beam width b) Full null beam width
c) Beam width d) None of the mentioned

3) The ratio of power radiated in a particular direction to the total input power of antenna is called as _____.
a) Directive gain b) Power gain
c) Directivity d) Partial directivity

4) If the progressive shift in antenna array is equal to zero then it is called _____.
a) Broad side b) End-fire
c) Yagi-uda d) Fishbone antenna

5) Which of the following antenna is obtained by removing a small area of metal from an infinite ground plane?
a) Slot antenna b) Plane reflector
c) Dipole d) Yagi-uda

6) What is the necessary condition for a helical antenna to operate in the axial mode?
a) $\pi D << \lambda$ b) $\pi D \approx \lambda$
c) $\pi D \approx n\lambda$ d) $\pi D = 0$

7) What is the principle used in slot antennas?
a) Babinet's principle b) Archimedes principle
c) Geo-Optics d) Image Theory

8) In Horn antennas impedance matching is provided by _____.
a) flaring b) increasing Power
c) decreasing axial length d) balun

9) The small the flare angle, ____ is the directivity and _____ is the beam width.
a) high, low b) low, high
c) low, low d) high, high

10) In which of the following type of antenna a patch is created during fabrication?
a) Microstrip antenna b) Horn antenna
c) Wire antenna d) Lens antenna

11) Log periodic antenna is frequency dependent.
a) True b) False

12) The geometrical design of the Log periodic depends on _____.
a) Scaling factor b) Gain
c) Impedance d) Stability

13) Up to which frequency the ground wave propagation is used?
a) 2MHz b) 2GHz
c) 30MHz d) 30GHz

14) Ground wave is always _____ polarized.
a) Vertically b) Horizontally
c) Either vertical or horizontal d) Neither horizontal nor vertical

SLR-GF-340

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (197044601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Define - Radiation Intensity, Directivity.
b) An antenna has a field pattern given by $E(\theta) = \cos^2(\theta)$ for $0° \leq \theta \leq 90°$ Find HPBW.
c) Explains any two properties of broadside array.
d) Explain pattern multiplication.
e) Explain helical geometry.

Q.3 Solve any two of the following. **12**

a) Define and derive expression for beam area.
b) Derive expression for two isotropic point sources with current equal in magnitude and phase.
c) Explain in detail slot antenna along with its working principle.

Section – II

Q.4 Solve any four of the following. **16**

a) Explain any one Feed Methods of reflector antenna.
b) Explain advantages and limitations of Microstrip antenna.
c) Explain reconfigurable antenna.
d) Explain Virtual Height concept of sky wave propagation.
e) Explain Log periodic antenna.

Q.5 Solve any two of the following. **12**

a) Design equation of horn antenna.
b) Explain in detail frequency independent antenna.
c) Explain in detail any one mode of propagation.

Seat No.	

Set | Q

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (197044601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
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Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In Horn antennas impedance matching is provided by _____.
a) flaring b) increasing Power
c) decreasing axial length d) balun

2) The small the flare angle, ____ is the directivity and _____ is the beam width.
a) high, low b) low, high
c) low, low d) high, high

3) In which of the following type of antenna a patch is created during fabrication?
a) Microstrip antenna b) Horn antenna
c) Wire antenna d) Lens antenna

4) Log periodic antenna is frequency dependent.
a) True b) False

5) The geometrical design of the Log periodic depends on _____.
a) Scaling factor b) Gain
c) Impedance d) Stability

6) Up to which frequency the ground wave propagation is used?
a) 2MHz b) 2GHz
c) 30MHz d) 30GHz

7) Ground wave is always _____ polarized.
a) Vertically b) Horizontally
c) Either vertical or horizontal d) Neither horizontal nor vertical

8) An Em wave is said to be vertically polarized when the angle between the electrical field and earth is _____.
a) 50° b) 20°
c) 90° d) 180°

9) The beam width of the antenna pattern measured at half power points is called: _____.
a) Half power beam width b) Full null beam width
c) Beam width d) None of the mentioned

10) The ratio of power radiated in a particular direction to the total input power of antenna is called as _____.

a) Directive gain
b) Power gain
c) Directivity
d) Partial directivity

11) If the progressive shift in antenna array is equal to zero then it is called _____.

a) Broad side
b) End-fire
c) Yagi-uda
d) Fishbone antenna

12) Which of the following antenna is obtained by removing a small area of metal from an infinite ground plane?

a) Slot antenna
b) Plane reflector
c) Dipole
d) Yagi-uda

13) What is the necessary condition for a helical antenna to operate in the axial mode?

a) $\pi D << \lambda$
b) $\pi D \approx \lambda$
c) $\pi D \approx n\lambda$
d) $\pi D = 0$

14) What is the principle used in slot antennas?

a) Babinet's principle
b) Archimedes principle
c) Geo-Optics
d) Image Theory

SLR-GF-340

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (197044601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Define - Radiation Intensity, Directivity.
b) An antenna has a field pattern given by $E(\theta) = \cos^2(\theta)$ for $0° \leq \theta \leq 90°$ Find HPBW.
c) Explains any two properties of broadside array.
d) Explain pattern multiplication.
e) Explain helical geometry.

Q.3 Solve any two of the following. **12**

a) Define and derive expression for beam area.
b) Derive expression for two isotropic point sources with current equal in magnitude and phase.
c) Explain in detail slot antenna along with its working principle.

Section – II

Q.4 Solve any four of the following. **16**

a) Explain any one Feed Methods of reflector antenna.
b) Explain advantages and limitations of Microstrip antenna.
c) Explain reconfigurable antenna.
d) Explain Virtual Height concept of sky wave propagation.
e) Explain Log periodic antenna.

Q.5 Solve any two of the following. **12**

a) Design equation of horn antenna.
b) Explain in detail frequency independent antenna.
c) Explain in detail any one mode of propagation.

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (197044601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Log periodic antenna is frequency dependent.
a) True b) False

2) The geometrical design of the Log periodic depends on _____.
a) Scaling factor b) Gain
c) Impedance d) Stability

3) Up to which frequency the ground wave propagation is used?
a) 2MHz b) 2GHz
c) 30MHz d) 30GHz

4) Ground wave is always _____ polarized.
a) Vertically b) Horizontally
c) Either vertical or horizontal d) Neither horizontal nor vertical

5) An Em wave is said to be vertically polarized when the angle between the electrical field and earth is _____.
a) 50° b) 20°
c) 90° d) 180°

6) The beam width of the antenna pattern measured at half power points is called: _____.
a) Half power beam width b) Full null beam width
c) Beam width d) None of the mentioned

7) The ratio of power radiated in a particular direction to the total input power of antenna is called as _____.
a) Directive gain b) Power gain
c) Directivity d) Partial directivity

8) If the progressive shift in antenna array is equal to zero then it is called _____.
a) Broad side b) End-fire
c) Yagi-uda d) Fishbone antenna

9) Which of the following antenna is obtained by removing a small area of metal from an infinite ground plane?
a) Slot antenna b) Plane reflector
c) Dipole d) Yagi-uda

10) What is the necessary condition for a helical antenna to operate in the axial mode?

a) $\pi D << \lambda$ b) $\pi D \approx \lambda$

c) $\pi D \approx n\lambda$ d) $\pi D = 0$

11) What is the principle used in slot antennas?

a) Babinet's principle b) Archimedes principle

c) Geo-Optics d) Image Theory

12) In Horn antennas impedance matching is provided by _____.

a) flaring b) increasing Power

c) decreasing axial length d) balun

13) The small the flare angle, ____ is the directivity and _____ is the beam width.

a) high, low b) low, high

c) low, low d) high, high

14) In which of the following type of antenna a patch is created during fabrication?

a) Microstrip antenna b) Horn antenna

c) Wire antenna d) Lens antenna

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (197044601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Define - Radiation Intensity, Directivity.
b) An antenna has a field pattern given by $E(\theta) = \cos^2(\theta)$ for $0° \leq \theta \leq 90°$ Find HPBW.
c) Explains any two properties of broadside array.
d) Explain pattern multiplication.
e) Explain helical geometry.

Q.3 Solve any two of the following. **12**

a) Define and derive expression for beam area.
b) Derive expression for two isotropic point sources with current equal in magnitude and phase.
c) Explain in detail slot antenna along with its working principle.

Section – II

Q.4 Solve any four of the following. **16**

a) Explain any one Feed Methods of reflector antenna.
b) Explain advantages and limitations of Microstrip antenna.
c) Explain reconfigurable antenna.
d) Explain Virtual Height concept of sky wave propagation.
e) Explain Log periodic antenna.

Q.5 Solve any two of the following. **12**

a) Design equation of horn antenna.
b) Explain in detail frequency independent antenna.
c) Explain in detail any one mode of propagation.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (197044601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What is the necessary condition for a helical antenna to operate in the axial mode?
a) $\pi D << \lambda$ b) $\pi D \approx \lambda$
c) $\pi D \approx n\lambda$ d) $\pi D = 0$

2) What is the principle used in slot antennas?
a) Babinet's principle b) Archimedes principle
c) Geo-Optics d) Image Theory

3) In Horn antennas impedance matching is provided by _____.
a) flaring b) increasing Power
c) decreasing axial length d) balun

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c) low, low d) high, high

5) In which of the following type of antenna a patch is created during fabrication?
a) Microstrip antenna b) Horn antenna
c) Wire antenna d) Lens antenna

6) Log periodic antenna is frequency dependent.
a) True b) False

7) The geometrical design of the Log periodic depends on _____.
a) Scaling factor b) Gain
c) Impedance d) Stability

8) Up to which frequency the ground wave propagation is used?
a) 2MHz b) 2GHz
c) 30MHz d) 30GHz

9) Ground wave is always _____ polarized.
a) Vertically b) Horizontally
c) Either vertical or horizontal d) Neither horizontal nor vertical

10) An Em wave is said to be vertically polarized when the angle between the electrical field and earth is _____.

a) 50° b) 20°
c) 90° d) 180°

11) The beam width of the antenna pattern measured at half power points is called: _____.

a) Half power beam width b) Full null beam width
c) Beam width d) None of the mentioned

12) The ratio of power radiated in a particular direction to the total input power of antenna is called as _____.

a) Directive gain b) Power gain
c) Directivity d) Partial directivity

13) If the progressive shift in antenna array is equal to zero then it is called _____.

a) Broad side b) End-fire
c) Yagi-uda d) Fishbone antenna

14) Which of the following antenna is obtained by removing a small area of metal from an infinite ground plane?

a) Slot antenna b) Plane reflector
c) Dipole d) Yagi-uda

SLR-GF-340

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Antenna & Wave Propagation (197044601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Define - Radiation Intensity, Directivity.
b) An antenna has a field pattern given by $E(\theta) = \cos^2(\theta)$ for $0° \leq \theta \leq 90°$ Find HPBW.
c) Explains any two properties of broadside array.
d) Explain pattern multiplication.
e) Explain helical geometry.

Q.3 Solve any two of the following. **12**

a) Define and derive expression for beam area.
b) Derive expression for two isotropic point sources with current equal in magnitude and phase.
c) Explain in detail slot antenna along with its working principle.

Section – II

Q.4 Solve any four of the following. **16**

a) Explain any one Feed Methods of reflector antenna.
b) Explain advantages and limitations of Microstrip antenna.
c) Explain reconfigurable antenna.
d) Explain Virtual Height concept of sky wave propagation.
e) Explain Log periodic antenna.

Q.5 Solve any two of the following. **12**

a) Design equation of horn antenna.
b) Explain in detail frequency independent antenna.
c) Explain in detail any one mode of propagation.

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (197044602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable date if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Embedded system specific trends are _____.
a) Amount of memory b) Real time constraints
c) Design time d) All of above

2) ARM uses the thumb _____ bit instruction set to improve code density.
a) 32 b) 8
c) 64 d) 16

3) Which of the following VIC having the highest priority?
a) Vectored interrupt request
b) Non vectored interrupt request
c) Fast interrupt request
d) None of the above

4) The ARM register _____ is called link register.
a) R 12 b) R 13
c) R 14 d) R 15

5) The on-chip ADC'S of LPC 2148 has _____ bit resolution and _____ conversion time.
a) 8, 2.44 μ sec b) 10, 2.44 μ sec
c) 12, 1.44 μ sec d) 10, 1.44 μ sec

6) If External frequency = 12 MHz, CCLK = 60MHz and PCLK = 30MHz then PLLCFG and VPBDIV values are _____
a) 0×23 and 0×01 b) 0×24 and 0×02
c) 0×24 and 0×00 d) None of these

7) ARM 7 core has a Von Neumann-style architecture where _____.
a) Data and instructions use same bus
b) Data and instructions use different bus
c) Core has five stage pipeline
d) None of the above

8) For real time operating systems, interrupt latency should be _____.
a) minimal b) maximum
c) zero d) dependent on the scheduling

9) Which of the following techniques is used for sharing data used for processes?
a) Semaphores b) Shared memory
c) Messages d) b) and c)

10) _____ kernels require that each task does something to explicitly give up control of the CPU.
a) Preemptive b) Non-Preemptive
c) Selective Preemption d) None of above

11) Round-robin scheduling _____.
a) Allows interactive task quicker access to processor
b) Is quite complex to implement
c) Gives each task the same chance at the processor
d) None of the above

12) Which is the core of OS?
a) Shell b) Kernel
c) Commands d) Scripts

13) Information about a task is maintained in a _____.
a) Stack b) Translation look aside buffer
c) Task control block d) Task condition block

14) Real lime operating systems can be found in _____.
a) PDAS b) Scientific instruments
c) Cell phones d) PDC

Seat No.	

Set | P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (197044602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable date if required.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) Explain embedded system design challenges.
b) Explain revenue loss in time to market design metrics.
c) Write different features of LPC2148.
d) Explain concept of three stage pipe line of ARM 7 processor.
e) Explain bus architecture in ARM7.

Q.3 Attempt any two of the following questions. **12**

a) Draw and explain the data flow model of ARM core.
b) What are operating modes of ARM7 processor and draw the CPSR format.
c) Explain the concept of following peripherals in LPC2148.
1) Timer/Counter
2) ADC

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Write different features of RTOS.
b) Explain concept of semaphore with example.
c) Draw and explain architecture of kernel.
d) Explain task states associated with RTOS.
e) Explain embedded system used in digital camera.

Q.5 Attempt any two of the following questions. **12**

a) Explain the following kernel objects in RTOS.
1) Mailbox
2) Message Queue
b) What are the types of scheduling algorithm. Explain any two types of scheduling algorithm in RTOS.
c) Interface LED to any port pin of LPC2148. Write an embedded C program to blink LED continuously after some delay.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (197044602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable date if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) For real time operating systems, interrupt latency should be _____.
a) minimal b) maximum
c) zero d) dependent on the scheduling

2) Which of the following techniques is used for sharing data used for processes?
a) Semaphores b) Shared memory
c) Messages d) b) and c)

3) _____ kernels require that each task does something to explicitly give up control of the CPU.
a) Preemptive b) Non-Preemptive
c) Selective Preemption d) None of above

4) Round-robin scheduling _____.
a) Allows interactive task quicker access to processor
b) Is quite complex to implement
c) Gives each task the same chance at the processor
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5) Which is the core of OS?
a) Shell b) Kernel
c) Commands d) Scripts

6) Information about a task is maintained in a _____.
a) Stack b) Translation look aside buffer
c) Task control block d) Task condition block

7) Real lime operating systems can be found in _____.
a) PDAS b) Scientific instruments
c) Cell phones d) PDC

8) Embedded system specific trends are _____.
a) Amount of memory b) Real time constraints
c) Design time d) All of above

9) ARM uses the thumb _____ bit instruction set to improve code density.
a) 32 b) 8
c) 64 d) 16

10) Which of the following VIC having the highest priority?
a) Vectored interrupt request
b) Non vectored interrupt request
c) Fast interrupt request
d) None of the above

11) The ARM register _____ is called link register.
a) R 12 b) R 13
c) R 14 d) R 15

12) The on-chip ADC'S of LPC 2148 has _____ bit resolution and _____ conversion time.
a) 8, 2.44 μ sec b) 10, 2.44 μ sec
c) 12, 1.44 μ sec d) 10, 1.44 μ sec

13) If External frequency = 12 MHz, CCLK = 60MHz and PCLK = 30MHz then PLLCFG and VPBDIV values are _____
a) 0×23 and 0×01 b) 0×24 and 0×02
c) 0×24 and 0×00 d) None of these

14) ARM 7 core has a Von Neumann-style architecture where _____.
a) Data and instructions use same bus
b) Data and instructions use different bus
c) Core has five stage pipeline
d) None of the above

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (197044602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable date if required.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) Explain embedded system design challenges.
b) Explain revenue loss in time to market design metrics.
c) Write different features of LPC2148.
d) Explain concept of three stage pipe line of ARM 7 processor.
e) Explain bus architecture in ARM7.

Q.3 Attempt any two of the following questions. **12**

a) Draw and explain the data flow model of ARM core.
b) What are operating modes of ARM7 processor and draw the CPSR format.
c) Explain the concept of following peripherals in LPC2148.
1) Timer/Counter
2) ADC

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Write different features of RTOS.
b) Explain concept of semaphore with example.
c) Draw and explain architecture of kernel.
d) Explain task states associated with RTOS.
e) Explain embedded system used in digital camera.

Q.5 Attempt any two of the following questions. **12**

a) Explain the following kernel objects in RTOS.
1) Mailbox
2) Message Queue
b) What are the types of scheduling algorithm. Explain any two types of scheduling algorithm in RTOS.
c) Interface LED to any port pin of LPC2148. Write an embedded C program to blink LED continuously after some delay.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (197044602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable date if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Round-robin scheduling _____.
a) Allows interactive task quicker access to processor
b) Is quite complex to implement
c) Gives each task the same chance at the processor
d) None of the above

2) Which is the core of OS?
a) Shell b) Kernel
c) Commands d) Scripts

3) Information about a task is maintained in a _____.
a) Stack b) Translation look aside buffer
c) Task control block d) Task condition block

4) Real lime operating systems can be found in _____.
a) PDAS b) Scientific instruments
c) Cell phones d) PDC

5) Embedded system specific trends are _____.
a) Amount of memory b) Real time constraints
c) Design time d) All of above

6) ARM uses the thumb _____ bit instruction set to improve code density.
a) 32 b) 8
c) 64 d) 16

7) Which of the following VIC having the highest priority?
a) Vectored interrupt request
b) Non vectored interrupt request
c) Fast interrupt request
d) None of the above

8) The ARM register _____ is called link register.
a) R 12 b) R 13
c) R 14 d) R 15

9) The on-chip ADC'S of LPC 2148 has _____ bit resolution and _____ conversion time.
a) 8, 2.44 μ sec
b) 10, 2.44 μ sec
c) 12, 1.44 μ sec
d) 10, 1.44 μ sec

10) If External frequency = 12 MHz, CCLK = 60MHz and PCLK = 30MHz then PLLCFG and VPBDIV values are _____
a) 0×23 and 0×01
b) 0×24 and 0×02
c) 0×24 and 0×00
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11) ARM 7 core has a Von Neumann-style architecture where _____.
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b) Data and instructions use different bus
c) Core has five stage pipeline
d) None of the above

12) For real time operating systems, interrupt latency should be _____.
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b) maximum
c) zero
d) dependent on the scheduling

13) Which of the following techniques is used for sharing data used for processes?
a) Semaphores
b) Shared memory
c) Messages
d) b) and c)

14) _____ kernels require that each task does something to explicitly give up control of the CPU.
a) Preemptive
b) Non-Preemptive
c) Selective Preemption
d) None of above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (197044602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable date if required.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) Explain embedded system design challenges.
b) Explain revenue loss in time to market design metrics.
c) Write different features of LPC2148.
d) Explain concept of three stage pipe line of ARM 7 processor.
e) Explain bus architecture in ARM7.

Q.3 Attempt any two of the following questions. **12**

a) Draw and explain the data flow model of ARM core.
b) What are operating modes of ARM7 processor and draw the CPSR format.
c) Explain the concept of following peripherals in LPC2148.
1) Timer/Counter
2) ADC

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Write different features of RTOS.
b) Explain concept of semaphore with example.
c) Draw and explain architecture of kernel.
d) Explain task states associated with RTOS.
e) Explain embedded system used in digital camera.

Q.5 Attempt any two of the following questions. **12**

a) Explain the following kernel objects in RTOS.
1) Mailbox
2) Message Queue
b) What are the types of scheduling algorithm. Explain any two types of scheduling algorithm in RTOS.
c) Interface LED to any port pin of LPC2148. Write an embedded C program to blink LED continuously after some delay.

SLR-GF-341

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (197044602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable date if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If External frequency = 12 MHz, CCLK = 60MHz and PCLK = 30MHz then PLLCFG and VPBDIV values are _____
a) 0×23 and 0×01 b) 0×24 and 0×02
c) 0×24 and 0×00 d) None of these

2) ARM 7 core has a Von Neumann-style architecture where _____.
a) Data and instructions use same bus
b) Data and instructions use different bus
c) Core has five stage pipeline
d) None of the above

3) For real time operating systems, interrupt latency should be _____.
a) minimal b) maximum
c) zero d) dependent on the scheduling

4) Which of the following techniques is used for sharing data used for processes?
a) Semaphores b) Shared memory
c) Messages d) b) and c)

5) _____ kernels require that each task does something to explicitly give up control of the CPU.
a) Preemptive b) Non-Preemptive
c) Selective Preemption d) None of above

6) Round-robin scheduling _____.
a) Allows interactive task quicker access to processor
b) Is quite complex to implement
c) Gives each task the same chance at the processor
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7) Which is the core of OS?
a) Shell b) Kernel
c) Commands d) Scripts

8) Information about a task is maintained in a _____.
a) Stack b) Translation look aside buffer
c) Task control block d) Task condition block

9) Real lime operating systems can be found in _____.
a) PDAS b) Scientific instruments
c) Cell phones d) PDC

10) Embedded system specific trends are _____.
a) Amount of memory b) Real time constraints
c) Design time d) All of above

11) ARM uses the thumb _____ bit instruction set to improve code density.
a) 32 b) 8
c) 64 d) 16

12) Which of the following VIC having the highest priority?
a) Vectored interrupt request
b) Non vectored interrupt request
c) Fast interrupt request
d) None of the above

13) The ARM register _____ is called link register.
a) R 12 b) R 13
c) R 14 d) R 15

14) The on-chip ADC'S of LPC 2148 has _____ bit resolution and _____ conversion time.
a) 8, 2.44 μ sec b) 10, 2.44 μ sec
c) 12, 1.44 μ sec d) 10, 1.44 μ sec

SLR-GF-341

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Embedded System (197044602)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable date if required.

Section – I

Q.2 Attempt any four of the following questions. **16**

a) Explain embedded system design challenges.
b) Explain revenue loss in time to market design metrics.
c) Write different features of LPC2148.
d) Explain concept of three stage pipe line of ARM 7 processor.
e) Explain bus architecture in ARM7.

Q.3 Attempt any two of the following questions. **12**

a) Draw and explain the data flow model of ARM core.
b) What are operating modes of ARM7 processor and draw the CPSR format.
c) Explain the concept of following peripherals in LPC2148.
1) Timer/Counter
2) ADC

Section – II

Q.4 Attempt any four of the following questions. **16**

a) Write different features of RTOS.
b) Explain concept of semaphore with example.
c) Draw and explain architecture of kernel.
d) Explain task states associated with RTOS.
e) Explain embedded system used in digital camera.

Q.5 Attempt any two of the following questions. **12**

a) Explain the following kernel objects in RTOS.
1) Mailbox
2) Message Queue
b) What are the types of scheduling algorithm. Explain any two types of scheduling algorithm in RTOS.
c) Interface LED to any port pin of LPC2148. Write an embedded C program to blink LED continuously after some delay.

SLR-GF-342

Seat No.		Set	P

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (197044603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Assume suitable data if required.
4) Use of calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) TRIAC is antiparallel arrangement of _____.
a) Diodes b) SCR
c) BJT d) None

2) SCR is used in _____ applications.
a) High voltage b) High frequency
c) Both a & b d) None of these

3) A single phase M-2 full converter with inductive load has _____ DC voltage across load when freewheeling diode is absent for α = 90°.
a) Zero b) $\mathrm{Vm}/2\pi$
c) Vm/π d) none of these

4) A fully controlled bridge converter is more beneficial over M-2 converter because _____.
a) SCR PIV rating requirement is less
b) Transformer rating requirement is less
c) Both a and b
d) None of these

5) In PLL, input signal frequency is compared with _____.
a) Output of phase comparator b) VCO output
c) Either a or b d) None of these

6) For continuous conduction in a single phase half wave rectifier, SCR conducts for _____.
a) π b) $\pi - \alpha$
c) $\alpha + \pi$ d) α

7) Lock range of PLL is _____ the capture range.
a) greater than b) less than
c) equal to d) None of these

8) What is the maximum display count in 3 and half digit display?
a) 1000 b) 2000
c) 1999 d) 999

9) IC XR2240 consist of _____.

a) 8 bit counter b) 8 digit counter
c) 4 bit counter d) 6 digit counter

10) For a DVM, if Vin = 2V and update rate is 50 readings/sec, what will be value of clock signal applied to AND gate _____.

a) 200 KHz b) 300 KHz
c) 500 KHz d) 1 MHz

11) A cascading two IC 2240 generates maximum delay up to _____.

a) Seconds b) Hours
c) Days d) Years

12) The number of IC 74926 required to count frequency of 1 MHz with 0.1 Hz resolution is _____.

a) 4 b) 2
c) 7 d) 8

13) RTD is a temperature sensor with _____ temperature coefficient.

a) Non-linear b) Negative
c) Linear d) Positive

14) Resistance of PT 100 at 100°C is _____.

a) $100\ \Omega$ b) $138.5\ \Omega$
c) $136.8\ \Omega$ d) $200\ \Omega$

SLR-GF-342

Seat No.		Set	P

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (197044603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of calculator is allowed.

Section – I

Q.2 Answer any four. **16**

a) Explain different triggering methods of SCR. Explain any one in detail.
b) Explain construction and V-I characteristics of TRIAC.
c) Draw internal block diagram of LM565, explain its working. How PLL is suitable for frequency synthesis.
d) Draw load voltage waveform for a single phase fully controlled bridge rectifier with inductive load for firing angle $\alpha < 90°, \alpha = 90°$ and $\alpha > 90°$. Comment on the DC voltage obtained in all three cases. (Assume Freewheeling diode is not connected).
e) Explain AC power control using DIAC and TRIAC.

Q.3 Answer any two. **12**

a) Explain with the help of circuit diagram and waveforms single phase full wave controlled rectifier (Mid-point converter) with resistive load. Derive the expression for
1) Average DC output voltage
2) RMS load voltage
b) For a free running frequency of 500KHz of LM565, determine value of capture range, lock range of VCO, external resistor and capacitor. Draw circuit diagram.
c) Design a frequency synthesizer using PLL 565 to generate frequency in the range of 1Hz - 999KHz. Use suitable TTL ICs.

Section – II

Q.4 Solve any four. **16**

a) Design a timer using IC XR 2240 to generate a delay of 500 seconds in two sections
b) Design zero and span circuit to convert 1.6 V - 2.75 V into 0 - 5 V.
c) Design I to V converter which converts 4 mA - 20 mA into 0 - 10 V.
d) Draw & explain the ladder diagram for bottle filling plant.
e) Compare Relay logic controller & PLC.

Q.5 Solve any two. **12**

a) Design 3 ½ digit DVM for measurement of voltage in the range of 2 V to 200 V.

b) Design frequency measurement setup to measure frequency up to 100 kHz with 0.1 Hz accuracy. Use IC 74C926.

c) Design a signal conditioning circuit to convert 0 to 100°C to 4mA to 20mA.

Seat No.	

Set **Q**

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (197044603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Use of calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What is the maximum display count in 3 and half digit display?
a) 1000 b) 2000
c) 1999 d) 999

2) IC XR2240 consist of _____.
a) 8 bit counter b) 8 digit counter
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a) 200 KHz b) 300 KHz
c) 500 KHz d) 1 MHz

4) A cascading two IC 2240 generates maximum delay up to _____.
a) Seconds b) Hours
c) Days d) Years

5) The number of IC 74926 required to count frequency of 1 MHz with 0.1 Hz resolution is _____.
a) 4 b) 2
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6) RTD is a temperature sensor with _____ temperature coefficient.
a) Non-linear b) Negative
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7) Resistance of PT 100 at 100°C is _____.
a) $100\ \Omega$ b) $138.5\ \Omega$
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a) Zero
b) $\mathrm{Vm}/2\pi$
c) Vm/π
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11) A fully controlled bridge converter is more beneficial over M-2 converter because _____.

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b) Transformer rating requirement is less
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12) In PLL, input signal frequency is compared with _____.

a) Output of phase comparator
b) VCO output
c) Either a or b
d) None of these

13) For continuous conduction in a single phase half wave rectifier, SCR conducts for _____.

a) π
b) $\pi - \alpha$
c) $\alpha + \pi$
d) α

14) Lock range of PLL is _____ the capture range.

a) greater than
b) less than
c) equal to
d) None of these

SLR-GF-342

Seat No.		Set	Q

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (197044603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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4) Use of calculator is allowed.

Section – I

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b) Explain construction and V-I characteristics of TRIAC.
c) Draw internal block diagram of LM565, explain its working. How PLL is suitable for frequency synthesis.
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e) Explain AC power control using DIAC and TRIAC.

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a) Explain with the help of circuit diagram and waveforms single phase full wave controlled rectifier (Mid-point converter) with resistive load. Derive the expression for
1) Average DC output voltage
2) RMS load voltage
b) For a free running frequency of 500KHz of LM565, determine value of capture range, lock range of VCO, external resistor and capacitor. Draw circuit diagram.
c) Design a frequency synthesizer using PLL 565 to generate frequency in the range of 1Hz - 999KHz. Use suitable TTL ICs.

Section – II

Q.4 Solve any four. **16**

a) Design a timer using IC XR 2240 to generate a delay of 500 seconds in two sections
b) Design zero and span circuit to convert 1.6 V - 2.75 V into 0 - 5 V.
c) Design I to V converter which converts 4 mA - 20 mA into 0 - 10 V.
d) Draw & explain the ladder diagram for bottle filling plant.
e) Compare Relay logic controller & PLC.

Q.5 Solve any two. **12**

a) Design 3 ½ digit DVM for measurement of voltage in the range of 2 V to 200 V.

b) Design frequency measurement setup to measure frequency up to 100 kHz with 0.1 Hz accuracy. Use IC 74C926.

c) Design a signal conditioning circuit to convert 0 to 100°C to 4mA to 20mA.

Seat No.	

Set **R**

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (197044603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Assume suitable data if required.
4) Use of calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) A cascading two IC 2240 generates maximum delay up to _____.
a) Seconds b) Hours
c) Days d) Years

2) The number of IC 74926 required to count frequency of 1 MHz with 0.1 Hz resolution is _____.
a) 4 b) 2
c) 7 d) 8

3) RTD is a temperature sensor with _____ temperature coefficient.
a) Non-linear b) Negative
c) Linear d) Positive

4) Resistance of PT 100 at 100°C is _____.
a) $100\ \Omega$ b) $138.5\ \Omega$
c) $136.8\ \Omega$ d) $200\ \Omega$

5) TRIAC is antiparallel arrangement of _____.
a) Diodes b) SCR
c) BJT d) None

6) SCR is used in _____ applications.
a) High voltage b) High frequency
c) Both a & b d) None of these

7) A single phase M-2 full converter with inductive load has _____ DC voltage across load when freewheeling diode is absent for α = 90°.
a) Zero b) $\mathrm{Vm}/2\pi$
c) Vm/π d) none of these

8) A fully controlled bridge converter is more beneficial over M-2 converter because _____.
a) SCR PIV rating requirement is less
b) Transformer rating requirement is less
c) Both a and b
d) None of these

9) In PLL, input signal frequency is compared with _____.
a) Output of phase comparator b) VCO output
c) Either a or b d) None of these

10) For continuous conduction in a single phase half wave rectifier, SCR conducts for _____.
a) π b) $\pi - \alpha$
c) $\alpha + \pi$ d) α

11) Lock range of PLL is _____ the capture range.
a) greater than b) less than
c) equal to d) None of these

12) What is the maximum display count in 3 and half digit display?
a) 1000 b) 2000
c) 1999 d) 999

13) IC XR2240 consist of _____.
a) 8 bit counter b) 8 digit counter
c) 4 bit counter d) 6 digit counter

14) For a DVM, if Vin = 2V and update rate is 50 readings/sec, what will be value of clock signal applied to AND gate _____.
a) 200 KHz b) 300 KHz
c) 500 KHz d) 1 MHz

SLR-GF-342

Seat No.	

Set R

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (197044603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of calculator is allowed.

Section – I

Q.2 Answer any four. **16**

a) Explain different triggering methods of SCR. Explain any one in detail.
b) Explain construction and V-I characteristics of TRIAC.
c) Draw internal block diagram of LM565, explain its working. How PLL is suitable for frequency synthesis.
d) Draw load voltage waveform for a single phase fully controlled bridge rectifier with inductive load for firing angle $\alpha < 90°, \alpha = 90°$ and $\alpha > 90°$. Comment on the DC voltage obtained in all three cases. (Assume Freewheeling diode is not connected).
e) Explain AC power control using DIAC and TRIAC.

Q.3 Answer any two. **12**

a) Explain with the help of circuit diagram and waveforms single phase full wave controlled rectifier (Mid-point converter) with resistive load. Derive the expression for
1) Average DC output voltage
2) RMS load voltage
b) For a free running frequency of 500KHz of LM565, determine value of capture range, lock range of VCO, external resistor and capacitor. Draw circuit diagram.
c) Design a frequency synthesizer using PLL 565 to generate frequency in the range of 1Hz - 999KHz. Use suitable TTL ICs.

Section – II

Q.4 Solve any four. **16**

a) Design a timer using IC XR 2240 to generate a delay of 500 seconds in two sections
b) Design zero and span circuit to convert 1.6 V - 2.75 V into 0 - 5 V.
c) Design I to V converter which converts 4 mA - 20 mA into 0 - 10 V.
d) Draw & explain the ladder diagram for bottle filling plant.
e) Compare Relay logic controller & PLC.

Q.5 Solve any two. **12**

a) Design 3 ½ digit DVM for measurement of voltage in the range of 2 V to 200 V.

b) Design frequency measurement setup to measure frequency up to 100 kHz with 0.1 Hz accuracy. Use IC 74C926.

c) Design a signal conditioning circuit to convert 0 to 100°C to 4mA to 20mA.

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Seat No.		Set	S

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (197044603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Assume suitable data if required.
4) Use of calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) For continuous conduction in a single phase half wave rectifier, SCR conducts for _____.
a) π b) $\pi - \alpha$
c) $\alpha + \pi$ d) α

2) Lock range of PLL is _____ the capture range.
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c) equal to d) None of these

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c) 1999 d) 999

4) IC XR2240 consist of _____.
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5) For a DVM, if Vin = 2V and update rate is 50 readings/sec, what will be value of clock signal applied to AND gate _____.
a) 200 KHz b) 300 KHz
c) 500 KHz d) 1 MHz

6) A cascading two IC 2240 generates maximum delay up to _____.
a) Seconds b) Hours
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7) The number of IC 74926 required to count frequency of 1 MHz with 0.1 Hz resolution is _____.
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c) Linear d) Positive

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c) $136.8\ \Omega$ d) $200\ \Omega$

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a) Diodes b) SCR
c) BJT d) None

11) SCR is used in _____ applications.
a) High voltage b) High frequency
c) Both a & b d) None of these

12) A single phase M-2 full converter with inductive load has _____ DC voltage across load when freewheeling diode is absent for α = 90°.
a) Zero b) $\mathrm{Vm}/2\pi$
c) Vm/π d) none of these

13) A fully controlled bridge converter is more beneficial over M-2 converter because _____.
a) SCR PIV rating requirement is less
b) Transformer rating requirement is less
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d) None of these

14) In PLL, input signal frequency is compared with _____.
a) Output of phase comparator b) VCO output
c) Either a or b d) None of these

SLR-GF-342

Seat No.		Set	S

T.Y. (B. Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Electronic System Design (197044603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of calculator is allowed.

Section – I

Q.2 Answer any four. **16**

a) Explain different triggering methods of SCR. Explain any one in detail.
b) Explain construction and V-I characteristics of TRIAC.
c) Draw internal block diagram of LM565, explain its working. How PLL is suitable for frequency synthesis.
d) Draw load voltage waveform for a single phase fully controlled bridge rectifier with inductive load for firing angle $\alpha < 90°, \alpha = 90°$ and $\alpha > 90°$. Comment on the DC voltage obtained in all three cases. (Assume Freewheeling diode is not connected).
e) Explain AC power control using DIAC and TRIAC.

Q.3 Answer any two. **12**

a) Explain with the help of circuit diagram and waveforms single phase full wave controlled rectifier (Mid-point converter) with resistive load. Derive the expression for
1) Average DC output voltage
2) RMS load voltage
b) For a free running frequency of 500KHz of LM565, determine value of capture range, lock range of VCO, external resistor and capacitor. Draw circuit diagram.
c) Design a frequency synthesizer using PLL 565 to generate frequency in the range of 1Hz - 999KHz. Use suitable TTL ICs.

Section – II

Q.4 Solve any four. **16**

a) Design a timer using IC XR 2240 to generate a delay of 500 seconds in two sections
b) Design zero and span circuit to convert 1.6 V - 2.75 V into 0 - 5 V.
c) Design I to V converter which converts 4 mA - 20 mA into 0 - 10 V.
d) Draw & explain the ladder diagram for bottle filling plant.
e) Compare Relay logic controller & PLC.

Q.5 Solve any two. **12**

a) Design 3 ½ digit DVM for measurement of voltage in the range of 2 V to 200 V.

b) Design frequency measurement setup to measure frequency up to 100 kHz with 0.1 Hz accuracy. Use IC 74C926.

c) Design a signal conditioning circuit to convert 0 to 100°C to 4mA to 20mA.

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Advanced Mobile Communication (197044604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In PGSM the uplink frequency band is _____.
a) 890-915 MHz b) 890-935 MHz
c) 935-960 MHz d) 925-960 MHz

2) Standard GSM systems support a data rate of _____.
a) 164 kbps b) 64 kbps
c) 128 kbps d) 9.6 kbps

3) Cellular concept replaces many low power transmitters to a single high-power transmitter.
a) True b) False

4) Actual radio coverage of a cell is called _____.
a) Fingerprint b) Footprint
c) Imprint d) Matrix

5) How many users or voice channels are supported for each 200 KHz channel in GSM?
a) Eight b) Three
c) Sixty four d) Twelve

6) Frequency division duplexing provides _____ distinct bands of frequencies for_____ user.
a) Two, two b) One, two
c) Two, one d) Two, many

7) Which system is called as buffer and burst method?
a) FDMA b) TDMA
c) CDMA d) None of the above

8) Free space propagation model is to predict _____.
a) Received signal strength b) Transmitted power
c) Gain of transmitter d) Gain of receiver

9) Diffraction occurs when radio path between Tx. and Rx. is obstructed by _____.
a) Surface having sharp irregularities
b) Smooth irregularities
c) Rough surface
d) All types of surfaces

10) Which organization is responsible for developing LTE standards?
a) UMTS
b) 3GPP
c) 3GPP2
d) ISO

11) OFDMA stands for _____.
a) Omnidirectional frequency division multiple access
b) Orthogonal frequency duplex multiple access
c) Orthogonal frequency divider multiple access
d) Orthogonal frequency division multiple access

12) Modulation techniques used in CDMA 2000 is _____.
a) Uplink-QPSK downlink-BPSK
b) Uplink-BPSK downlink-QPSK
c) Uplink-BPSK downlink-BPSK
d) None of the above

13) What is the minimum spectrum allocation required by W-CDMA?
a) 5 MHz
b) 20 MHz
c) 1.25 MHz
d) 200 KHz

14) The process of transferring a mobile station from one base station to another is _____.
a) Call forwarding
b) Roamer
c) Handoff
d) None of the above

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Advanced Mobile Communication (197044604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve Any Four. **16**

a) Explain different channel assignment strategies in cellular system.
b) What is small scale fading? What are its types? Explain in detail.
c) What is the need of cellular system? Explain the frequency reuse concept in cellular system.
d) What is diffraction? Explain knife edge diffraction.
e) Explain FDMA with its non-linear effects.

Q.3 Solve Any Two. **12**

a) What is SSMA? What are its types? Explain in detail FHMA.
b) What are the different methods to improve the coverage and capacity of a cellular system? Explain in detail.
c) Explain two ray model in detail.

Section - II

Q.4 Attempt Any Four: **16**

a) What is handoff? Explain different types of handoff in GSM.
b) What are the different identifiers used in GSM? Explain in detail.
c) Draw and explain packet and frame formats of CDMA IS - 95.
d) What is E-UTRAN? Explain.
e) Explain the features, advantages, disadvantages and applications of 5G.

Q.5 Solve Any Two. **12**

a) Give the detail comparison of IMT 2000, IMT Advanced and IMT 2020.
b) Draw and explain the network architecture of GSM in detail.
c) Explain in detail radio interface, modulation, channels & features of 4G.

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Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Advanced Mobile Communication (197044604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Free space propagation model is to predict _____.
a) Received signal strength b) Transmitted power
c) Gain of transmitter d) Gain of receiver

2) Diffraction occurs when radio path between Tx. and Rx. is obstructed by _____.
a) Surface having sharp irregularities
b) Smooth irregularities
c) Rough surface
d) All types of surfaces

3) Which organization is responsible for developing LTE standards?
a) UMTS b) 3GPP
c) 3GPP2 d) ISO

4) OFDMA stands for _____.
a) Omnidirectional frequency division multiple access
b) Orthogonal frequency duplex multiple access
c) Orthogonal frequency divider multiple access
d) Orthogonal frequency division multiple access

5) Modulation techniques used in CDMA 2000 is _____.
a) Uplink-QPSK downlink-BPSK
b) Uplink-BPSK downlink-QPSK
c) Uplink-BPSK downlink-BPSK
d) None of the above

6) What is the minimum spectrum allocation required by W-CDMA?
a) 5 MHz b) 20 MHz
c) 1.25 MHz d) 200 KHz

7) The process of transferring a mobile station from one base station to another is _____.
a) Call forwarding b) Roamer
c) Handoff d) None of the above

8) In PGSM the uplink frequency band is _____.
a) 890-915 MHz b) 890-935 MHz
c) 935-960 MHz d) 925-960 MHz

9) Standard GSM systems support a data rate of _____.
a) 164 kbps b) 64 kbps
c) 128 kbps d) 9.6 kbps

10) Cellular concept replaces many low power transmitters to a single high-power transmitter.
a) True b) False

11) Actual radio coverage of a cell is called _____.
a) Fingerprint b) Footprint
c) Imprint d) Matrix

12) How many users or voice channels are supported for each 200 KHz channel in GSM?
a) Eight b) Three
c) Sixty four d) Twelve

13) Frequency division duplexing provides _____ distinct bands of frequencies for_____ user.
a) Two, two b) One, two
c) Two, one d) Two, many

14) Which system is called as buffer and burst method?
a) FDMA b) TDMA
c) CDMA d) None of the above

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Advanced Mobile Communication (197044604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve Any Four. **16**

a) Explain different channel assignment strategies in cellular system.
b) What is small scale fading? What are its types? Explain in detail.
c) What is the need of cellular system? Explain the frequency reuse concept in cellular system.
d) What is diffraction? Explain knife edge diffraction.
e) Explain FDMA with its non-linear effects.

Q.3 Solve Any Two. **12**

a) What is SSMA? What are its types? Explain in detail FHMA.
b) What are the different methods to improve the coverage and capacity of a cellular system? Explain in detail.
c) Explain two ray model in detail.

Section - II

Q.4 Attempt Any Four: **16**

a) What is handoff? Explain different types of handoff in GSM.
b) What are the different identifiers used in GSM? Explain in detail.
c) Draw and explain packet and frame formats of CDMA IS - 95.
d) What is E-UTRAN? Explain.
e) Explain the features, advantages, disadvantages and applications of 5G.

Q.5 Solve Any Two. **12**

a) Give the detail comparison of IMT 2000, IMT Advanced and IMT 2020.
b) Draw and explain the network architecture of GSM in detail.
c) Explain in detail radio interface, modulation, channels & features of 4G.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Advanced Mobile Communication (197044604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) OFDMA stands for _____.
a) Omnidirectional frequency division multiple access
b) Orthogonal frequency duplex multiple access
c) Orthogonal frequency divider multiple access
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2) Modulation techniques used in CDMA 2000 is _____.
a) Uplink-QPSK downlink-BPSK
b) Uplink-BPSK downlink-QPSK
c) Uplink-BPSK downlink-BPSK
d) None of the above

3) What is the minimum spectrum allocation required by W-CDMA?
a) 5 MHz b) 20 MHz
c) 1.25 MHz d) 200 KHz

4) The process of transferring a mobile station from one base station to another is _____.
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10) Frequency division duplexing provides _____ distinct bands of frequencies for_____ user.

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11) Which system is called as buffer and burst method?

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c) Gain of transmitter d) Gain of receiver

13) Diffraction occurs when radio path between Tx. and Rx. is obstructed by _____.

a) Surface having sharp irregularities
b) Smooth irregularities
c) Rough surface
d) All types of surfaces

14) Which organization is responsible for developing LTE standards?

a) UMTS b) 3GPP
c) 3GPP2 d) ISO

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Advanced Mobile Communication (197044604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section - I

Q.2 Solve Any Four. **16**

a) Explain different channel assignment strategies in cellular system.
b) What is small scale fading? What are its types? Explain in detail.
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Q.3 Solve Any Two. **12**

a) What is SSMA? What are its types? Explain in detail FHMA.
b) What are the different methods to improve the coverage and capacity of a cellular system? Explain in detail.
c) Explain two ray model in detail.

Section - II

Q.4 Attempt Any Four: **16**

a) What is handoff? Explain different types of handoff in GSM.
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c) Draw and explain packet and frame formats of CDMA IS - 95.
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Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Advanced Mobile Communication (197044604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Frequency division duplexing provides _____ distinct bands of frequencies for_____ user.
a) Two, two b) One, two
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2) Which system is called as buffer and burst method?
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a) 5 MHz b) 20 MHz
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a) 164 kbps b) 64 kbps
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12) Cellular concept replaces many low power transmitters to a single high-power transmitter.
a) True b) False

13) Actual radio coverage of a cell is called _____.
a) Fingerprint b) Footprint
c) Imprint d) Matrix

14) How many users or voice channels are supported for each 200 KHz channel in GSM?
a) Eight b) Three
c) Sixty four d) Twelve

SLR-GF-343

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Advanced Mobile Communication (197044604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve Any Four. **16**

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b) What is small scale fading? What are its types? Explain in detail.
c) What is the need of cellular system? Explain the frequency reuse concept in cellular system.
d) What is diffraction? Explain knife edge diffraction.
e) Explain FDMA with its non-linear effects.

Q.3 Solve Any Two. **12**

a) What is SSMA? What are its types? Explain in detail FHMA.
b) What are the different methods to improve the coverage and capacity of a cellular system? Explain in detail.
c) Explain two ray model in detail.

Section - II

Q.4 Attempt Any Four: **16**

a) What is handoff? Explain different types of handoff in GSM.
b) What are the different identifiers used in GSM? Explain in detail.
c) Draw and explain packet and frame formats of CDMA IS - 95.
d) What is E-UTRAN? Explain.
e) Explain the features, advantages, disadvantages and applications of 5G.

Q.5 Solve Any Two. **12**

a) Give the detail comparison of IMT 2000, IMT Advanced and IMT 2020.
b) Draw and explain the network architecture of GSM in detail.
c) Explain in detail radio interface, modulation, channels & features of 4G.

SLR-GF-344

Seat No.		Set	P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Optical Communication (197044608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Responsivity of photo diode is expressed in _____.
a) A/W b) A-W
c) W/A d) A^2-W

2) Speed of response of detector is limited by _____.
a) drift time of carrier through the carrier through depletion region
b) diffusion time of the carrier generated outside the depletion region
c) time constant incurred by the capacitance of photodiode with its load
d) All the above

3) Transmission of multiple optical signals over same fiber is used _____.
a) to increase the transmission capacity of the fiber
b) to increase the core diameter of the fiber
c) to increase the cladding diameter of the fiber
d) None of the above

4) WDM means _____.
a) Wave Division Multiplexing
b) Wavelength Division Multiplexing
c) Width Division Multiplexing
d) None of the above

5) A photodiode has a quantum efficiency of 70% when photons of energy 1.8×10^{-19} J are incident upon it, then the responsivity of the photodiode is ___.
a) 0.694 b) 0.723
c) 0.369 d) 0.623

6) The graded index profile which produces the best results for multimode optical propagation have _____.
a) Parabolic b) Rectangular
c) Triangular d) Circular

7) If recombination is _____, energy is released in the form of heat.
a) Radiative b) Non radiative
c) Sensitive d) None of above

8) The Numerical Aperture (NA) is defined for a step index fiber in air by NA is equal to _____.

a) $\sin\theta_a$ b) $\cos\theta_a$

c) $\tan\theta_a$ d) None of these

9) Photon energy is _____ proportional to wavelength.

a) directly b) inversely

c) both d) none of these

10) Snell's law is related to light refraction _____.

a) True b) False

c) Partially true d) None of these

11) Edge emitting LED has _____ temperature dependence then surface emitting LED.

a) greater b) lesser

c) equal d) none of above

12) An optical fiber _____ is a device that distributes light from a main fiber into one or more branch fibers.

a) Splitter b) Coupler

c) Splices d) Connector

13) The spectral linewidth of an LED operating at room temperature is the 0.8 to 0.9 μm wavelength band is usually between at the half maximum intensity points.

a) 10 to 15 nm b) 20 to 30 nm

c) 15 to 20 nm d) 25 to 40 nm

14) Attenuation is expressed in _____.

a) Decibel b) Ampere

c) Watts d) None of these

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Optical Communication (197044608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four. **16**

a) Using simple ray theory, describe the mechanism of transmission of light in optical fiber.
b) Briefly write about Graded index fiber.
c) An optical fiber has a core refractive index of 1.50 and a cladding refractive index of 1.47. Determine
1) Critical angle at the core cladding interface
2) NA for the fiber
3) Acceptance angle
d) Explain the principle operation of double hetero junction LED.
e) What are splices? Explain techniques for splicing.

Q.3 Answer any two. **12**

a) A 15 km optical fiber link uses fiber with loss of 1.5 dB/km. The fiber is jointed every kilometer with connectors which give an attenuation of 0.8 dB each. Determine the minimum mean optical power which must be launched into the fiber in order to maintain a mean power level of $0.3\ \mu W$ at the detector.
b) Explain intrinsic and extrinsic absorption mechanism in fiber optics.
c) What is population inversion? Explain working principle of Laser.

Section – II

Q.4 Answer any four. **16**

a) Explain SONET/SDH rings.
b) Explain the working principle of pin photodiode.
c) Explain the receiver design for optical communication.
d) Explain optical time division multiplexing.
e) When 3×10^{11} photons each with a wavelength of $0.85\ \mu m$ are incident on a photodiode, on average 1.2×10^{11} electrons are collected at the terminals of the device. Determine the quantum efficiency and responsivity of the photodiode at $0.85\ \mu m$.

Q.5 Answer any two. **12**

a) When 10^{11} photons per second each with an energy of 1.28×10^{-19}J are incident on an ideal photodiode, calculate:
1) the wavelength of the incident radiation
2) the output photocurrent
3) the output photocurrent if the device is an APD with a multiplication factor of 18

b) What is WDM? Explain the various features of WDM.

c) Explain FDDI network.

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Optical Communication (197044608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The Numerical Aperture (NA) is defined for a step index fiber in air by NA is equal to _____.
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c) time constant incurred by the capacitance of photodiode with its load
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10) Transmission of multiple optical signals over same fiber is used _____.
a) to increase the transmission capacity of the fiber
b) to increase the core diameter of the fiber
c) to increase the cladding diameter of the fiber
d) None of the above

11) WDM means _____.
a) Wave Division Multiplexing
b) Wavelength Division Multiplexing
c) Width Division Multiplexing
d) None of the above

12) A photodiode has a quantum efficiency of 70% when photons of energy 1.8×10^{-19} J are incident upon it, then the responsivity of the photodiode is ___.
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13) The graded index profile which produces the best results for multimode optical propagation have _____.
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c) Sensitive d) None of above

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Optical Communication (197044608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Answer any four. **16**

a) Using simple ray theory, describe the mechanism of transmission of light in optical fiber.
b) Briefly write about Graded index fiber.
c) An optical fiber has a core refractive index of 1.50 and a cladding refractive index of 1.47. Determine
1) Critical angle at the core cladding interface
2) NA for the fiber
3) Acceptance angle
d) Explain the principle operation of double hetero junction LED.
e) What are splices? Explain techniques for splicing.

Q.3 Answer any two. **12**

a) A 15 km optical fiber link uses fiber with loss of 1.5 dB/km. The fiber is jointed every kilometer with connectors which give an attenuation of 0.8 dB each. Determine the minimum mean optical power which must be launched into the fiber in order to maintain a mean power level of $0.3\ \mu W$ at the detector.
b) Explain intrinsic and extrinsic absorption mechanism in fiber optics.
c) What is population inversion? Explain working principle of Laser.

Section – II

Q.4 Answer any four. **16**

a) Explain SONET/SDH rings.
b) Explain the working principle of pin photodiode.
c) Explain the receiver design for optical communication.
d) Explain optical time division multiplexing.
e) When 3×10^{11} photons each with a wavelength of $0.85\ \mu m$ are incident on a photodiode, on average 1.2×10^{11} electrons are collected at the terminals of the device. Determine the quantum efficiency and responsivity of the photodiode at $0.85\ \mu m$.

Q.5 Answer any two. **12**

a) When 10^{11} photons per second each with an energy of 1.28×10^{-19}J are incident on an ideal photodiode, calculate:
   1) the wavelength of the incident radiation
   2) the output photocurrent
   3) the output photocurrent if the device is an APD with a multiplication factor of 18

b) What is WDM? Explain the various features of WDM.

c) Explain FDDI network.

Seat No.		Set	R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Optical Communication (197044608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Edge emitting LED has _____ temperature dependence then surface emitting LED.
a) greater b) lesser
c) equal d) none of above

2) An optical fiber _____ is a device that distributes light from a main fiber into one or more branch fibers.
a) Splitter b) Coupler
c) Splices d) Connector

3) The spectral linewidth of an LED operating at room temperature is the 0.8 to 0.9 μm wavelength band is usually between at the half maximum intensity points.
a) 10 to 15 nm b) 20 to 30 nm
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4) Attenuation is expressed in _____.
a) Decibel b) Ampere
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5) Responsivity of photo diode is expressed in _____.
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6) Speed of response of detector is limited by _____.
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8) WDM means _____.
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9) A photodiode has a quantum efficiency of 70% when photons of energy 1.8×10^{-19} J are incident upon it, then the responsivity of the photodiode is ___.
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12) The Numerical Aperture (NA) is defined for a step index fiber in air by NA is equal to _____.
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13) Photon energy is _____ proportional to wavelength.
a) directly b) inversely
c) both d) none of these

14) Snell's law is related to light refraction _____.
a) True b) False
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Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Optical Communication (197044608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Answer any four. **16**

a) Using simple ray theory, describe the mechanism of transmission of light in optical fiber.
b) Briefly write about Graded index fiber.
c) An optical fiber has a core refractive index of 1.50 and a cladding refractive index of 1.47. Determine
1) Critical angle at the core cladding interface
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e) What are splices? Explain techniques for splicing.

Q.3 Answer any two. **12**

a) A 15 km optical fiber link uses fiber with loss of 1.5 dB/km. The fiber is jointed every kilometer with connectors which give an attenuation of 0.8 dB each. Determine the minimum mean optical power which must be launched into the fiber in order to maintain a mean power level of $0.3\ \mu W$ at the detector.
b) Explain intrinsic and extrinsic absorption mechanism in fiber optics.
c) What is population inversion? Explain working principle of Laser.

Section – II

Q.4 Answer any four. **16**

a) Explain SONET/SDH rings.
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e) When 3×10^{11} photons each with a wavelength of $0.85\ \mu m$ are incident on a photodiode, on average 1.2×10^{11} electrons are collected at the terminals of the device. Determine the quantum efficiency and responsivity of the photodiode at $0.85\ \mu m$.

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a) When 10^{11} photons per second each with an energy of 1.28×10^{-19}J are incident on an ideal photodiode, calculate:
   1) the wavelength of the incident radiation
   2) the output photocurrent
   3) the output photocurrent if the device is an APD with a multiplication factor of 18

b) What is WDM? Explain the various features of WDM.

c) Explain FDDI network.

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Optical Communication (197044608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.	

Set | S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Optical Communication (197044608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four. **16**

a) Using simple ray theory, describe the mechanism of transmission of light in optical fiber.
b) Briefly write about Graded index fiber.
c) An optical fiber has a core refractive index of 1.50 and a cladding refractive index of 1.47. Determine
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d) Explain the principle operation of double hetero junction LED.
e) What are splices? Explain techniques for splicing.

Q.3 Answer any two. **12**

a) A 15 km optical fiber link uses fiber with loss of 1.5 dB/km. The fiber is jointed every kilometer with connectors which give an attenuation of 0.8 dB each. Determine the minimum mean optical power which must be launched into the fiber in order to maintain a mean power level of $0.3\ \mu W$ at the detector.
b) Explain intrinsic and extrinsic absorption mechanism in fiber optics.
c) What is population inversion? Explain working principle of Laser.

Section – II

Q.4 Answer any four. **16**

a) Explain SONET/SDH rings.
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c) Explain the receiver design for optical communication.
d) Explain optical time division multiplexing.
e) When 3×10^{11} photons each with a wavelength of $0.85\ \mu m$ are incident on a photodiode, on average 1.2×10^{11} electrons are collected at the terminals of the device. Determine the quantum efficiency and responsivity of the photodiode at $0.85\ \mu m$.

Q.5 Answer any two. **12**

a) When 10^{11} photons per second each with an energy of 1.28×10^{-19}J are incident on an ideal photodiode, calculate:
   1) the wavelength of the incident radiation
   2) the output photocurrent
   3) the output photocurrent if the device is an APD with a multiplication factor of 18

b) What is WDM? Explain the various features of WDM.

c) Explain FDDI network.

SLR-GF-345

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Sensors & Applications (197044609)

Day & Date: Friday,22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Active sensors contain _____.
a) ICS b) Active devices
c) Excitation circuits d) None above

2) Actuators _____.
a) Convert electrical signal to physical
b) Convert Physical signal to electrical
c) Both above
d) None above

3) SI unit for amount of substance is _____.
a) kg- m b) Newton
c) Mole d) None above

4) Solenoid coil can be used as _____.
a) Switch b) Fluid control
c) Fuel control d) all above

5) Stimulus is associated with _____.
a) input of sensor b) output of sensor
c) processing unit d) none above

6) Input impedance of Ideal Amp should be _____.
a) infinity b) zero
c) moderate d) none above

7) Transfer function of charge to voltage converter is _____.
a) $\mathrm{Vout} = \Delta Q/C$ b) $\mathrm{Vout} = \Delta Q\, C$
c) $\mathrm{Vout} = C/\Delta Q$ d) None above

8) Which device is used for converting light to voltage?
a) Photo diode b) Photo Transistor
c) Photo resistor d) all above can be used

9) Capacitive sensors convert _____.
a) Force-Cap-Voltage b) Pressure-Cap-Voltage
c) Velocity-Cap-Voltage d) None

10) A battery with 100 mAH with current consumption 5mA works for 3 min every hour. For what duration battery will work?

a) 400 hrs b) 110 hrs
c) 120 hrs d) Ever last

11) Pressure sensors make use of _____ effect.

a) tunneling b) siebeck
c) torque d) none

12) For Analog to digital conversion of sensors technique popularly used is _____.

a) PPM b) PWM
c) PAM d) none

13) An output of actuator is _____.

a) Mechanical work b) Electrical signal
c) Potential difference d) Current

14) External power source is required for _____.

a) Sensor b) Actuator
c) Transducer d) none

SLR-GF-345

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Sensors & Applications (197044609)

Day & Date: Friday,22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four **16**

a) With suitable example explain use of different kinds of sensors in data acquisition system.
b) Compare transducer and sensor.
c) What is the effect of adding dielectric in Capacitance? What is effect of temp on it?
d) Calculate value of resistance printed on substrate in rectangular pattern with length 20 and breadth 10 with specific resistivity of 10 KOhm
e) Derive an expression for electric field intensity on Gaussian Sphere.

Q.3 Attempt any two **12**

a) Differentiate between sensors and Transducers.
b) Explain static and dynamic characteristics of sensors.
c) Explain design of typical liquid level controller deploying hall effect.

Section – II

Q.4 Attempt any four **16**

a) Differentiate between sensors and actuators.
b) What are types of actuators explain any two in detail.
c) What are processes involved in surface mounting. Explain screen Printing in brief.
d) Which sensor will you use for sensing fuel in the tank of your bike explain with relevant figure.
e) Explain working of solenoid valve.

Q.5 Attempt any two **12**

a) Explain sensor actuator cycle with block diagram and relevant example.
b) Explain role of whetstone's bridge in sensor circuits.
c) What is linear motor? Where it is used?

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Sensors & Applications (197044609)

Day & Date: Friday,22-12-2023 Max. Marks: 70
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d) None above

10) SI unit for amount of substance is _____.

a) kg- m b) Newton
c) Mole d) None above

11) Solenoid coil can be used as _____.

a) Switch b) Fluid control
c) Fuel control d) all above

12) Stimulus is associated with _____.

a) input of sensor b) output of sensor
c) processing unit d) none above

13) Input impedance of Ideal Amp should be _____.

a) infinity b) zero
c) moderate d) none above

14) Transfer function of charge to voltage converter is _____.

a) $\mathrm{Vout} = \Delta \mathrm{Q}/\mathrm{C}$ b) $\mathrm{Vout} = \Delta \mathrm{Q}\ \mathrm{C}$
c) $\mathrm{Vout} = \mathrm{C}/\Delta \mathrm{Q}$ d) None above

SLR-GF-345

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Sensors & Applications (197044609)

Day & Date: Friday,22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four **16**

a) With suitable example explain use of different kinds of sensors in data acquisition system.
b) Compare transducer and sensor.
c) What is the effect of adding dielectric in Capacitance? What is effect of temp on it?
d) Calculate value of resistance printed on substrate in rectangular pattern with length 20 and breadth 10 with specific resistivity of 10 KOhm
e) Derive an expression for electric field intensity on Gaussian Sphere.

Q.3 Attempt any two **12**

a) Differentiate between sensors and Transducers.
b) Explain static and dynamic characteristics of sensors.
c) Explain design of typical liquid level controller deploying hall effect.

Section – II

Q.4 Attempt any four **16**

a) Differentiate between sensors and actuators.
b) What are types of actuators explain any two in detail.
c) What are processes involved in surface mounting. Explain screen Printing in brief.
d) Which sensor will you use for sensing fuel in the tank of your bike explain with relevant figure.
e) Explain working of solenoid valve.

Q.5 Attempt any two **12**

a) Explain sensor actuator cycle with block diagram and relevant example.
b) Explain role of whetstone's bridge in sensor circuits.
c) What is linear motor? Where it is used?

Seat No.		Set	R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Sensors & Applications (197044609)

Day & Date: Friday,22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Pressure sensors make use of _____ effect.
a) tunneling b) siebeck
c) torque d) none

2) For Analog to digital conversion of sensors technique popularly used is _____.
a) PPM b) PWM
c) PAM d) none

3) An output of actuator is _____.
a) Mechanical work b) Electrical signal
c) Potential difference d) Current

4) External power source is required for _____.
a) Sensor b) Actuator
c) Transducer d) none

5) Active sensors contain _____.
a) ICS b) Active devices
c) Excitation circuits d) None above

6) Actuators _____.
a) Convert electrical signal to physical
b) Convert Physical signal to electrical
c) Both above
d) None above

7) SI unit for amount of substance is _____.
a) kg- m b) Newton
c) Mole d) None above

8) Solenoid coil can be used as _____.
a) Switch b) Fluid control
c) Fuel control d) all above

9) Stimulus is associated with _____.
a) input of sensor b) output of sensor
c) processing unit d) none above

10) Input impedance of Ideal Amp should be _____.

a) infinity b) zero
c) moderate d) none above

11) Transfer function of charge to voltage converter is _____.

a) $\mathrm{Vout} = \Delta\mathrm{Q}/\mathrm{C}$ b) $\mathrm{Vout} = \Delta\mathrm{Q}\ \mathrm{C}$
c) $\mathrm{Vout} = \mathrm{C}/\Delta\mathrm{Q}$ d) None above

12) Which device is used for converting light to voltage?

a) Photo diode b) Photo Transistor
c) Photo resistor d) all above can be used

13) Capacitive sensors convert _____.

a) Force-Cap-Voltage b) Pressure-Cap-Voltage
c) Velocity-Cap-Voltage d) None

14) A battery with 100 mAH with current consumption 5mA works for 3 min every hour. For what duration battery will work?

a) 400 hrs b) 110 hrs
c) 120 hrs d) Ever last

SLR-GF-345

Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Sensors & Applications (197044609)

Day & Date: Friday,22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four **16**

a) With suitable example explain use of different kinds of sensors in data acquisition system.
b) Compare transducer and sensor.
c) What is the effect of adding dielectric in Capacitance? What is effect of temp on it?
d) Calculate value of resistance printed on substrate in rectangular pattern with length 20 and breadth 10 with specific resistivity of 10 KOhm
e) Derive an expression for electric field intensity on Gaussian Sphere.

Q.3 Attempt any two **12**

a) Differentiate between sensors and Transducers.
b) Explain static and dynamic characteristics of sensors.
c) Explain design of typical liquid level controller deploying hall effect.

Section – II

Q.4 Attempt any four **16**

a) Differentiate between sensors and actuators.
b) What are types of actuators explain any two in detail.
c) What are processes involved in surface mounting. Explain screen Printing in brief.
d) Which sensor will you use for sensing fuel in the tank of your bike explain with relevant figure.
e) Explain working of solenoid valve.

Q.5 Attempt any two **12**

a) Explain sensor actuator cycle with block diagram and relevant example.
b) Explain role of whetstone's bridge in sensor circuits.
c) What is linear motor? Where it is used?

Seat No.	

Set **S**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Sensors & Applications (197044609)

Day & Date: Friday,22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Input impedance of Ideal Amp should be _____.
a) infinity b) zero
c) moderate d) none above

2) Transfer function of charge to voltage converter is _____.
a) $\mathrm{Vout} = \Delta\mathrm{Q}/\mathrm{C}$ b) $\mathrm{Vout} = \Delta\mathrm{Q}\ \mathrm{C}$
c) $\mathrm{Vout} = \mathrm{C}/\Delta\mathrm{Q}$ d) None above

3) Which device is used for converting light to voltage?
a) Photo diode b) Photo Transistor
c) Photo resistor d) all above can be used

4) Capacitive sensors convert _____.
a) Force-Cap-Voltage b) Pressure-Cap-Voltage
c) Velocity-Cap-Voltage d) None

5) A battery with 100 mAH with current consumption 5mA works for 3 min every hour. For what duration battery will work?
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a) ICS b) Active devices
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11) Actuators _____.
a) Convert electrical signal to physical
b) Convert Physical signal to electrical
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12) SI unit for amount of substance is _____.
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c) Mole d) None above

13) Solenoid coil can be used as _____.
a) Switch b) Fluid control
c) Fuel control d) all above

14) Stimulus is associated with _____.
a) input of sensor b) output of sensor
c) processing unit d) none above

SLR-GF-345

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Sensors & Applications (197044609)

Day & Date: Friday,22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four **16**

a) With suitable example explain use of different kinds of sensors in data acquisition system.
b) Compare transducer and sensor.
c) What is the effect of adding dielectric in Capacitance? What is effect of temp on it?
d) Calculate value of resistance printed on substrate in rectangular pattern with length 20 and breadth 10 with specific resistivity of 10 KOhm
e) Derive an expression for electric field intensity on Gaussian Sphere.

Q.3 Attempt any two **12**

a) Differentiate between sensors and Transducers.
b) Explain static and dynamic characteristics of sensors.
c) Explain design of typical liquid level controller deploying hall effect.

Section – II

Q.4 Attempt any four **16**

a) Differentiate between sensors and actuators.
b) What are types of actuators explain any two in detail.
c) What are processes involved in surface mounting. Explain screen Printing in brief.
d) Which sensor will you use for sensing fuel in the tank of your bike explain with relevant figure.
e) Explain working of solenoid valve.

Q.5 Attempt any two **12**

a) Explain sensor actuator cycle with block diagram and relevant example.
b) Explain role of whetstone's bridge in sensor circuits.
c) What is linear motor? Where it is used?

Seat No.	

Set | P

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computer Organization (197044610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternative. **10**

1) The ALU makes use of _____ to store the intermediate results.
a) Accumulators b) Registers
c) Heap d) Stack

2) _____ is generally used to increase the apparent size of physical memory.
a) Secondary memory b) Virtual memory
c) Hard-disk d) Disks

3) The decoded instruction is stored in _____.
a) IR b) PC
c) Registers d) MDR

4) A processor performing fetch or decoding of different instruction during the execution of another instruction is called _____.
a) Super-scaling b) Parallel Computation
c) Pipe-lining d) None of the mentioned

5) The addressing mode, where you directly specify the operand value is _____.
a) Relative b) Definite
c) Direct d) Immediate

6) Cache memory is located between main memory and _____.
a) CPU b) Memory
c) Both A and B d) None of these

7) An instruction pipeline can be implemented by means of _____.
a) LIFO buffer b) FIFO buffer
c) Sequential memory d) None of the above

8) A microprogram sequencer _____.
a) generates the address of next micro instruction to be executed
b) generates the control signals to execute a microinstruction
c) sequentially averages all microinstructions in the control memory
d) enables the efficient handling of a micro program subroutine

9) Cache memory works on the principle of _____.

a) Locality of data
b) Locality of memory
c) Locality of reference
d) Locality of reference & memory

10) Which of the following data transfer mode is relatively fast?

a) DMA
b) Interrupt initiated I/O
c) programmed I/O
d) Isolated I/O

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computer Organization (197044610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any four questions from the following questions.
2) Figures to the right indicates full marks.

Q.2 Solve any FOUR. **40**

a) Illustrate the different functional units of a computer.

b) What are the different types of addressing Modes? Explain each with suitable example.

c) Compare hardwired and micro programmed control unit in a CPU.

d) Describe with block diagram virtual memory system in detail.

e) What are the major functions of IO subsystem?

SLR-GF-348

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computer Organization (197044610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternative. **10**

1) Cache memory is located between main memory and _____.
a) CPU b) Memory
c) Both A and B d) None of these

2) An instruction pipeline can be implemented by means of _____.
a) LIFO buffer b) FIFO buffer
c) Sequential memory d) None of the above

3) A microprogram sequencer _____.
a) generates the address of next micro instruction to be executed
b) generates the control signals to execute a microinstruction
c) sequentially averages all microinstructions in the control memory
d) enables the efficient handling of a micro program subroutine

4) Cache memory works on the principle of _____.
a) Locality of data b) Locality of memory
c) Locality of reference d) Locality of reference & memory

5) Which of the following data transfer mode is relatively fast?
a) DMA b) Interrupt initiated I/O
c) programmed I/O d) Isolated I/O

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c) Heap d) Stack

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a) Secondary memory b) Virtual memory
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8) The decoded instruction is stored in _____.
a) IR b) PC
c) Registers d) MDR

9) A processor performing fetch or decoding of different instruction during the execution of another instruction is called _____.
a) Super-scaling b) Parallel Computation
c) Pipe-lining d) None of the mentioned

10) The addressing mode, where you directly specify the operand value is _____.

a) Relative
b) Definite
c) Direct
d) Immediate

SLR-GF-348

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computer Organization (197044610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any four questions from the following questions.
2) Figures to the right indicates full marks.

Q.2 Solve any FOUR. **40**

a) Illustrate the different functional units of a computer.

b) What are the different types of addressing Modes? Explain each with suitable example.

c) Compare hardwired and micro programmed control unit in a CPU.

d) Describe with block diagram virtual memory system in detail.

e) What are the major functions of IO subsystem?

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computer Organization (197044610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternative. **10**

1) Cache memory works on the principle of _____.
a) Locality of data b) Locality of memory
c) Locality of reference d) Locality of reference & memory

2) Which of the following data transfer mode is relatively fast?
a) DMA b) Interrupt initiated I/O
c) programmed I/O d) Isolated I/O

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c) Pipe-lining d) None of the mentioned

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c) Direct d) Immediate

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c) Sequential memory d) None of the above

10) A microprogram sequencer _____.

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b) generates the control signals to execute a microinstruction
c) sequentially averages all microinstructions in the control memory
d) enables the efficient handling of a micro program subroutine

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Seat No.	

Set R

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computer Organization (197044610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any four questions from the following questions.
2) Figures to the right indicates full marks.

Q.2 Solve any FOUR. **40**

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b) What are the different types of addressing Modes? Explain each with suitable example.

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e) What are the major functions of IO subsystem?

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computer Organization (197044610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternative. **10**

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a) IR b) PC
c) Registers d) MDR

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a) Relative b) Definite
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c) Sequential memory d) None of the above

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b) generates the control signals to execute a microinstruction
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a) DMA b) Interrupt initiated I/O
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9) The ALU makes use of _____ to store the intermediate results.

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c) Heap d) Stack

10) _____ is generally used to increase the apparent size of physical memory.

a) Secondary memory b) Virtual memory

c) Hard-disk d) Disks

SLR-GF-348

Seat No.	

Set S

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computer Organization (197044610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any four questions from the following questions.
2) Figures to the right indicates full marks.

Q.2 Solve any FOUR. **40**

a) Illustrate the different functional units of a computer.

b) What are the different types of addressing Modes? Explain each with suitable example.

c) Compare hardwired and micro programmed control unit in a CPU.

d) Describe with block diagram virtual memory system in detail.

e) What are the major functions of IO subsystem?

SLR-GF-349

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Renewable Energy Systems (197044611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternative: **10**

1) Which of the following is not a renewable source of energy?
a) Fossil fuels b) Sun
c) Biomass d) Wind

2) Which of the following is used to locate a geothermal site?
a) Drilling wells b) Reflection
c) Seismograph d) SONAR

3) What are the two basic ways to measure solar radiation?
a) Ground-based instrumentation and satellite measurement
b) Telephonic measurement and mobile tower measurement
c) Anemometer and voltmeter
d) Ammeter and voltmeter

4) Which of the following provides energy for winds to blow naturally?
a) Sun b) Water
c) Man d) Food

5) Wind flows from _____ pressure area to _____ pressure area.
a) high, high b) high, low
c) low, high d) low, low

6) What is tidal power?
a) Energy from tides b) Energy from water
c) Energy from moon d) Energy from sun

7) Which of the following categories does tidal power fall into?
a) Hydrothermal b) Hydropower
c) Solar d) Wind

8) What are the types of geothermal energy resources?
a) Hydrothermal, geo-pressurised brines, hot dry rocks, magma
b) Hydrothermal, geo-pressurised brines, hot dry rocks, sun
c) Biomass, geo-pressurised brines, hot dry rocks
d) Wind, magma, geopressurised brines, hydrothermal

9) Which of the following is not a type of primary resource?

a) Crude Oil
b) Coal
c) Hydrogen Energy
d) Sunlight

10) Energy Resources which are being used for many decades are known as _____.

a) conventional energy sources
b) non-conventional energy sources
c) primary energy sources
d) fuel cells

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Renewable Energy Systems (197044611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Discuss advantages and limitations of conventional energy sources. **10**

OR

Draw the block diagram of a solar thermal electric plant and explain its working.

Q.3 List advantages and disadvantages of wind energy conversion system. **10**

OR

What are energy resources? How are they classified?

Q.4 **Write short notes on any four.** **20**

a) Advantages and disadvantages of conventional energy resources
b) Stand-alone PV system
c) Solar cell
d) Renewable energy sources
e) Advantages and disadvantages of Geo-thermal energy
f) Tidal energy

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Renewable Energy Systems (197044611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternative: **10**

1) What is tidal power?
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c) Energy from moon d) Energy from sun

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c) Solar d) Wind

3) What are the types of geothermal energy resources?
a) Hydrothermal, geo-pressurised brines, hot dry rocks, magma
b) Hydrothermal, geo-pressurised brines, hot dry rocks, sun
c) Biomass, geo-pressurised brines, hot dry rocks
d) Wind, magma, geopressurised brines, hydrothermal

4) Which of the following is not a type of primary resource?
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b) non-conventional energy sources
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9) Which of the following provides energy for winds to blow naturally?

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c) Man
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a) high, high
b) high, low
c) low, high
d) low, low

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Renewable Energy Systems (197044611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Discuss advantages and limitations of conventional energy sources. **10**

OR

Draw the block diagram of a solar thermal electric plant and explain its working.

Q.3 List advantages and disadvantages of wind energy conversion system. **10**

OR

What are energy resources? How are they classified?

Q.4 **Write short notes on any four.** **20**

a) Advantages and disadvantages of conventional energy resources
b) Stand-alone PV system
c) Solar cell
d) Renewable energy sources
e) Advantages and disadvantages of Geo-thermal energy
f) Tidal energy

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Renewable Energy Systems (197044611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternative: **10**

1) Which of the following is not a type of primary resource?
a) Crude Oil b) Coal
c) Hydrogen Energy d) Sunlight

2) Energy Resources which are being used for many decades are known as _____.
a) conventional energy sources
b) non-conventional energy sources
c) primary energy sources
d) fuel cells

3) Which of the following is not a renewable source of energy?
a) Fossil fuels b) Sun
c) Biomass d) Wind

4) Which of the following is used to locate a geothermal site?
a) Drilling wells b) Reflection
c) Seismograph d) SONAR

5) What are the two basic ways to measure solar radiation?
a) Ground-based instrumentation and satellite measurement
b) Telephonic measurement and mobile tower measurement
c) Anemometer and voltmeter
d) Ammeter and voltmeter

6) Which of the following provides energy for winds to blow naturally?
a) Sun b) Water
c) Man d) Food

7) Wind flows from _____ pressure area to _____ pressure area.
a) high, high b) high, low
c) low, high d) low, low

8) What is tidal power?
a) Energy from tides b) Energy from water
c) Energy from moon d) Energy from sun

9) Which of the following categories does tidal power fall into?

a) Hydrothermal
b) Hydropower
c) Solar
d) Wind

10) What are the types of geothermal energy resources?

a) Hydrothermal, geo-pressurised brines, hot dry rocks, magma
b) Hydrothermal, geo-pressurised brines, hot dry rocks, sun
c) Biomass, geo-pressurised brines, hot dry rocks
d) Wind, magma, geopressurised brines, hydrothermal

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Renewable Energy Systems (197044611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Discuss advantages and limitations of conventional energy sources. **10**

OR

Draw the block diagram of a solar thermal electric plant and explain its working.

Q.3 List advantages and disadvantages of wind energy conversion system. **10**

OR

What are energy resources? How are they classified?

Q.4 **Write short notes on any four.** **20**

a) Advantages and disadvantages of conventional energy resources
b) Stand-alone PV system
c) Solar cell
d) Renewable energy sources
e) Advantages and disadvantages of Geo-thermal energy
f) Tidal energy

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Renewable Energy Systems (197044611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternative: **10**

1) What are the two basic ways to measure solar radiation?
a) Ground-based instrumentation and satellite measurement
b) Telephonic measurement and mobile tower measurement
c) Anemometer and voltmeter
d) Ammeter and voltmeter

2) Which of the following provides energy for winds to blow naturally?
a) Sun b) Water
c) Man d) Food

3) Wind flows from _____ pressure area to _____ pressure area.
a) high, high b) high, low
c) low, high d) low, low

4) What is tidal power?
a) Energy from tides b) Energy from water
c) Energy from moon d) Energy from sun

5) Which of the following categories does tidal power fall into?
a) Hydrothermal b) Hydropower
c) Solar d) Wind

6) What are the types of geothermal energy resources?
a) Hydrothermal, geo-pressurised brines, hot dry rocks, magma
b) Hydrothermal, geo-pressurised brines, hot dry rocks, sun
c) Biomass, geo-pressurised brines, hot dry rocks
d) Wind, magma, geopressurised brines, hydrothermal

7) Which of the following is not a type of primary resource?
a) Crude Oil b) Coal
c) Hydrogen Energy d) Sunlight

8) Energy Resources which are being used for many decades are known as _____.
a) conventional energy sources
b) non-conventional energy sources
c) primary energy sources
d) fuel cells

9) Which of the following is not a renewable source of energy?

a) Fossil fuels b) Sun

c) Biomass d) Wind

10) Which of the following is used to locate a geothermal site?

a) Drilling wells b) Reflection

c) Seismograph d) SONAR

Seat No.	

Set | S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Renewable Energy Systems (197044611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Discuss advantages and limitations of conventional energy sources. **10**

OR

Draw the block diagram of a solar thermal electric plant and explain its working.

Q.3 List advantages and disadvantages of wind energy conversion system. **10**

OR

What are energy resources? How are they classified?

Q.4 **Write short notes on any four.** **20**

a) Advantages and disadvantages of conventional energy resources
b) Stand-alone PV system
c) Solar cell
d) Renewable energy sources
e) Advantages and disadvantages of Geo-thermal energy
f) Tidal energy

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Soft Computing (197044612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Fuzziness means _____.
a) Vagueness b) Clear
c) Precise d) Certainty

2) _____ are pictorial representations to denote a set.
a) Flow chart b) Venn diagram
c) DFD d) ER diagrams

3) The member ship function of fuzzy set not always be described by _____.
a) Continuous b) Discrete
c) Crisp d) Specific

4) Fuzzy system are _____.
a) Rule based system b) Control system
c) Binary system d) None of the above

5) Fuzzy relation associates _____ to a varying degree of membership.
a) records b) tuples
c) felds d) none

6) _____ truth values are multivalued.
a) crisp logic b) boolean logic
c) fuzzy logic d) none

7) The _____ is the arithmetic average of mean values of all intervals.
a) Mean b) mean of maxima
c) Maximum d) mean interval

8) Neural networks also known as _____.
a) Artificial Neural Network b) Artificial Neural Systems
c) Both A and B d) None of the above

9) Signum function is defined as _____.

a) $\varphi(I) = +1, I > 0, -1, I <= 0$ b) $\varphi(I) = 0$

c) $\varphi(I) = +1, I > 0$ d) $\varphi(I) = -1, I <= 0$

10) _____ carrying the weights connect every input neuron to the output neuron but not vice-versa.

a) Feed forward network b) Fast forward network

c) Fast network d) Forward network

11) Neural network applications _____.

a) Pattern Recognition b) Optimization Problem

c) Forecasting d) All the above

12) Intermediary layer is present in _____.

a) Multilayer feedforward perception model

b) Multilayer perception model

c) Multilayer Feedforward model

d) None of the above

13) In the learning method, the target output is not presented to the network ____.

a) Supervised learning b) Unsupervised learning

c) Reinforced learning d) Hebbian learning

14) In the neuron, attached to the soma are long irregularly shaped filaments called _____.

a) Dendrites b) Axon

c) Synapse d) Cerebellum

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Soft Computing (197044612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any five questions from the following questions.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any four. **16**

a) Explain crisp set.
b) What is fuzzy logic? Describe one of the application of it?
c) Consider fuzzy relations.

$$R = \begin{bmatrix} 0.4 & 0.6 \\ 0.8 & 0.3 \end{bmatrix} \qquad S = \begin{bmatrix} 0.7 & 0.5 & 0.4 \\ 0.3 & 0.6 & 0.7 \end{bmatrix}$$

Find the relation $\mathrm{T} = \mathrm{R} \circ \mathrm{S}$ using max-min.
d) Explain the different Fuzzy relation operation?
e) Explain fuzzification and defuzzification.

Q.3 Solve any two. **12**

a) What are the different applications of Fuzzy logic concepts in Engineering problems?
b) What are the different methods of development of membership function?
c) We will define inputs on the universe $X = [0, 50, 100, 150, 200]$ femtotesla & outputs on the universe $Y = [0, 50, 100, 150, 200]$ femtotesla. We will define two fuzzy sets, two different stimuli, on the universe X.

$W =$ weak stimulus $= \left\{\frac{1}{0} + \frac{0.9}{50} + \frac{0.3}{100} + \frac{0}{150} + \frac{0}{200}\right\} \subset X$

$M =$ medium stimulus $= \left\{\frac{0}{0} + \frac{0.4}{50} + \frac{1}{100} + \frac{0.4}{150} + \frac{0}{200}\right\} \subset X$ & one fuzzy set on the output universe $Y, S =$ severe response $= \left\{\frac{1}{0} + \frac{0.9}{50} + \frac{0.3}{100} + \frac{0}{150} + \frac{0}{200}\right\} \subset Y$

Construct the preposition If “weak stimulus” THEN “not severe response” using fuzzy implication?

Section – II

Q.3 Solve any four. **16**

a) What is ANN? Compare ANN with biological neural network?
b) Sketch neural network architecture.
c) Explain various activation functions used in ANN?
d) Write a short note on McCulloch - Pitts Model of ANN.
e) Draw a 6-7-1 artificial neural network.

Q.4 Solve any two. **12**

a) Describe the Backpropagation Learning Algorithm with Example.

b) Explain with a neat diagram the neural network architecture of multilayer feedforward network.

c) Give a detailed description of various learning strategies of ANN in brief.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Soft Computing (197044612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Neural networks also known as _____.
a) Artificial Neural Network b) Artificial Neural Systems
c) Both A and B d) None of the above

2) Signum function is defined as _____.
a) $\varphi(I) = +1, I > 0, -1, I <= 0$ b) $\varphi(I) = 0$
c) $\varphi(I) = +1, I > 0$ d) $\varphi(I) = -1, I <= 0$

3) _____ carrying the weights connect every input neuron to the output neuron but not vice-versa.
a) Feed forward network b) Fast forward network
c) Fast network d) Forward network

4) Neural network applications _____.
a) Pattern Recognition b) Optimization Problem
c) Forecasting d) All the above

5) Intermediary layer is present in _____.
a) Multilayer feedforward perception model
b) Multilayer perception model
c) Multilayer Feedforward model
d) None of the above

6) In the learning method, the target output is not presented to the network ____.
a) Supervised learning b) Unsupervised learning
c) Reinforced learning d) Hebbian learning

7) In the neuron, attached to the soma are long irregularly shaped filaments called _____.
a) Dendrites b) Axon
c) Synapse d) Cerebellum

8) Fuzziness means _____.
a) Vagueness b) Clear
c) Precise d) Certainty

9) _____ are pictorial representations to denote a set.
a) Flow chart b) Venn diagram
c) DFD d) ER diagrams

10) The member ship function of fuzzy set not always be described by _____.
a) Continuous b) Discrete
c) Crisp d) Specific

11) Fuzzy system are _____.
a) Rule based system b) Control system
c) Binary system d) None of the above

12) Fuzzy relation associates _____ to a varying degree of membership.
a) records b) tuples
c) felds d) none

13) _____ truth values are multivalued.
a) crisp logic b) boolean logic
c) fuzzy logic d) none

14) The _____ is the arithmetic average of mean values of all intervals.
a) Mean b) mean of maxima
c) Maximum d) mean interval

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Soft Computing (197044612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any five questions from the following questions.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any four. **16**

a) Explain crisp set.
b) What is fuzzy logic? Describe one of the application of it?
c) Consider fuzzy relations.

$$R = \begin{bmatrix} 0.4 & 0.6 \\ 0.8 & 0.3 \end{bmatrix} \qquad S = \begin{bmatrix} 0.7 & 0.5 & 0.4 \\ 0.3 & 0.6 & 0.7 \end{bmatrix}$$

Find the relation $\mathrm{T} = \mathrm{R}\ \mathrm{o}\ \mathrm{S}$ using max-min.
d) Explain the different Fuzzy relation operation?
e) Explain fuzzification and defuzzification.

Q.3 Solve any two. **12**

a) What are the different applications of Fuzzy logic concepts in Engineering problems?
b) What are the different methods of development of membership function?
c) We will define inputs on the universe $X = [0, 50, 100, 150, 200]$ femtotesla & outputs on the universe $Y = [0, 50, 100, 150, 200]$ femtotesla. We will define two fuzzy sets, two different stimuli, on the universe X.

$W =$ weak stimulus $= \left\{\frac{1}{0} + \frac{0.9}{50} + \frac{0.3}{100} + \frac{0}{150} + \frac{0}{200}\right\} \subset X$

$M =$ medium stimulus $= \left\{\frac{0}{0} + \frac{0.4}{50} + \frac{1}{100} + \frac{0.4}{150} + \frac{0}{200}\right\} \subset X$ & one fuzzy set on the output universe $Y, S =$ severe response $= \left\{\frac{1}{0} + \frac{0.9}{50} + \frac{0.3}{100} + \frac{0}{150} + \frac{0}{200}\right\} \subset Y$

Construct the preposition If “weak stimulus” THEN “not severe response” using fuzzy implication?

Section – II

Q.3 Solve any four. **16**

a) What is ANN? Compare ANN with biological neural network?
b) Sketch neural network architecture.
c) Explain various activation functions used in ANN?
d) Write a short note on McCulloch - Pitts Model of ANN.
e) Draw a 6-7-1 artificial neural network.

Q.4 Solve any two. **12**

a) Describe the Backpropagation Learning Algorithm with Example.

b) Explain with a neat diagram the neural network architecture of multilayer feedforward network.

c) Give a detailed description of various learning strategies of ANN in brief.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Soft Computing (197044612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Neural network applications _____.
a) Pattern Recognition b) Optimization Problem
c) Forecasting d) All the above

2) Intermediary layer is present in _____.
a) Multilayer feedforward perception model
b) Multilayer perception model
c) Multilayer Feedforward model
d) None of the above

3) In the learning method, the target output is not presented to the network ____.
a) Supervised learning b) Unsupervised learning
c) Reinforced learning d) Hebbian learning

4) In the neuron, attached to the soma are long irregularly shaped filaments called _____.
a) Dendrites b) Axon
c) Synapse d) Cerebellum

5) Fuzziness means _____.
a) Vagueness b) Clear
c) Precise d) Certainty

6) _____ are pictorial representations to denote a set.
a) Flow chart b) Venn diagram
c) DFD d) ER diagrams

7) The member ship function of fuzzy set not always be described by _____.
a) Continuous b) Discrete
c) Crisp d) Specific

8) Fuzzy system are _____.
a) Rule based system b) Control system
c) Binary system d) None of the above

9) Fuzzy relation associates _____ to a varying degree of membership.

a) records b) tuples
c) felds d) none

10) _____ truth values are multivalued.

a) crisp logic b) boolean logic
c) fuzzy logic d) none

11) The _____ is the arithmetic average of mean values of all intervals.

a) Mean b) mean of maxima
c) Maximum d) mean interval

12) Neural networks also known as _____.

a) Artificial Neural Network b) Artificial Neural Systems
c) Both A and B d) None of the above

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a) $\varphi(I) = +1, I > 0, -1, I <= 0$ b) $\varphi(I) = 0$
c) $\varphi(I) = +1, I > 0$ d) $\varphi(I) = -1, I <= 0$

14) _____ carrying the weights connect every input neuron to the output neuron but not vice-versa.

a) Feed forward network b) Fast forward network
c) Fast network d) Forward network

SLR-GF-350

Seat No.	

Set R

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Soft Computing (197044612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any five questions from the following questions.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any four. **16**

a) Explain crisp set.
b) What is fuzzy logic? Describe one of the application of it?
c) Consider fuzzy relations.

$$R = \begin{bmatrix} 0.4 & 0.6 \\ 0.8 & 0.3 \end{bmatrix} \qquad S = \begin{bmatrix} 0.7 & 0.5 & 0.4 \\ 0.3 & 0.6 & 0.7 \end{bmatrix}$$

Find the relation $\mathrm{T} = \mathrm{R} \circ \mathrm{S}$ using max-min.
d) Explain the different Fuzzy relation operation?
e) Explain fuzzification and defuzzification.

Q.3 Solve any two. **12**

a) What are the different applications of Fuzzy logic concepts in Engineering problems?
b) What are the different methods of development of membership function?
c) We will define inputs on the universe $X = [0, 50, 100, 150, 200]$ femtotesla & outputs on the universe $Y = [0, 50, 100, 150, 200]$ femtotesla. We will define two fuzzy sets, two different stimuli, on the universe X.

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$M =$ medium stimulus $= \left\{\frac{0}{0} + \frac{0.4}{50} + \frac{1}{100} + \frac{0.4}{150} + \frac{0}{200}\right\} \subset X$ & one fuzzy set on the output universe $Y, S =$ severe response $= \left\{\frac{1}{0} + \frac{0.9}{50} + \frac{0.3}{100} + \frac{0}{150} + \frac{0}{200}\right\} \subset Y$

Construct the preposition If “weak stimulus” THEN “not severe response” using fuzzy implication?

Section – II

Q.3 Solve any four. **16**

a) What is ANN? Compare ANN with biological neural network?
b) Sketch neural network architecture.
c) Explain various activation functions used in ANN?
d) Write a short note on McCulloch - Pitts Model of ANN.
e) Draw a 6-7-1 artificial neural network.

Q.4 Solve any two. **12**

a) Describe the Backpropagation Learning Algorithm with Example.

b) Explain with a neat diagram the neural network architecture of multilayer feedforward network.

c) Give a detailed description of various learning strategies of ANN in brief.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Soft Computing (197044612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) _____ truth values are multivalued.
a) crisp logic b) boolean logic
c) fuzzy logic d) none

2) The _____ is the arithmetic average of mean values of all intervals.
a) Mean b) mean of maxima
c) Maximum d) mean interval

3) Neural networks also known as _____.
a) Artificial Neural Network b) Artificial Neural Systems
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4) Signum function is defined as _____.
a) $\varphi(I) = +1, I > 0, -1, I <= 0$ b) $\varphi(I) = 0$
c) $\varphi(I) = +1, I > 0$ d) $\varphi(I) = -1, I <= 0$

5) _____ carrying the weights connect every input neuron to the output neuron but not vice-versa.
a) Feed forward network b) Fast forward network
c) Fast network d) Forward network

6) Neural network applications _____.
a) Pattern Recognition b) Optimization Problem
c) Forecasting d) All the above

7) Intermediary layer is present in _____.
a) Multilayer feedforward perception model
b) Multilayer perception model
c) Multilayer Feedforward model
d) None of the above

8) In the learning method, the target output is not presented to the network ____.
a) Supervised learning b) Unsupervised learning
c) Reinforced learning d) Hebbian learning

9) In the neuron, attached to the soma are long irregularly shaped filaments called _____.

a) Dendrites b) Axon
c) Synapse d) Cerebellum

10) Fuzziness means _____.

a) Vagueness b) Clear
c) Precise d) Certainty

11) _____ are pictorial representations to denote a set.

a) Flow chart b) Venn diagram
c) DFD d) ER diagrams

12) The member ship function of fuzzy set not always be described by _____.

a) Continuous b) Discrete
c) Crisp d) Specific

13) Fuzzy system are _____.

a) Rule based system b) Control system
c) Binary system d) None of the above

14) Fuzzy relation associates _____ to a varying degree of membership.

a) records b) tuples
c) felds d) none

SLR-GF-350

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Soft Computing (197044612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any five questions from the following questions.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve any four. **16**

a) Explain crisp set.
b) What is fuzzy logic? Describe one of the application of it?
c) Consider fuzzy relations.

$$R = \begin{bmatrix} 0.4 & 0.6 \\ 0.8 & 0.3 \end{bmatrix} \qquad S = \begin{bmatrix} 0.7 & 0.5 & 0.4 \\ 0.3 & 0.6 & 0.7 \end{bmatrix}$$

Find the relation $\mathrm{T} = \mathrm{R} \circ \mathrm{S}$ using max-min.
d) Explain the different Fuzzy relation operation?
e) Explain fuzzification and defuzzification.

Q.3 Solve any two. **12**

a) What are the different applications of Fuzzy logic concepts in Engineering problems?
b) What are the different methods of development of membership function?
c) We will define inputs on the universe $X = [0, 50, 100, 150, 200]$ femtotesla & outputs on the universe $Y = [0, 50, 100, 150, 200]$ femtotesla. We will define two fuzzy sets, two different stimuli, on the universe X.

$W =$ weak stimulus $= \left\{\frac{1}{0} + \frac{0.9}{50} + \frac{0.3}{100} + \frac{0}{150} + \frac{0}{200}\right\} \subset X$

$M =$ medium stimulus $= \left\{\frac{0}{0} + \frac{0.4}{50} + \frac{1}{100} + \frac{0.4}{150} + \frac{0}{200}\right\} \subset X$ & one fuzzy set on the output universe $Y, S =$ severe response $= \left\{\frac{1}{0} + \frac{0.9}{50} + \frac{0.3}{100} + \frac{0}{150} + \frac{0}{200}\right\} \subset Y$

Construct the preposition If “weak stimulus” THEN “not severe response” using fuzzy implication?

Section – II

Q.3 Solve any four. **16**

a) What is ANN? Compare ANN with biological neural network?
b) Sketch neural network architecture.
c) Explain various activation functions used in ANN?
d) Write a short note on McCulloch - Pitts Model of ANN.
e) Draw a 6-7-1 artificial neural network.

Q.4 Solve any two. **12**

a) Describe the Backpropagation Learning Algorithm with Example.

b) Explain with a neat diagram the neural network architecture of multilayer feedforward network.

c) Give a detailed description of various learning strategies of ANN in brief.

SLR-GF-351

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) H plane tee is called _____.
a) Current divider b) Power device
c) Voltage divider d) Reciprocal device

2) The power between 0.01mw to 10mw can be measured by _____ technique.
a) Bolometer b) Thermistor
c) Calorimetric wattmeter d) Calorimetric Technique

3) Modes are supported by rectangular waveguide only when _____.
a) $f = f_c$ b) $f > f_c$
c) $f < f_c$ d) not depends on f_c

4) In E-plane tee the output at port 1 and port 2 having _____ phase shift.
a) 0^0 b) 90^0
c) 45^0 d) 180^0

5) In Two cavity Klystron, electron beam is _____ and RF field is _____.
a) travelling, stationary b) stationary, stationary
c) travelling, travelling d) stationary, travelling

6) _____ of the following microwave diode is suitable for very low power oscillations.
a) Gunn diode b) Tunnel diode
c) IMPATT diode d) Varactor diode

7) The relation between phase velocity and group velocity is represented as ___.
a) $V_p = V_g$ b) $V_p . V_g = C$
c) $V_p . V_g = C^2$ d) $V_p . V_g = 1$

8) Travelling wave tube is suitable for _____.
a) Microwave oscillator b) Narrowband amplifier
c) Wideband amplifier d) Microwave filter

9) _____ frequency is preferred for microwave oven application.
a) 2.1 GHz b) 900 MHZ
c) 1800 MHz d) 2.45 GHz

10) The semiconductor diode which can be used as voltage-controlled oscillator at microwave range is _____.
a) PIN diode b) Varactor diode
c) Tunnel diode d) Gunn diode

11) Admittance and Impedance matrices of microwave network analysis are related to _____.
a) $[Y] = [Z]^{-1}$ b) $[Y] = [Z]$
c) $[V] = [Z][Z]^{-1}$ d) $[Z] = [V][V]^{-1}$

12) For simple impedance Z, ABCD parameters are _____.
a) $\mathrm{A} = 1, \mathrm{B} = \mathrm{Z}, \mathrm{C} = 0, \mathrm{D} = 1$ b) $\mathrm{A} = 0, \mathrm{B} = 1, \mathrm{C} = 1, \mathrm{D} = 0$
c) $\mathrm{A} = \mathrm{Z}, \mathrm{B} = 1, \mathrm{C} = 1, \mathrm{D} = 0$ d) $\mathrm{A} = 1, \mathrm{B} = 0, \mathrm{C} = \mathrm{Z}, \mathrm{D} = 1$

13) The device used to get the measurement of S parameters of n port microwave network is _____.
a) CRO b) Network Analyzer
c) Circulator d) Attenuator

14) Measurement of attenuation can be done by using _____ method.
a) Power Ratio b) RF substitution
c) Both a) & b) d) using slotted line

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Attempt any three **12**

a) Explain in brief construction and operation of Isolator.
b) Define Mode in waveguide. Justify that TEM mode does not exist in Rectangular waveguide.
c) Explain working of H plane Tee with scattering matrix.
d) State and explain similarities and dissimilarities between transmission line & waveguide.

Q.3 Attempt any Two **16**

a) Draw the construction of Magic Tee. Derive Scattering matrix for magic tee.
b) Explain the principle of Faraday's rotation used in microwave components. Explain the working of circulator. State the applications of circulator.
c) An air-filled rectangular waveguide has dimensions $a = 7$ cm, $b = 3.5$ cm, $f = 3.5$ GHz operates in dominant mode. Then calculate
1) Cut off frequency
2) Cut off wavelength
3) Phase velocity
4) Guided wavelength

Section – II

Q.4 Attempt any three. **12**

a) Explain in brief velocity modulation process in Reflex Klystron with Applegate diagram.
b) What is PIN diode? Explain its working with characteristics.
c) State advantages of slow wave structures. Explain working of Helix TWT.
d) What is tunneling effect? Explain with V-I characteristics.

Q.5 Attempt any two **16**

a) State the significance of Hull cut off conditions. Derive the expression for Hull cut off conditions in terms of voltage and magnetic flux density for magnetron operation.
b) State negative resistance principle used for semiconductor microwave devices. Explain in detail RWH theory used to achieve negative resistance. Also, state microwave device operates on RWH theory.
c) Define the importance of VSWR in microwave engineering. State the methods used to measure VSWR. Explain any one method in detail.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Travelling wave tube is suitable for _____.
a) Microwave oscillator b) Narrowband amplifier
c) Wideband amplifier d) Microwave filter

2) _____ frequency is preferred for microwave oven application.
a) 2.1 GHz b) 900 MHZ
c) 1800 MHz d) 2.45 GHz

3) The semiconductor diode which can be used as voltage-controlled oscillator at microwave range is _____.
a) PIN diode b) Varactor diode
c) Tunnel diode d) Gunn diode

4) Admittance and Impedance matrices of microwave network analysis are related to _____.
a) $[Y] = [Z]^{-1}$ b) $[Y] = [Z]$
c) $[V] = [Z][Z]^{-1}$ d) $[Z] = [V][V]^{-1}$

5) For simple impedance Z, ABCD parameters are _____.
a) $\mathrm{A} = 1, \mathrm{B} = \mathrm{Z}, \mathrm{C} = 0, \mathrm{D} = 1$ b) $\mathrm{A} = 0, \mathrm{B} = 1, \mathrm{C} = 1, \mathrm{D} = 0$
c) $\mathrm{A} = \mathrm{Z}, \mathrm{B} = 1, \mathrm{C} = 1, \mathrm{D} = 0$ d) $\mathrm{A} = 1, \mathrm{B} = 0, \mathrm{C} = \mathrm{Z}, \mathrm{D} = 1$

6) The device used to get the measurement of S parameters of n port microwave network is _____.
a) CRO b) Network Analyzer
c) Circulator d) Attenuator

7) Measurement of attenuation can be done by using _____ method.
a) Power Ratio b) RF substitution
c) Both a) & b) d) using slotted line

8) H plane tee is called _____.
a) Current divider b) Power device
c) Voltage divider d) Reciprocal device

9) The power between 0.01mw to 10mw can be measured by _____ technique.
a) Bolometer b) Thermistor
c) Calorimetric wattmeter d) Calorimetric Technique

10) Modes are supported by rectangular waveguide only when _____.
a) $f = f_c$ b) $f > f_c$
c) $f < f_c$ d) not depends on f_c

11) In E-plane tee the output at port 1 and port 2 having _____ phase shift.
a) 0^0 b) 90^0
c) 45^0 d) 180^0

12) In Two cavity Klystron, electron beam is _____ and RF field is _____.
a) travelling, stationary b) stationary, stationary
c) travelling, travelling d) stationary, travelling

13) _____ of the following microwave diode is suitable for very low power oscillations.
a) Gunn diode b) Tunnel diode
c) IMPATT diode d) Varactor diode

14) The relation between phase velocity and group velocity is represented as ___.
a) $\mathrm{V_p} = \mathrm{V_g}$ b) $\mathrm{V_p}.\mathrm{V_g} = \mathrm{C}$
c) $\mathrm{V_p}.\mathrm{V_g} = \mathrm{C}^2$ d) $\mathrm{V_p}.\mathrm{V_g} = 1$

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Attempt any three **12**

a) Explain in brief construction and operation of Isolator.
b) Define Mode in waveguide. Justify that TEM mode does not exist in Rectangular waveguide.
c) Explain working of H plane Tee with scattering matrix.
d) State and explain similarities and dissimilarities between transmission line & waveguide.

Q.3 Attempt any Two **16**

a) Draw the construction of Magic Tee. Derive Scattering matrix for magic tee.
b) Explain the principle of Faraday's rotation used in microwave components. Explain the working of circulator. State the applications of circulator.
c) An air-filled rectangular waveguide has dimensions $a = 7$ cm, $b = 3.5$ cm, $f = 3.5$ GHz operates in dominant mode. Then calculate
1) Cut off frequency
2) Cut off wavelength
3) Phase velocity
4) Guided wavelength

Section – II

Q.4 Attempt any three. **12**

a) Explain in brief velocity modulation process in Reflex Klystron with Applegate diagram.
b) What is PIN diode? Explain its working with characteristics.
c) State advantages of slow wave structures. Explain working of Helix TWT.
d) What is tunneling effect? Explain with V-I characteristics.

Q.5 Attempt any two **16**

a) State the significance of Hull cut off conditions. Derive the expression for Hull cut off conditions in terms of voltage and magnetic flux density for magnetron operation.
b) State negative resistance principle used for semiconductor microwave devices. Explain in detail RWH theory used to achieve negative resistance. Also, state microwave device operates on RWH theory.
c) Define the importance of VSWR in microwave engineering. State the methods used to measure VSWR. Explain any one method in detail.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Admittance and Impedance matrices of microwave network analysis are related to _____.
a) $[Y] = [Z]^{-1}$ b) $[Y] = [Z]$
c) $[V] = [Z][Z]^{-1}$ d) $[Z] = [V][V]^{-1}$

2) For simple impedance Z, ABCD parameters are _____.
a) $\mathrm{A} = 1, \mathrm{B} = \mathrm{Z}, \mathrm{C} = 0, \mathrm{D} = 1$ b) $\mathrm{A} = 0, \mathrm{B} = 1, \mathrm{C} = 1, \mathrm{D} = 0$
c) $\mathrm{A} = \mathrm{Z}, \mathrm{B} = 1, \mathrm{C} = 1, \mathrm{D} = 0$ d) $\mathrm{A} = 1, \mathrm{B} = 0, \mathrm{C} = \mathrm{Z}, \mathrm{D} = 1$

3) The device used to get the measurement of S parameters of n port microwave network is _____.
a) CRO b) Network Analyzer
c) Circulator d) Attenuator

4) Measurement of attenuation can be done by using _____ method.
a) Power Ratio b) RF substitution
c) Both a) & b) d) using slotted line

5) H plane tee is called _____.
a) Current divider b) Power device
c) Voltage divider d) Reciprocal device

6) The power between 0.01mw to 10mw can be measured by _____ technique.
a) Bolometer b) Thermistor
c) Calorimetric wattmeter d) Calorimetric Technique

7) Modes are supported by rectangular waveguide only when _____.
a) $f = f_c$ b) $f > f_c$
c) $f < f_c$ d) not depends on f_c

8) In E-plane tee the output at port 1 and port 2 having _____ phase shift.
a) 0^0 b) 90^0
c) 45^0 d) 180^0

9) In Two cavity Klystron, electron beam is _____ and RF field is _____.
a) travelling, stationary b) stationary, stationary
c) travelling, travelling d) stationary, travelling

10) _____ of the following microwave diode is suitable for very low power oscillations.

a) Gunn diode
b) Tunnel diode
c) IMPATT diode
d) Varactor diode

11) The relation between phase velocity and group velocity is represented as ___.

a) $V_p = V_g$
b) $V_p . V_g = C$
c) $V_p . V_g = C^2$
d) $V_p . V_g = 1$

12) Travelling wave tube is suitable for _____.

a) Microwave oscillator
b) Narrowband amplifier
c) Wideband amplifier
d) Microwave filter

13) _____ frequency is preferred for microwave oven application.

a) 2.1 GHz
b) 900 MHZ
c) 1800 MHz
d) 2.45 GHz

14) The semiconductor diode which can be used as voltage-controlled oscillator at microwave range is _____.

a) PIN diode
b) Varactor diode
c) Tunnel diode
d) Gunn diode

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Attempt any three **12**

a) Explain in brief construction and operation of Isolator.
b) Define Mode in waveguide. Justify that TEM mode does not exist in Rectangular waveguide.
c) Explain working of H plane Tee with scattering matrix.
d) State and explain similarities and dissimilarities between transmission line & waveguide.

Q.3 Attempt any Two **16**

a) Draw the construction of Magic Tee. Derive Scattering matrix for magic tee.
b) Explain the principle of Faraday's rotation used in microwave components. Explain the working of circulator. State the applications of circulator.
c) An air-filled rectangular waveguide has dimensions $a = 7$ cm, $b = 3.5$ cm, $f = 3.5$ GHz operates in dominant mode. Then calculate
1) Cut off frequency
2) Cut off wavelength
3) Phase velocity
4) Guided wavelength

Section – II

Q.4 Attempt any three. **12**

a) Explain in brief velocity modulation process in Reflex Klystron with Applegate diagram.
b) What is PIN diode? Explain its working with characteristics.
c) State advantages of slow wave structures. Explain working of Helix TWT.
d) What is tunneling effect? Explain with V-I characteristics.

Q.5 Attempt any two **16**

a) State the significance of Hull cut off conditions. Derive the expression for Hull cut off conditions in terms of voltage and magnetic flux density for magnetron operation.
b) State negative resistance principle used for semiconductor microwave devices. Explain in detail RWH theory used to achieve negative resistance. Also, state microwave device operates on RWH theory.
c) Define the importance of VSWR in microwave engineering. State the methods used to measure VSWR. Explain any one method in detail.

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ of the following microwave diode is suitable for very low power oscillations.
a) Gunn diode b) Tunnel diode
c) IMPATT diode d) Varactor diode

2) The relation between phase velocity and group velocity is represented as ___.
a) $\mathrm{V_p = V_g}$ b) $\mathrm{V_p . V_g = C}$
c) $\mathrm{V_p . V_g = C^2}$ d) $\mathrm{V_p . V_g = 1}$

3) Travelling wave tube is suitable for _____.
a) Microwave oscillator b) Narrowband amplifier
c) Wideband amplifier d) Microwave filter

4) _____ frequency is preferred for microwave oven application.
a) 2.1 GHz b) 900 MHZ
c) 1800 MHz d) 2.45 GHz

5) The semiconductor diode which can be used as voltage-controlled oscillator at microwave range is _____.
a) PIN diode b) Varactor diode
c) Tunnel diode d) Gunn diode

6) Admittance and Impedance matrices of microwave network analysis are related to _____.
a) $[Y] = [Z]^{-1}$ b) $[Y] = [Z]$
c) $[V] = [Z][Z]^{-1}$ d) $[Z] = [V][V]^{-1}$

7) For simple impedance Z, ABCD parameters are _____.
a) $\mathrm{A = 1, B = Z, C = 0, D = 1}$ b) $\mathrm{A = 0, B = 1, C = 1, D = 0}$
c) $\mathrm{A = Z, B = 1, C = 1, D = 0}$ d) $\mathrm{A = 1, B = 0, C = Z, D = 1}$

8) The device used to get the measurement of S parameters of n port microwave network is _____.
a) CRO b) Network Analyzer
c) Circulator d) Attenuator

9) Measurement of attenuation can be done by using _____ method.
a) Power Ratio b) RF substitution
c) Both a) & b) d) using slotted line

10) H plane tee is called _____.
a) Current divider b) Power device
c) Voltage divider d) Reciprocal device

11) The power between 0.01mw to 10mw can be measured by _____ technique.
a) Bolometer b) Thermistor
c) Calorimetric wattmeter d) Calorimetric Technique

12) Modes are supported by rectangular waveguide only when _____.
a) $f = f_c$ b) $f > f_c$
c) $f < f_c$ d) not depends on f_c

13) In E-plane tee the output at port 1 and port 2 having _____ phase shift.
a) 0^0 b) 90^0
c) 45^0 d) 180^0

14) In Two cavity Klystron, electron beam is _____ and RF field is _____.
a) travelling, stationary b) stationary, stationary
c) travelling, travelling d) stationary, travelling

SLR-GF-351

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (BTN06701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Attempt any three **12**

a) Explain in brief construction and operation of Isolator.
b) Define Mode in waveguide. Justify that TEM mode does not exist in Rectangular waveguide.
c) Explain working of H plane Tee with scattering matrix.
d) State and explain similarities and dissimilarities between transmission line & waveguide.

Q.3 Attempt any Two **16**

a) Draw the construction of Magic Tee. Derive Scattering matrix for magic tee.
b) Explain the principle of Faraday's rotation used in microwave components. Explain the working of circulator. State the applications of circulator.
c) An air-filled rectangular waveguide has dimensions $a = 7$ cm, $b = 3.5$ cm, $f = 3.5$ GHz operates in dominant mode. Then calculate
1) Cut off frequency
2) Cut off wavelength
3) Phase velocity
4) Guided wavelength

Section – II

Q.4 Attempt any three. **12**

a) Explain in brief velocity modulation process in Reflex Klystron with Applegate diagram.
b) What is PIN diode? Explain its working with characteristics.
c) State advantages of slow wave structures. Explain working of Helix TWT.
d) What is tunneling effect? Explain with V-I characteristics.

Q.5 Attempt any two **16**

a) State the significance of Hull cut off conditions. Derive the expression for Hull cut off conditions in terms of voltage and magnetic flux density for magnetron operation.
b) State negative resistance principle used for semiconductor microwave devices. Explain in detail RWH theory used to achieve negative resistance. Also, state microwave device operates on RWH theory.
c) Define the importance of VSWR in microwave engineering. State the methods used to measure VSWR. Explain any one method in detail.

SLR-GF-352

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which network topology requires a central controller or hub?
a) Star b) Mesh
c) Ring d) Bus

2) Data communication system within a building or campus is _____.
a) MAN b) WAN
c) LAN d) PAN

3) Bluetooth is an example of _____.
a) wide area network b) local area network
c) virtual private network d) personal area network

4) A local telephone network is an example of a _____ network.
a) Packet switched b) Circuit switched
c) Bit switched d) Line switched

5) Sliding window protocol makes use of two types of frames namely _____.
a) Data frame b) Acknowledgement frame
c) Both a & b d) None of these

6) What is the number of layers in the OSI model?
a) 4 b) 8
c) 7 d) 5

7) _____ refers to a family of IEEE standards dealing with local area network and metropolitan area network.
a) IEEE800 b) IEEE801
c) IEEE802 d) IEEE803

8) FTP stands for?
a) File Text Protocol b) File Transfer Protocol
c) Firm Transfer Protocol d) File Transplant Protocol

9) The network layer is concerned with _____ of data.
a) bits b) frames
c) packets d) bytes

10) A 4 byte IP address consists of _____.
a) only network address
b) only host address
c) network address & host address
d) network address & MAC address

11) Which of the following routing algorithms can be used for network layer design?
a) shortest path algorithm
b) distance vector routing
c) link state routing
d) all of the above

12) ICMP is primarily used for _____.
a) error and diagnostic functions
b) addressing
c) forwarding
d) routing

13) What is the main advantage of UDP?
a) More overload
b) Reliable
c) Low overload
d) Fast

14) The size of an IP address in IPv6 is _____.
a) 4 bytes
b) 128 bits
c) 8 bytes
d) 100 bits

SLR-GF-352

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any four **16**

a) Define network topology? Explain Star and Ring topology with its advantages and disadvantages.
b) Explain IEEE 802.5 in detail.
c) Differentiate between Circuit switching and Packet switching.
d) Write a short note on Bluetooth and its versions.
e) A bit stream 1100011011 is to be transmitted using the standard CRC method. The generator polynomial is $x_4 + x + 1$. What is the actual bit string transmitted?

Q.3 Solve any two **12**

a) What is piggybacking? Explain Stop & wait protocol in detail.
b) Draw& Explain ISO-OSI model with functions of each layer.
c) Explain various HDLC frame formats.

Section – II

Q.4 Solve any four **16**

a) Explain ARP & RARP in detail.
b) Write a short note on IPV4.
c) Explain with neat diagram FTP.
d) Explain three-way handshake.
e) Explain the DNS.

Q.5 Solve any two. **12**

a) Explain shortest path routing algorithm.
b) Explain different classes of IP addresses along with their address ranges. Enlist four special IP address.
c) Draw the IP header format and discuss the significance of various fields.

Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) FTP stands for?
a) File Text Protocol b) File Transfer Protocol
c) Firm Transfer Protocol d) File Transplant Protocol

2) The network layer is concerned with _____ of data.
a) bits b) frames
c) packets d) bytes

3) A 4 byte IP address consists of _____.
a) only network address
b) only host address
c) network address & host address
d) network address & MAC address

4) Which of the following routing algorithms can be used for network layer design?
a) shortest path algorithm b) distance vector routing
c) link state routing d) all of the above

5) ICMP is primarily used for _____.
a) error and diagnostic functions b) addressing
c) forwarding d) routing

6) What is the main advantage of UDP?
a) More overload b) Reliable
c) Low overload d) Fast

7) The size of an IP address in IPv6 is _____.
a) 4 bytes b) 128 bits
c) 8 bytes d) 100 bits

8) Which network topology requires a central controller or hub?
a) Star b) Mesh
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9) Data communication system within a building or campus is _____.
a) MAN b) WAN
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10) Bluetooth is an example of _____.
a) wide area network b) local area network
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11) A local telephone network is an example of a _____ network.
a) Packet switched b) Circuit switched
c) Bit switched d) Line switched

12) Sliding window protocol makes use of two types of frames namely _____.
a) Data frame b) Acknowledgement frame
c) Both a & b d) None of these

13) What is the number of layers in the OSI model?
a) 4 b) 8
c) 7 d) 5

14) _____ refers to a family of IEEE standards dealing with local area network and metropolitan area network.
a) IEEE800 b) IEEE801
c) IEEE802 d) IEEE803

SLR-GF-352

Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any four **16**

a) Define network topology? Explain Star and Ring topology with its advantages and disadvantages.
b) Explain IEEE 802.5 in detail.
c) Differentiate between Circuit switching and Packet switching.
d) Write a short note on Bluetooth and its versions.
e) A bit stream 1100011011 is to be transmitted using the standard CRC method. The generator polynomial is $x_4 + x + 1$. What is the actual bit string transmitted?

Q.3 Solve any two **12**

a) What is piggybacking? Explain Stop & wait protocol in detail.
b) Draw& Explain ISO-OSI model with functions of each layer.
c) Explain various HDLC frame formats.

Section – II

Q.4 Solve any four **16**

a) Explain ARP & RARP in detail.
b) Write a short note on IPV4.
c) Explain with neat diagram FTP.
d) Explain three-way handshake.
e) Explain the DNS.

Q.5 Solve any two. **12**

a) Explain shortest path routing algorithm.
b) Explain different classes of IP addresses along with their address ranges. Enlist four special IP address.
c) Draw the IP header format and discuss the significance of various fields.

SLR-GF-352

Seat No.		Set	R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

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Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section –I

Q.2 Solve any four **16**

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Section – II

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c) Draw the IP header format and discuss the significance of various fields.

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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1) What is the number of layers in the OSI model?
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Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (BTN06702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any four **16**

a) Define network topology? Explain Star and Ring topology with its advantages and disadvantages.
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c) Differentiate between Circuit switching and Packet switching.
d) Write a short note on Bluetooth and its versions.
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Q.3 Solve any two **12**

a) What is piggybacking? Explain Stop & wait protocol in detail.
b) Draw& Explain ISO-OSI model with functions of each layer.
c) Explain various HDLC frame formats.

Section – II

Q.4 Solve any four **16**

a) Explain ARP & RARP in detail.
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Q.5 Solve any two. **12**

a) Explain shortest path routing algorithm.
b) Explain different classes of IP addresses along with their address ranges. Enlist four special IP address.
c) Draw the IP header format and discuss the significance of various fields.

SLR-GF-353

Seat No.	

Set P

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions (Each Question 1 marks) **14**

1) In CMOS Logic PDN consists of _____ and PUN Consists of _____
a) P types MOSFETS, N type MOSFETS
b) N types MOSFETS, N type MOSFETS
c) N types MOSFETS, P type MOSFETS
d) P types MOSFETS, P type MOSFETS

2) PMOS produces strong _____ and weak _____
a) 0,1 b) 1,1
c) 0,0 d) 1,0

3) The FPGA is abbreviated as:
a) First programmable Gate Array
b) Field Programmable Gate Array
c) Field Post Gate Array
d) Field Program Gate Array

4) Which of the following is a characteristic of Verilog HDL?
a) Strongly typed language b) Case sensitive
c) Better library d) Not portable

5) Which of the following loops are supported by Verilog?
a) if-else loop b) for loop
c) while loop d) All the above

6) @Posedge means _____
a) Transition from x to 1 b) Transition from z to 1,x
c) Transition from 0 to 1, x or z d) Transition from 1 to 0

7) To introduce delays in a circuit, we can use a _____
a) Buffer b) Inverter
c) EXOR Gate d) Flip-Flop

8) Default value of a reg data type is _____.
a) 0 b) X
c) 1 d) Z

9) MOS transistors consist of which of the following?

a) Semiconductor layer
b) Metal layer
c) Layer of silicon-di-oxide
d) All of the mentioned

10) The power dissipation in Pseudo-nMOS is reduced to about _____ compared to nMOS device

a) 50%
b) 30%
c) 60%
d) 70%

11) VLSI technology uses _____ to form integrated circuit.

a) transistors
b) diodes
c) switches
d) buffers

12) Electrical charge flows from _____.

a) source to drain
b) source to ground
c) drain to source
d) source to gate

13) In Pseudo-nMOS logic, n transistor operates in _____

a) cut off region
b) saturation region
c) resistive region
d) non saturation region

14) Most Lookup tables in FPGAs use _____ inputs, resulting in _____ possible outputs

a) 4,16
b) 8,16
c) 4,12
d) 6,12

Seat No.	

Set **P**

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are complusory.
2) Figures to the right indicates full marks.

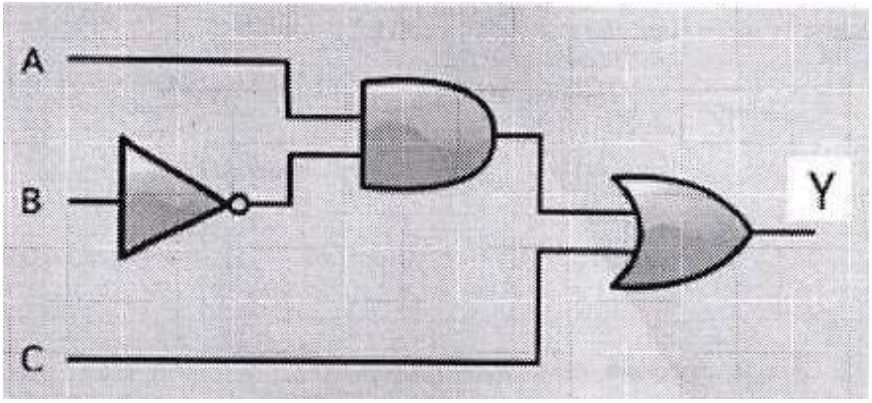
Section – I

Q.2 Solve any four of the following **16**

a) List all the data types available in Verilog HDL. Explain any three data types with examples.
b) Write a verilog code for mod-5 counter.
c) Write a Verilog code for JK Flip flop.
d) Explain Sequential Statements in Verilog.
e) Write a Verilog code for Comparator.

Q.3 Solve any two of the following. **12**

a) Write a Verilog code for output Y in Data Flow, Behavioural and Structural Style of Modelling. Circuit diagram is as shown below.



b) Write a Verilog code for Half Subtractor and Full subtractor
c) Write a Verilog code for Shift Register.

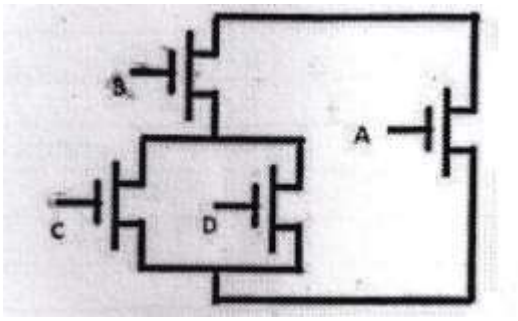
Section – II

Q.4 Solve any four of the following. **16**

a) Differentiate between CPLD and FPGA Architecture.
b) What is dynamic power dissipation of CMOS inverter?
c) Draw and explain architecture of FPGA.
d) Design two input OR/NOR gate using complimentary pass transistor logic.
e) Define scaling. Explain the various types of scaling.

Q.5 Solve any two of the following. **12**

a) Design output equation and draw complete CMOS circuit if a CMOS Logic PDN network is as follows.



b) How to obtain DC characteristics of CMOS inverter? Explain the effect of $\beta n/\beta p$.
c) What is complimentary CMOS logic? Design half adder using CMOS logic.

Seat No.	

Set **Q**

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions (Each Question 1 marks) **14**

1) Default value of a reg data type is _____.
a) 0 b) X
c) 1 d) Z

2) MOS transistors consist of which of the following?
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a) 50% b) 30%
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Seat No.	

Set **Q**

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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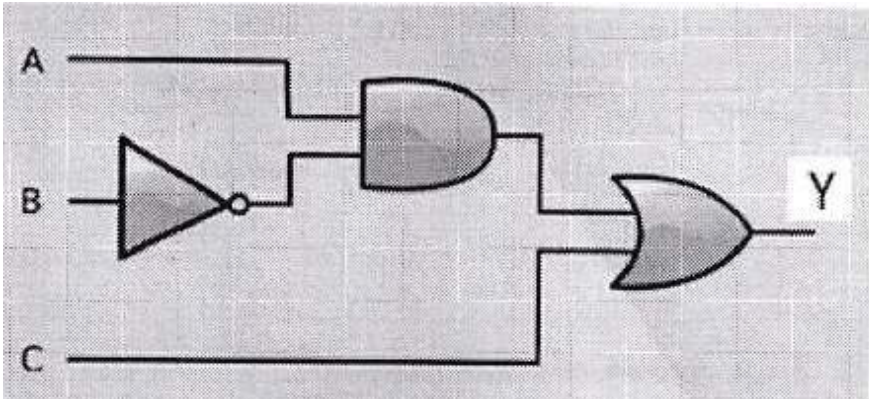
a) Write a Verilog code for output Y in Data Flow, Behavioural and Structural Style of Modelling. Circuit diagram is as shown below.



b) Write a Verilog code for Half Subtractor and Full subtractor
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Section – II

Q.4 Solve any four of the following. **16**

a) Differentiate between CPLD and FPGA Architecture.
b) What is dynamic power dissipation of CMOS inverter?
c) Draw and explain architecture of FPGA.
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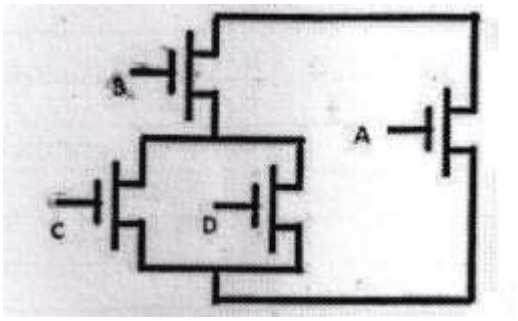

b) How to obtain DC characteristics of CMOS inverter? Explain the effect of $\beta n/\beta p$.
c) What is complimentary CMOS logic? Design half adder using CMOS logic.

Seat No.	

Set **R**

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions (Each Question 1 marks) **14**

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SLR-GF-353

Seat No.	

Set R

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
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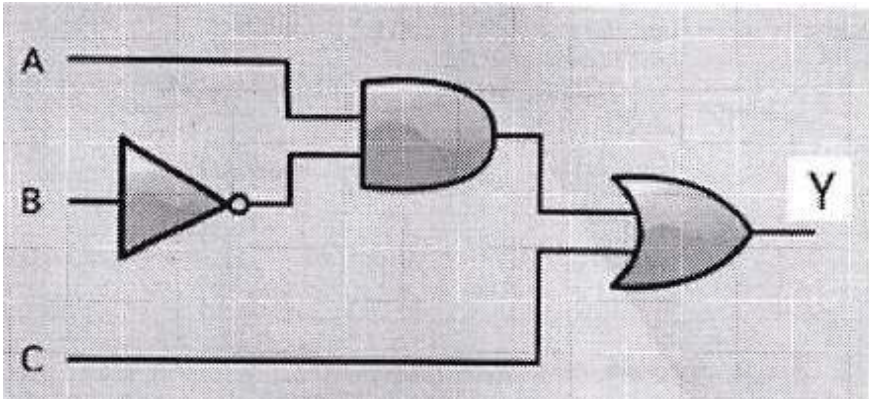

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Section – II

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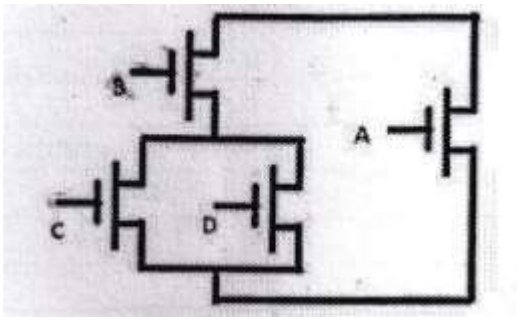


b) How to obtain DC characteristics of CMOS inverter? Explain the effect of $\beta n/\beta p$.
c) What is complimentary CMOS logic? Design half adder using CMOS logic.

Seat No.	

Set **S**

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions (Each Question 1 marks) **14**

1) @Posedge means _____
a) Transition from x to 1 b) Transition from z to 1,x
c) Transition from 0 to 1, x or z d) Transition from 1 to 0

2) To introduce delays in a circuit, we can use a _____
a) Buffer b) Inverter
c) EXOR Gate d) Flip-Flop

3) Default value of a reg data type is _____.
a) 0 b) X
c) 1 d) Z

4) MOS transistors consist of which of the following?
a) Semiconductor layer b) Metal layer
c) Layer of silicon-di-oxide d) All of the mentioned

5) The power dissipation in Pseudo-nMOS is reduced to about _____ compared to nMOS device
a) 50% b) 30%
c) 60% d) 70%

6) VLSI technology uses _____ to form integrated circuit.
a) transistors b) diodes
c) switches d) buffers

7) Electrical charge flows from _____.
a) source to drain b) source to ground
c) drain to source d) source to gate

8) In Pseudo-nMOS logic, n transistor operates in _____
a) cut off region b) saturation region
c) resistive region d) non saturation region

9) Most Lookup tables in FPGAs use _____ inputs, resulting in _____ possible outputs
a) 4,16 b) 8,16
c) 4,12 d) 6,12

10) In CMOS Logic PDN consists of _____ and PUN Consists of _____
a) P types MOSFETS, N type MOSFETS
b) N types MOSFETS, N type MOSFETS
c) N types MOSFETS, P type MOSFETS
d) P types MOSFETS, P type MOSFETS

11) PMOS produces strong _____ and weak _____
a) 0,1 b) 1,1
c) 0,0 d) 1,0

12) The FPGA is abbreviated as:
a) First programmable Gate Array
b) Field Programmable Gate Array
c) Field Post Gate Array
d) Field Program Gate Array

13) Which of the following is a characteristic of Verilog HDL?
a) Strongly typed language b) Case sensitive
c) Better library d) Not portable

14) Which of the following loops are supported by Verilog?
a) if-else loop b) for loop
c) while loop d) All the above

Seat No.	

Set **S**

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
VLSI Design (BTN06703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

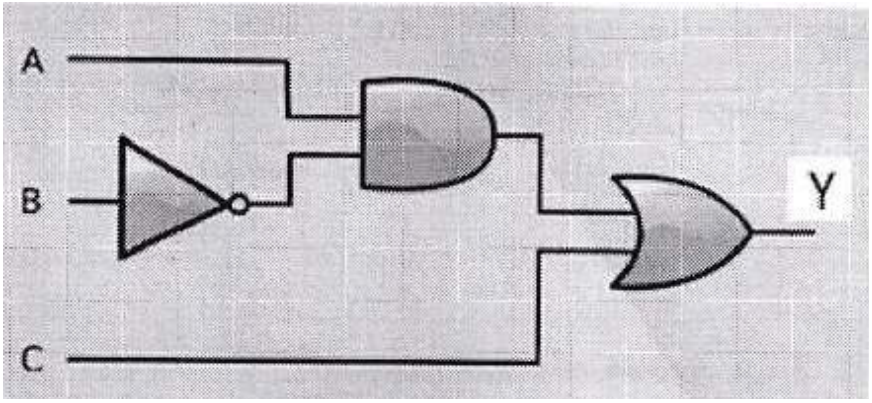
Section – I

Q.2 Solve any four of the following **16**

a) List all the data types available in Verilog HDL. Explain any three data types with examples.
b) Write a verilog code for mod-5 counter.
c) Write a Verilog code for JK Flip flop.
d) Explain Sequential Statements in Verilog.
e) Write a Verilog code for Comparator.

Q.3 Solve any two of the following. **12**

a) Write a Verilog code for output Y in Data Flow, Behavioural and Structural Style of Modelling. Circuit diagram is as shown below.



b) Write a Verilog code for Half Subtractor and Full subtractor
c) Write a Verilog code for Shift Register.

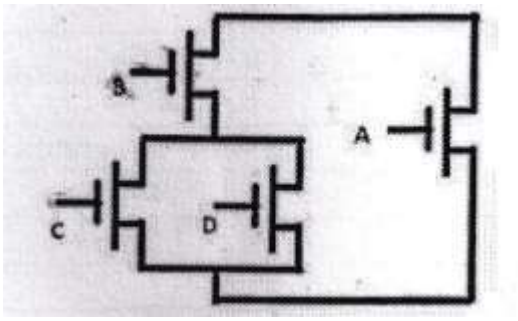
Section – II

Q.4 Solve any four of the following. **16**

a) Differentiate between CPLD and FPGA Architecture.
b) What is dynamic power dissipation of CMOS inverter?
c) Draw and explain architecture of FPGA.
d) Design two input OR/NOR gate using complimentary pass transistor logic.
e) Define scaling. Explain the various types of scaling.

Q.5 Solve any two of the following. **12**

a) Design output equation and draw complete CMOS circuit if a CMOS Logic PDN network is as follows.



b) How to obtain DC characteristics of CMOS inverter? Explain the effect of $\beta n/\beta p$.
c) What is complimentary CMOS logic? Design half adder using CMOS logic.

Seat No.	

Set | P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 14

Q.1 Choose correct Answer. **14**

1) How does a PLC differ from a traditional hardwired control system?
a) PLCs use software programming instead of physical wiring.
b) PLCs can only be used in industrial applications.
c) PLCs are more expensive than traditional hardwired control systems.
d) PLCs are less reliable than traditional hardwired control systems.

2) Which criteria should be prioritized when selecting a PLC for a high-speed manufacturing process?
a) Communication protocols
b) Processing speed of the PLC
c) Programming capabilities
d) Compatibility with existing systems

3) What is the function of a PLC's power supply?
a) To provide power to the PLC's CPU
b) To provide power to the PLC's input/output modules
c) To provide power to the PLC's communication interfaces
d) All of the above

4) Which of the following is an example of an input module in a PLC?
a) Motor b) Sensor
c) Relay d) Actuator

5) What is the standard form of PIR sensor?
a) Partial Infrared Sensor b) Positive Infrared Sensor
c) Passive Infrared Sensor d) None of the above

6) Which one of the following is a basic component of pneumatic power system?
a) Air tank b) Compressor
c) Valves d) All of the above

7) Electrical strain gauge works on the principle of _____.
a) variation of resistance b) variation of capacitance
c) variation of inductance d) variation of area

8) What is the purpose of using a stepper motor in a PLC system?
a) To convert electrical energy into mechanical energy
b) To provide rotational motion to machinery
c) To control the position and speed of a motor
d) To provide feedback to the PLC system

9) How does a relay function in a PLC?
a) By opening or closing an electrical circuit based on a control signal.
b) By converting analog signals to digital signals.
c) By monitoring temperature and pressure levels in the PLC.
d) By performing logical operations on data.

10) Which mini application of PLC is used for monitoring and controlling the temperature and pressure in a manufacturing process?
a) Traffic signal control
b) Home automation
c) Industrial robot control
d) Process control

11) Which of the following is not a commonly used programming language for PLC programming?
a) Ladder Logic
b) Structured Text
c) Function Block Diagram
d) Visual Basic

12) Each horizontal line Ladder Diagram is referred to as:
a) Row
b) Ladder Line
c) Rung
d) Column

13) A automation system is related to _____.
a) Distributed control system
b) Supervisory control and data acquisition system
c) Distinct control system
d) Both a and b

14) What is the primary function of an industrial controller?
a) Data storage
b) Data transmission
c) Process control
d) Data visualization

SLR-GF-354

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any Four of the following. **16**

a) With the help of block diagram explain the working of PLC.
b) List different applications of PLC. Explain why PLC is preferred over relay circuit.
c) Describe sinking and sourcing concept in DC input modules of PLC with diagram.
d) What are different types proximity switches? Explain any one in detail.
e) Explain Two wire & Three wire system in RTD.

Q.3 Attempt any Two of following. **12**

a) Why different types of I/O modules are required to be interfaced with PLC? Draw and describe the block diagram of DC discrete output module of PLC.
b) What are the suitable materials for piezo electric sensor? What is piezo electric effect? Explain working of piezoelectric Sensor.
c) Explain construction & working of Potentiometer sensor. State Advantages & disadvantages of it.

Section – II

Q.4 Attempt any Four of the following. **16**

a) How Does a Push Button Switch Operate? Draw symbol of NO & NC type pushbutton.
b) Write short note on selection criteria for a solenoid valve in a PLC.
c) Explain use of UP Counter instruction in PLC with example.
d) Define industrial controller. Discuss the Application areas of industrial controller.
e) What is use of comparison instruction in PLC programming? Explain any two comparison instruction in detail.

Q.5 Attempt any Two of following. **12**

a) Explain working of DC servo motor with block diagram. List specification of it.
b) List different Methods of Programming a PLC. Draw Ladder diagram for basic gates.
c) Draw a ladder diagram for two lamps RED & YELLOW having following conditions
i) When start button pressed RED lamp will be ON.
ii) After 10 second YELLOW lamp will be ON.
iii) When stop button pressed both lamps will be OFF.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 14

Q.1 Choose correct Answer. **14**

1) What is the purpose of using a stepper motor in a PLC system?
a) To convert electrical energy into mechanical energy
b) To provide rotational motion to machinery
c) To control the position and speed of a motor
d) To provide feedback to the PLC system

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c) By monitoring temperature and pressure levels in the PLC.
d) By performing logical operations on data.

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a) Traffic signal control b) Home automation
c) Industrial robot control d) Process control

4) Which of the following is not a commonly used programming language for PLC programming?
a) Ladder Logic b) Structured Text
c) Function Block Diagram d) Visual Basic

5) Each horizontal line Ladder Diagram is referred to as:
a) Row b) Ladder Line
c) Rung d) Column

6) A automation system is related to _____.
a) Distributed control system
b) Supervisory control and data acquisition system
c) Distinct control system
d) Both a and b

7) What is the primary function of an industrial controller?
a) Data storage b) Data transmission
c) Process control d) Data visualization

8) How does a PLC differ from a traditional hardwired control system?
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9) Which criteria should be prioritized when selecting a PLC for a high-speed manufacturing process?
a) Communication protocols
b) Processing speed of the PLC
c) Programming capabilities
d) Compatibility with existing systems

10) What is the function of a PLC's power supply?
a) To provide power to the PLC's CPU
b) To provide power to the PLC's input/output modules
c) To provide power to the PLC's communication interfaces
d) All of the above

11) Which of the following is an example of an input module in a PLC?
a) Motor b) Sensor
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12) What is the standard form of PIR sensor?
a) Partial Infrared Sensor b) Positive Infrared Sensor
c) Passive Infrared Sensor d) None of the above

13) Which one of the following is a basic component of pneumatic power system?
a) Air tank b) Compressor
c) Valves d) All of the above

14) Electrical strain gauge works on the principle of _____.
a) variation of resistance b) variation of capacitance
c) variation of inductance d) variation of area

SLR-GF-354

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any Four of the following. **16**

a) With the help of block diagram explain the working of PLC.
b) List different applications of PLC. Explain why PLC is preferred over relay circuit.
c) Describe sinking and sourcing concept in DC input modules of PLC with diagram.
d) What are different types proximity switches? Explain any one in detail.
e) Explain Two wire & Three wire system in RTD.

Q.3 Attempt any Two of following. **12**

a) Why different types of I/O modules are required to be interfaced with PLC? Draw and describe the block diagram of DC discrete output module of PLC.
b) What are the suitable materials for piezo electric sensor? What is piezo electric effect? Explain working of piezoelectric Sensor.
c) Explain construction & working of Potentiometer sensor. State Advantages & disadvantages of it.

Section – II

Q.4 Attempt any Four of the following. **16**

a) How Does a Push Button Switch Operate? Draw symbol of NO & NC type pushbutton.
b) Write short note on selection criteria for a solenoid valve in a PLC.
c) Explain use of UP Counter instruction in PLC with example.
d) Define industrial controller. Discuss the Application areas of industrial controller.
e) What is use of comparison instruction in PLC programming? Explain any two comparison instruction in detail.

Q.5 Attempt any Two of following. **12**

a) Explain working of DC servo motor with block diagram. List specification of it.
b) List different Methods of Programming a PLC. Draw Ladder diagram for basic gates.
c) Draw a ladder diagram for two lamps RED & YELLOW having following conditions
i) When start button pressed RED lamp will be ON.
ii) After 10 second YELLOW lamp will be ON.
iii) When stop button pressed both lamps will be OFF.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 14

Q.1 Choose correct Answer. **14**

1) Which of the following is not a commonly used programming language for PLC programming?
a) Ladder Logic b) Structured Text
c) Function Block Diagram d) Visual Basic

2) Each horizontal line Ladder Diagram is referred to as:
a) Row b) Ladder Line
c) Rung d) Column

3) A automation system is related to _____.
a) Distributed control system
b) Supervisory control and data acquisition system
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4) What is the primary function of an industrial controller?
a) Data storage b) Data transmission
c) Process control d) Data visualization

5) How does a PLC differ from a traditional hardwired control system?
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6) Which criteria should be prioritized when selecting a PLC for a high-speed manufacturing process?
a) Communication protocols
b) Processing speed of the PLC
c) Programming capabilities
d) Compatibility with existing systems

7) What is the function of a PLC's power supply?
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b) To provide power to the PLC's input/output modules
c) To provide power to the PLC's communication interfaces
d) All of the above

8) Which of the following is an example of an input module in a PLC?
a) Motor b) Sensor
c) Relay d) Actuator

9) What is the standard form of PIR sensor?
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c) Passive Infrared Sensor d) None of the above

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12) What is the purpose of using a stepper motor in a PLC system?
a) To convert electrical energy into mechanical energy
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13) How does a relay function in a PLC?
a) By opening or closing an electrical circuit based on a control signal.
b) By converting analog signals to digital signals.
c) By monitoring temperature and pressure levels in the PLC.
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14) Which mini application of PLC is used for monitoring and controlling the temperature and pressure in a manufacturing process?
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c) Industrial robot control d) Process control

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any Four of the following. **16**

a) With the help of block diagram explain the working of PLC.
b) List different applications of PLC. Explain why PLC is preferred over relay circuit.
c) Describe sinking and sourcing concept in DC input modules of PLC with diagram.
d) What are different types proximity switches? Explain any one in detail.
e) Explain Two wire & Three wire system in RTD.

Q.3 Attempt any Two of following. **12**

a) Why different types of I/O modules are required to be interfaced with PLC? Draw and describe the block diagram of DC discrete output module of PLC.
b) What are the suitable materials for piezo electric sensor? What is piezo electric effect? Explain working of piezoelectric Sensor.
c) Explain construction & working of Potentiometer sensor. State Advantages & disadvantages of it.

Section – II

Q.4 Attempt any Four of the following. **16**

a) How Does a Push Button Switch Operate? Draw symbol of NO & NC type pushbutton.
b) Write short note on selection criteria for a solenoid valve in a PLC.
c) Explain use of UP Counter instruction in PLC with example.
d) Define industrial controller. Discuss the Application areas of industrial controller.
e) What is use of comparison instruction in PLC programming? Explain any two comparison instruction in detail.

Q.5 Attempt any Two of following. **12**

a) Explain working of DC servo motor with block diagram. List specification of it.
b) List different Methods of Programming a PLC. Draw Ladder diagram for basic gates.
c) Draw a ladder diagram for two lamps RED & YELLOW having following conditions
i) When start button pressed RED lamp will be ON.
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iii) When stop button pressed both lamps will be OFF.

Seat No.	

Set | S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 14

Q.1 Choose correct Answer. **14**

1) Which one of the following is a basic component of pneumatic power system?
a) Air tank b) Compressor
c) Valves d) All of the above

2) Electrical strain gauge works on the principle of _____.
a) variation of resistance b) variation of capacitance
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3) What is the purpose of using a stepper motor in a PLC system?
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c) Rung d) Column

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9) What is the primary function of an industrial controller?
a) Data storage
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10) How does a PLC differ from a traditional hardwired control system?
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d) All of the above

13) Which of the following is an example of an input module in a PLC?
a) Motor
b) Sensor
c) Relay
d) Actuator

14) What is the standard form of PIR sensor?
a) Partial Infrared Sensor
b) Positive Infrared Sensor
c) Passive Infrared Sensor
d) None of the above

SLR-GF-354

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
PLC and Industrial Controllers (BTN06707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any Four of the following. **16**

a) With the help of block diagram explain the working of PLC.
b) List different applications of PLC. Explain why PLC is preferred over relay circuit.
c) Describe sinking and sourcing concept in DC input modules of PLC with diagram.
d) What are different types proximity switches? Explain any one in detail.
e) Explain Two wire & Three wire system in RTD.

Q.3 Attempt any Two of following. **12**

a) Why different types of I/O modules are required to be interfaced with PLC? Draw and describe the block diagram of DC discrete output module of PLC.
b) What are the suitable materials for piezo electric sensor? What is piezo electric effect? Explain working of piezoelectric Sensor.
c) Explain construction & working of Potentiometer sensor. State Advantages & disadvantages of it.

Section – II

Q.4 Attempt any Four of the following. **16**

a) How Does a Push Button Switch Operate? Draw symbol of NO & NC type pushbutton.
b) Write short note on selection criteria for a solenoid valve in a PLC.
c) Explain use of UP Counter instruction in PLC with example.
d) Define industrial controller. Discuss the Application areas of industrial controller.
e) What is use of comparison instruction in PLC programming? Explain any two comparison instruction in detail.

Q.5 Attempt any Two of following. **12**

a) Explain working of DC servo motor with block diagram. List specification of it.
b) List different Methods of Programming a PLC. Draw Ladder diagram for basic gates.
c) Draw a ladder diagram for two lamps RED & YELLOW having following conditions
i) When start button pressed RED lamp will be ON.
ii) After 10 second YELLOW lamp will be ON.
iii) When stop button pressed both lamps will be OFF.

SLR-GF-355

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Mobile Communication (BTN06708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The technique adopted to increase the system capacity and reduce co-channel interference is _____.
a) High power BTS
b) By installing the Omnidirectional antenna
c) Sectoring
d) None

2) The remote and sparsely populated areas will be covered by _____.
a) Microcell b) Macrocell
c) Picocell d) None of the above

3) Polarisation used in satellite communication is _____.
a) Horizontal polarisation b) Vertical polarisation
c) Circular polarisation d) None

4) Half duplex system for communication has communication in _____.
a) Communication in single direction
b) Communication in single direction at a time
c) Communication in both directions at the same time
d) None

5) MIN stands for _____.
a) Mobile Identification Number b) Mobile Internet
c) Mobility In Network d) None

6) Antenna down tilting refers to _____.
a) Focusing radio energy towards ground
b) Decreasing the strength of antenna
c) Decreasing the S/N ratio at the antenna input
d) All of the above

7) Dwell time is the time for _____.
a) A call within the cell b) Hand off
c) Waiting for channel allocation d) None of these

8) What is the chip rate of W-CDMA?

a) 1.2288 Mcps b) 3.84 Mcps
c) 270.833 Ksps d) 100 Mcps

9) The minimum spectrum allocation required for W-CDMA is ____ MHz

a) 2 b) 5
c) 500 d) 100

10) The type of access used in GSM technology is _____.

a) FDMA/TDMA b) CDMA
c) OFDMA d) None of the above

11) IMT-2000 is a digital mobile system that functions as _____.

a) Pager b) Cordless
c) Low earth orbit Satellites d) All

12) What does LTE stand for?

a) Level Telecom Advanced b) Long Terminal Advanced
c) Long Term Evolution d) Long Time Evolution.

13) For i=2, j=3 value of N is _____.

a) 12 b) 7
c) 19 d) None

14) For N=4, M=87, C=87000 chs, value of k is _____ chs/cell.

a) 143 b) 250
c) 255 d) None

SLR-GF-355

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Mobile Communication (BTN06708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Explain Co-channel interference in detail.
b) What is Handoff? Explain different types of Handoffs?
c) What is diffraction? Explain Knife edge diffraction
d) What is Sectoring and Splitting? Explain.
e) Explain frequency reuse technique in cellular system.

Q.3 Attempt the following (Any Two) **12**

a) A spectrum of 33 MHz is allocated to a wireless FDD cellular system which uses two 25 KHz simplex channels to provide full duplex voice & control channel. Compute the number of channels available per cell if system uses- a) 4-cell reuse b) 7-cell reuse & c) 12-cell reuse. If 1MHz of the allocated spectrum is dedicated to control channels. Determine an equitable distribution of control channels & voice channels in each cell for each of the three systems.
b) Explain and derive an expression for Two ground reflection Model. Prove path difference = (2.ht.hr)/d
c) Consider service area of a cellular system is 6300 km2, a total of 1001 radio channels are available for traffic handling and the area of one cell is 18 km2.
   i) Calculate replication factor for the cluster of size 7. Calculate number of channels per cell & system capacity.
   ii) Calculate above parameter if the cluster size is decreased from 7 to 4 and comment on result obtained

Section II

Q.4 Attempt the following (Any Four) **16**

a) Explain features of 5G.
b) Explain mobile call origination sequences in GSM.
c) Explain speech coding in GSM.
d) Draw & Explain GSM architecture.
e) What are LTE channels? Explain.

Q.5 Attempt the following (Any Two) **12**

a) Explain GSM channels in details.
b) Explain 5G CN architecture. Compare between 4G and 5G.
c) Explain GSM identifiers in details.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Mobile Communication (BTN06708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What is the chip rate of W-CDMA?
a) 1.2288 Mcps b) 3.84 Mcps
c) 270.833 Ksps d) 100 Mcps

2) The minimum spectrum allocation required for W-CDMA is ____ MHz
a) 2 b) 5
c) 500 d) 100

3) The type of access used in GSM technology is _____.
a) FDMA/TDMA b) CDMA
c) OFDMA d) None of the above

4) IMT-2000 is a digital mobile system that functions as _____.
a) Pager b) Cordless
c) Low earth orbit Satellites d) All

5) What does LTE stand for?
a) Level Telecom Advanced b) Long Terminal Advanced
c) Long Term Evolution d) Long Time Evolution.

6) For i=2, j=3 value of N is _____.
a) 12 b) 7
c) 19 d) None

7) For N=4, M=87, C=87000 chs, value of k is _____ chs/cell.
a) 143 b) 250
c) 255 d) None

8) The technique adopted to increase the system capacity and reduce co-channel interference is _____.
a) High power BTS
b) By installing the Omnidirectional antenna
c) Sectoring
d) None

9) The remote and sparsely populated areas will be covered by _____.
a) Microcell b) Macrocell
c) Picocell d) None of the above

10) Polarisation used in satellite communication is _____.
a) Horizontal polarisation b) Vertical polarisation
c) Circular polarisation d) None

11) Half duplex system for communication has communication in _____.
a) Communication in single direction
b) Communication in single direction at a time
c) Communication in both directions at the same time
d) None

12) MIN stands for _____.
a) Mobile Identification Number b) Mobile Internet
c) Mobility In Network d) None

13) Antenna down tilting refers to _____.
a) Focusing radio energy towards ground
b) Decreasing the strength of antenna
c) Decreasing the S/N ratio at the antenna input
d) All of the above

14) Dwell time is the time for _____.
a) A call within the cell b) Hand off
c) Waiting for channel allocation d) None of these

SLR-GF-355

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Mobile Communication (BTN06708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Explain Co-channel interference in detail.
b) What is Handoff? Explain different types of Handoffs?
c) What is diffraction? Explain Knife edge diffraction
d) What is Sectoring and Splitting? Explain.
e) Explain frequency reuse technique in cellular system.

Q.3 Attempt the following (Any Two) **12**

a) A spectrum of 33 MHz is allocated to a wireless FDD cellular system which uses two 25 KHz simplex channels to provide full duplex voice & control channel. Compute the number of channels available per cell if system uses- a) 4-cell reuse b) 7-cell reuse & c) 12-cell reuse. If 1MHz of the allocated spectrum is dedicated to control channels. Determine an equitable distribution of control channels & voice channels in each cell for each of the three systems.
b) Explain and derive an expression for Two ground reflection Model. Prove path difference = (2.ht.hr)/d
c) Consider service area of a cellular system is 6300 km2, a total of 1001 radio channels are available for traffic handling and the area of one cell is 18 km2.
   i) Calculate replication factor for the cluster of size 7. Calculate number of channels per cell & system capacity.
   ii) Calculate above parameter if the cluster size is decreased from 7 to 4 and comment on result obtained

Section II

Q.4 Attempt the following (Any Four) **16**

a) Explain features of 5G.
b) Explain mobile call origination sequences in GSM.
c) Explain speech coding in GSM.
d) Draw & Explain GSM architecture.
e) What are LTE channels? Explain.

Q.5 Attempt the following (Any Two) **12**

a) Explain GSM channels in details.
b) Explain 5G CN architecture. Compare between 4G and 5G.
c) Explain GSM identifiers in details.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Mobile Communication (BTN06708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) IMT-2000 is a digital mobile system that functions as _____.
a) Pager b) Cordless
c) Low earth orbit Satellites d) All

2) What does LTE stand for?
a) Level Telecom Advanced b) Long Terminal Advanced
c) Long Term Evolution d) Long Time Evolution.

3) For i=2, j=3 value of N is _____.
a) 12 b) 7
c) 19 d) None

4) For N=4, M=87, C=87000 chs, value of k is _____ chs/cell.
a) 143 b) 250
c) 255 d) None

5) The technique adopted to increase the system capacity and reduce co-channel interference is _____.
a) High power BTS
b) By installing the Omnidirectional antenna
c) Sectoring
d) None

6) The remote and sparsely populated areas will be covered by _____.
a) Microcell b) Macrocell
c) Picocell d) None of the above

7) Polarisation used in satellite communication is _____.
a) Horizontal polarisation b) Vertical polarisation
c) Circular polarisation d) None

8) Half duplex system for communication has communication in _____.
a) Communication in single direction
b) Communication in single direction at a time
c) Communication in both directions at the same time
d) None

9) MIN stands for _____.
a) Mobile Identification Number b) Mobile Internet
c) Mobility In Network d) None

10) Antenna down tilting refers to _____.
a) Focusing radio energy towards ground
b) Decreasing the strength of antenna
c) Decreasing the S/N ratio at the antenna input
d) All of the above

11) Dwell time is the time for _____.
a) A call within the cell b) Hand off
c) Waiting for channel allocation d) None of these

12) What is the chip rate of W-CDMA?
a) 1.2288 Mcps b) 3.84 Mcps
c) 270.833 Ksps d) 100 Mcps

13) The minimum spectrum allocation required for W-CDMA is ____ MHz
a) 2 b) 5
c) 500 d) 100

14) The type of access used in GSM technology is _____.
a) FDMA/TDMA b) CDMA
c) OFDMA d) None of the above

SLR-GF-355

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Mobile Communication (BTN06708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Explain Co-channel interference in detail.
b) What is Handoff? Explain different types of Handoffs?
c) What is diffraction? Explain Knife edge diffraction
d) What is Sectoring and Splitting? Explain.
e) Explain frequency reuse technique in cellular system.

Q.3 Attempt the following (Any Two) **12**

a) A spectrum of 33 MHz is allocated to a wireless FDD cellular system which uses two 25 KHz simplex channels to provide full duplex voice & control channel. Compute the number of channels available per cell if system uses- a) 4-cell reuse b) 7-cell reuse & c) 12-cell reuse. If 1MHz of the allocated spectrum is dedicated to control channels. Determine an equitable distribution of control channels & voice channels in each cell for each of the three systems.
b) Explain and derive an expression for Two ground reflection Model. Prove path difference = (2.ht.hr)/d
c) Consider service area of a cellular system is 6300 km2, a total of 1001 radio channels are available for traffic handling and the area of one cell is 18 km2.
   i) Calculate replication factor for the cluster of size 7. Calculate number of channels per cell & system capacity.
   ii) Calculate above parameter if the cluster size is decreased from 7 to 4 and comment on result obtained

Section II

Q.4 Attempt the following (Any Four) **16**

a) Explain features of 5G.
b) Explain mobile call origination sequences in GSM.
c) Explain speech coding in GSM.
d) Draw & Explain GSM architecture.
e) What are LTE channels? Explain.

Q.5 Attempt the following (Any Two) **12**

a) Explain GSM channels in details.
b) Explain 5G CN architecture. Compare between 4G and 5G.
c) Explain GSM identifiers in details.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Mobile Communication (BTN06708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Antenna down tilting refers to _____.
a) Focusing radio energy towards ground
b) Decreasing the strength of antenna
c) Decreasing the S/N ratio at the antenna input
d) All of the above

2) Dwell time is the time for _____.
a) A call within the cell b) Hand off
c) Waiting for channel allocation d) None of these

3) What is the chip rate of W-CDMA?
a) 1.2288 Mcps b) 3.84 Mcps
c) 270.833 Ksps d) 100 Mcps

4) The minimum spectrum allocation required for W-CDMA is ____ MHz
a) 2 b) 5
c) 500 d) 100

5) The type of access used in GSM technology is _____.
a) FDMA/TDMA b) CDMA
c) OFDMA d) None of the above

6) IMT-2000 is a digital mobile system that functions as _____.
a) Pager b) Cordless
c) Low earth orbit Satellites d) All

7) What does LTE stand for?
a) Level Telecom Advanced b) Long Terminal Advanced
c) Long Term Evolution d) Long Time Evolution.

8) For i=2, j=3 value of N is _____.
a) 12 b) 7
c) 19 d) None

9) For N=4, M=87, C=87000 chs, value of k is _____ chs/cell.
a) 143 b) 250
c) 255 d) None

10) The technique adopted to increase the system capacity and reduce co-channel interference is _____.
a) High power BTS
b) By installing the Omnidirectional antenna
c) Sectoring
d) None

11) The remote and sparsely populated areas will be covered by _____.
a) Microcell b) Macrocell
c) Picocell d) None of the above

12) Polarisation used in satellite communication is _____.
a) Horizontal polarisation b) Vertical polarisation
c) Circular polarisation d) None

13) Half duplex system for communication has communication in _____.
a) Communication in single direction
b) Communication in single direction at a time
c) Communication in both directions at the same time
d) None

14) MIN stands for _____.
a) Mobile Identification Number b) Mobile Internet
c) Mobility In Network d) None

SLR-GF-355

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Mobile Communication (BTN06708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Explain Co-channel interference in detail.
b) What is Handoff? Explain different types of Handoffs?
c) What is diffraction? Explain Knife edge diffraction
d) What is Sectoring and Splitting? Explain.
e) Explain frequency reuse technique in cellular system.

Q.3 Attempt the following (Any Two) **12**

a) A spectrum of 33 MHz is allocated to a wireless FDD cellular system which uses two 25 KHz simplex channels to provide full duplex voice & control channel. Compute the number of channels available per cell if system uses- a) 4-cell reuse b) 7-cell reuse & c) 12-cell reuse. If 1MHz of the allocated spectrum is dedicated to control channels. Determine an equitable distribution of control channels & voice channels in each cell for each of the three systems.
b) Explain and derive an expression for Two ground reflection Model. Prove path difference = (2.ht.hr)/d
c) Consider service area of a cellular system is 6300 km2, a total of 1001 radio channels are available for traffic handling and the area of one cell is 18 km2.
   i) Calculate replication factor for the cluster of size 7. Calculate number of channels per cell & system capacity.
   ii) Calculate above parameter if the cluster size is decreased from 7 to 4 and comment on result obtained

Section II

Q.4 Attempt the following (Any Four) **16**

a) Explain features of 5G.
b) Explain mobile call origination sequences in GSM.
c) Explain speech coding in GSM.
d) Draw & Explain GSM architecture.
e) What are LTE channels? Explain.

Q.5 Attempt the following (Any Two) **12**

a) Explain GSM channels in details.
b) Explain 5G CN architecture. Compare between 4G and 5G.
c) Explain GSM identifiers in details.

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Artificial Intelligence is about _____.
a) Playing a game on Computer
b) Making a machine Intelligent
c) Programming on Machine with your own Intelligence
d) Putting your intelligence in Machine.

2) The main tasks of an AI agent are _____.
a) Input and Output
b) Moment and Humanly Actions
c) Perceiving, thinking, and acting on the environment
d) None of the above

3) The main function of problem-solving agent is to _____
a) Solve the given problem and reach the goal
b) Find out which sequence of action will get it to the goal state.
c) Both a & b
d) None of these

4) The component of an Expert system is _____.
a) Knowledge Base b) Inference Engine
c) User interface d) All of these

5) The inference engine works on _____.
a) Forward Chaining b) Backward Chaining
c) Both A and B d) None of these

6) Web Crawler is an example of _____.
a) Intelligent Agent b) Problem-solving Agent
c) Simple reflex Agent d) Model-based Agent

7) Which of the given statement is true for Conditional Probability?
a) Conditional Probability gives 100% accurate results.
b) Conditional Probability can be applied to a single event.
c) Conditional Probability has no effect or relevance on independent events.
d) None of the above.

8) If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the _____.
a) Mobile b) Non-Servo
c) Open Loop d) Intelligent

9) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihood d) All of these

10) Who is known as the -Father of Al"?
a) Fisher Ada b) Alan Turing
c) John McCarthy d) Allen Newell

11) Which term describes the common-sense of the judgmental part of problem-solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

12) An Al agent perceives and acts upon the environment using ____.
a) Sensors b) Perceiver
c) Actuators d) Both A and C

13) Which Al technique enables the computers to understand the associations and relationships between objects and events?
a) Heuristic Processing b) Cognitive Science
c) Relative Symbolism d) Pattern Matching

14) A technique that was developed to determine whether a machine could or could not demonstrate the artificial intelligence known as the ____.
a) Boolean Algebra b) Turing Test
c) Logarithm d) Algorithm

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Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four **16**

a) State & Explain different types of Intelligent Agents.
b) Explain the various Branches of AI in brief.
c) Explain Man Vs Computers in brief.
d) Explain the Visual perception in AI in brief.
e) Explain the Pattern Recognition in brief.

Q.3 Solve Any Two **12**

a) Explain the major components of Intelligent System.
b) Explain the Knowledge, acquisition, Expert system tools in brief.
c) Explain the Basic architecture of an Expert system

Section – II

Q.4 Solve Any Four **16**

a) Explain the Language Models of NLP in brief.
b) Explain the Planning Uncertain in Robotics.
c) Explain the Augmented Grammars and Semantic in brief.
d) Discuss the Robotic Perception in brief.
e) Explain the Passive Reinforcement Learning in brief.

Q.5 Solve Any Two. **12**

a) Explain the Speech Recognition and Machine Translation in NLP in detail.
b) Explain the Robotic Software Architectures in brief.
c) Explain the Applications of Reinforcement Learning in brief.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the _____.
a) Mobile b) Non-Servo
c) Open Loop d) Intelligent

2) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihood d) All of these

3) Who is known as the -Father of Al"?
a) Fisher Ada b) Alan Turing
c) John McCarthy d) Allen Newell

4) Which term describes the common-sense of the judgmental part of problem-solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

5) An Al agent perceives and acts upon the environment using ____.
a) Sensors b) Perceiver
c) Actuators d) Both A and C

6) Which Al technique enables the computers to understand the associations and relationships between objects and events?
a) Heuristic Processing b) Cognitive Science
c) Relative Symbolism d) Pattern Matching

7) A technique that was developed to determine whether a machine could or could not demonstrate the artificial intelligence known as the ____.
a) Boolean Algebra b) Turing Test
c) Logarithm d) Algorithm

8) Artificial Intelligence is about _____.
   a) Playing a game on Computer
   b) Making a machine Intelligent
   c) Programming on Machine with your own Intelligence
   d) Putting your intelligence in Machine.

9) The main tasks of an AI agent are _____.
   a) Input and Output
   b) Moment and Humanly Actions
   c) Perceiving, thinking, and acting on the environment
   d) None of the above

10) The main function of problem-solving agent is to _____
   a) Solve the given problem and reach the goal
   b) Find out which sequence of action will get it to the goal state.
   c) Both a & b
   d) None of these

11) The component of an Expert system is _____.
   a) Knowledge Base b) Inference Engine
   c) User interface d) All of these

12) The inference engine works on _____.
   a) Forward Chaining b) Backward Chaining
   c) Both A and B d) None of these

13) Web Crawler is an example of _____.
   a) Intelligent Agent b) Problem-solving Agent
   c) Simple reflex Agent d) Model-based Agent

14) Which of the given statement is true for Conditional Probability?
   a) Conditional Probability gives 100% accurate results.
   b) Conditional Probability can be applied to a single event.
   c) Conditional Probability has no effect or relevance on independent events.
   d) None of the above.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four **16**

a) State & Explain different types of Intelligent Agents.
b) Explain the various Branches of AI in brief.
c) Explain Man Vs Computers in brief.
d) Explain the Visual perception in AI in brief.
e) Explain the Pattern Recognition in brief.

Q.3 Solve Any Two **12**

a) Explain the major components of Intelligent System.
b) Explain the Knowledge, acquisition, Expert system tools in brief.
c) Explain the Basic architecture of an Expert system

Section – II

Q.4 Solve Any Four **16**

a) Explain the Language Models of NLP in brief.
b) Explain the Planning Uncertain in Robotics.
c) Explain the Augmented Grammars and Semantic in brief.
d) Discuss the Robotic Perception in brief.
e) Explain the Passive Reinforcement Learning in brief.

Q.5 Solve Any Two. **12**

a) Explain the Speech Recognition and Machine Translation in NLP in detail.
b) Explain the Robotic Software Architectures in brief.
c) Explain the Applications of Reinforcement Learning in brief.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which term describes the common-sense of the judgmental part of problem-solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

2) An AI agent perceives and acts upon the environment using ____.
a) Sensors b) Perceiver
c) Actuators d) Both A and C

3) Which AI technique enables the computers to understand the associations and relationships between objects and events?
a) Heuristic Processing b) Cognitive Science
c) Relative Symbolism d) Pattern Matching

4) A technique that was developed to determine whether a machine could or could not demonstrate the artificial intelligence known as the ____.
a) Boolean Algebra b) Turing Test
c) Logarithm d) Algorithm

5) Artificial Intelligence is about _____.
a) Playing a game on Computer
b) Making a machine Intelligent
c) Programming on Machine with your own Intelligence
d) Putting your intelligence in Machine.

6) The main tasks of an AI agent are _____.
a) Input and Output
b) Moment and Humanly Actions
c) Perceiving, thinking, and acting on the environment
d) None of the above

7) The main function of problem-solving agent is to _____
a) Solve the given problem and reach the goal
b) Find out which sequence of action will get it to the goal state.
c) Both a & b
d) None of these

8) The component of an Expert system is _____.
a) Knowledge Base b) Inference Engine
c) User interface d) All of these

9) The inference engine works on _____.
a) Forward Chaining b) Backward Chaining
c) Both A and B d) None of these

10) Web Crawler is an example of _____.
a) Intelligent Agent b) Problem-solving Agent
c) Simple reflex Agent d) Model-based Agent

11) Which of the given statement is true for Conditional Probability?
a) Conditional Probability gives 100% accurate results.
b) Conditional Probability can be applied to a single event.
c) Conditional Probability has no effect or relevance on independent events.
d) None of the above.

12) If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the _____.
a) Mobile b) Non-Servo
c) Open Loop d) Intelligent

13) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihood d) All of these

14) Who is known as the -Father of Al"?
a) Fisher Ada b) Alan Turing
c) John McCarthy d) Allen Newell

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four **16**

a) State & Explain different types of Intelligent Agents.
b) Explain the various Branches of AI in brief.
c) Explain Man Vs Computers in brief.
d) Explain the Visual perception in AI in brief.
e) Explain the Pattern Recognition in brief.

Q.3 Solve Any Two **12**

a) Explain the major components of Intelligent System.
b) Explain the Knowledge, acquisition, Expert system tools in brief.
c) Explain the Basic architecture of an Expert system

Section – II

Q.4 Solve Any Four **16**

a) Explain the Language Models of NLP in brief.
b) Explain the Planning Uncertain in Robotics.
c) Explain the Augmented Grammars and Semantic in brief.
d) Discuss the Robotic Perception in brief.
e) Explain the Passive Reinforcement Learning in brief.

Q.5 Solve Any Two. **12**

a) Explain the Speech Recognition and Machine Translation in NLP in detail.
b) Explain the Robotic Software Architectures in brief.
c) Explain the Applications of Reinforcement Learning in brief.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Web Crawler is an example of _____.
a) Intelligent Agent b) Problem-solving Agent
c) Simple reflex Agent d) Model-based Agent

2) Which of the given statement is true for Conditional Probability?
a) Conditional Probability gives 100% accurate results.
b) Conditional Probability can be applied to a single event.
c) Conditional Probability has no effect or relevance on independent events.
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3) If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the _____.
a) Mobile b) Non-Servo
c) Open Loop d) Intelligent

4) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihood d) All of these

5) Who is known as the -Father of Al"?
a) Fisher Ada b) Alan Turing
c) John McCarthy d) Allen Newell

6) Which term describes the common-sense of the judgmental part of problem-solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

7) An Al agent perceives and acts upon the environment using ____.
a) Sensors b) Perceiver
c) Actuators d) Both A and C

8) Which Al technique enables the computers to understand the associations and relationships between objects and events?
a) Heuristic Processing b) Cognitive Science
c) Relative Symbolism d) Pattern Matching

9) A technique that was developed to determine whether a machine could or could not demonstrate the artificial intelligence known as the ____.

a) Boolean Algebra b) Turing Test
c) Logarithm d) Algorithm

10) Artificial Intelligence is about _____.

a) Playing a game on Computer
b) Making a machine Intelligent
c) Programming on Machine with your own Intelligence
d) Putting your intelligence in Machine.

11) The main tasks of an Al agent are _____.

a) Input and Output
b) Moment and Humanly Actions
c) Perceiving, thinking, and acting on the environment
d) None of the above

12) The main function of problem-solving agent is to _____

a) Solve the given problem and reach the goal
b) Find out which sequence of action will get it to the goal state.
c) Both a & b
d) None of these

13) The component of an Expert system is _____.

a) Knowledge Base b) Inference Engine
c) User interface d) All of these

14) The inference engine works on _____.

a) Forward Chaining b) Backward Chaining
c) Both A and B d) None of these

SLR-GF-357

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
AI Applications (BTN06710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four **16**

a) State & Explain different types of Intelligent Agents.
b) Explain the various Branches of AI in brief.
c) Explain Man Vs Computers in brief.
d) Explain the Visual perception in AI in brief.
e) Explain the Pattern Recognition in brief.

Q.3 Solve Any Two **12**

a) Explain the major components of Intelligent System.
b) Explain the Knowledge, acquisition, Expert system tools in brief.
c) Explain the Basic architecture of an Expert system

Section – II

Q.4 Solve Any Four **16**

a) Explain the Language Models of NLP in brief.
b) Explain the Planning Uncertain in Robotics.
c) Explain the Augmented Grammars and Semantic in brief.
d) Discuss the Robotic Perception in brief.
e) Explain the Passive Reinforcement Learning in brief.

Q.5 Solve Any Two. **12**

a) Explain the Speech Recognition and Machine Translation in NLP in detail.
b) Explain the Robotic Software Architectures in brief.
c) Explain the Applications of Reinforcement Learning in brief.

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science- Business Intelligence (BTN06713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is a broad category of applications and technologies for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions.
a) Data Mart b) Data mining
c) Business intelligence d) Artificial intelligence

2) _____ is a system where operations like data extraction, transformation and loading operations are executed.
a) Data staging b) Data integration
c) ETL d) Data mart

3) A _____ can be considered as a functional or departmental data warehouse of a smaller size and a more specific type than the overall company data warehouse.
a) Warehouse b) Database
c) Data mart d) Data Table

4) _____ is the outcome of extraction and processing activities on data.
a) Knowledge b) Information
c) Data d) Raw Data

5) Decision support systems are essential for _____.
a) Day-to-day operation of an organization
b) Providing statutory information.
c) Top level strategic decision making.
d) Ensuring that organizations are profitable.

6) Full form of OLAP:
a) Online analytical process b) Online analog process
c) Online anal process d) Online analogy process

7) i) A decision support system helps in decision making but does not necessarily give a decision itself.
ii) decision support system is a computer-based application that collects organizes and analyses business data to facilitate quality business decision making for management, operations, and planning.
a) only i) is correct
b) only ii) is correct
c) both are correct.
d) both are wrong.

8) What kind of chart is described as an enhanced version of a scatter plot?
a) heat map
b) bullet
c) pie chart
d) bubble chart

9) Which term refers to the process of presenting data in a visual format to facilitate understanding and decision-making?
a) Business Intelligence
b) Data Visualization
c) Data Analysis
d) Report Generation

10) Which of the following best describes relational marketing in the context of business intelligence (BI) applications?
a) Focusing on one-time sales and transactions
b) Building and maintaining long-term customer relationships
c) Analyzing financial data for marketing purposes
d) Implementing a single customer management platform

11) _____ is a performance management tool that recapitulates an organization's performance from several standpoints on a single page.
a) Dashboard
b) Data Cube
c) Balanced Scorecard
d) All of the mentioned

12) Which of the following statements best describes Six Sigma?
a) A quality control program
b) A process improvement methodology
c) A customer satisfaction initiative
d) A human resource management strategy

13) Which type of models are commonly used for logistics planning to determine the most cost-effective distribution routes and schedules?
a) Descriptive models
b) Predictive models
c) Optimization models
d) Diagnostic models

14) A _____ encompasses all activities associated with the flow and transformation of goods from the raw material stage, through to the end user, as well as the associated information flows.
a) Production line
b) Supply chain
c) Marketing channel
d) Warehouse

Seat No.	

Set **P**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science- Business Intelligence (BTN06713)

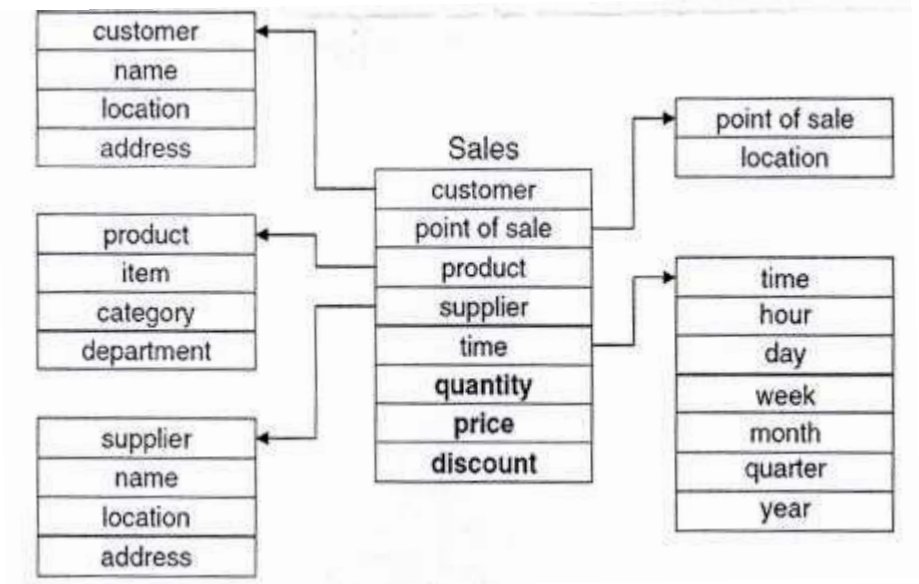
Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain importance of effective & timely decision.
b) What is data mining? List the real life application of data mining.
c) What are dimension tables? What are Fact Tables? What is the schema in the following diagram? Identify the fact tables and dimension tables in this schema.



d) What is decision support system (DSS)? Explain representation of DSS in brief.
e) What is ETL? Explain the process of extraction, transformation and loading of data in Data warehouse.

Q.3 Attempt Any Two. **12**

a) Explain the process of data mining with suitable diagram.
b) Describe the structure of Decision Support System with diagram
c) Explain business intelligence architecture with a neat diagram.

Section – II

Q.4 Attempt Any Four. **16**

a) What is a Business report? Outline the main components of a business reporting system.

b) Describe the concept of cross selling and up selling on optimization models for logistics planning.

c) Describe the objectives of salesforce management.

d) What is supply chain? In what ways can supply chain optimization be tailored to address specific challenges and demands encountered in logistic planning?

e) List and briefly describe the four phases of the business performance management cycle.

Q.5 Attempt Any Two. **12**

a) What is relational marketing? Describe the different components in an environment for relational marketing analysis.

b) What is revenue management systems? Describe the decision processes in revenue management.

c) Describe the use of bar charts, pie charts, bubble chart, line charts and scatter plot in data visualization with examples of situations where each type of chart is most effective.

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science- Business Intelligence (BTN06713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What kind of chart is described as an enhanced version of a scatter plot?
a) heat map b) bullet
c) pie chart d) bubble chart

2) Which term refers to the process of presenting data in a visual format to facilitate understanding and decision-making?
a) Business Intelligence b) Data Visualization
c) Data Analysis d) Report Generation

3) Which of the following best describes relational marketing in the context of business intelligence (BI) applications?
a) Focusing on one-time sales and transactions
b) Building and maintaining long-term customer relationships
c) Analyzing financial data for marketing purposes
d) Implementing a single customer management platform

4) _____ is a performance management tool that recapitulates an organization's performance from several standpoints on a single page.
a) Dashboard b) Data Cube
c) Balanced Scorecard d) All of the mentioned

5) Which of the following statements best describes Six Sigma?
a) A quality control program
b) A process improvement methodology
c) A customer satisfaction initiative
d) A human resource management strategy

6) Which type of models are commonly used for logistics planning to determine the most cost-effective distribution routes and schedules?
a) Descriptive models b) Predictive models
c) Optimization models d) Diagnostic models

7) A _____ encompasses all activities associated with the flow and transformation of goods from the raw material stage, through to the end user, as well as the associated information flows.
a) Production line b) Supply chain
c) Marketing channel d) Warehouse

8) _____ is a broad category of applications and technologies for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions.

a) Data Mart
b) Data mining
c) Business intelligence
d) Artificial intelligence

9) _____ is a system where operations like data extraction, transformation and loading operations are executed.

a) Data staging
b) Data integration
c) ETL
d) Data mart

10) A _____ can be considered as a functional or departmental data warehouse of a smaller size and a more specific type than the overall company data warehouse.

a) Warehouse
b) Database
c) Data mart
d) Data Table

11) _____ is the outcome of extraction and processing activities on data.

a) Knowledge
b) Information
c) Data
d) Raw Data

12) Decision support systems are essential for _____.

a) Day-to-day operation of an organization
b) Providing statutory information.
c) Top level strategic decision making.
d) Ensuring that organizations are profitable.

13) Full form of OLAP:

a) Online analytical process
b) Online analog process
c) Online anal process
d) Online analogy process

14)

i) A decision support system helps in decision making but does not necessarily give a decision itself.
ii) decision support system is a computer-based application that collects organizes and analyses business data to facilitate quality business decision making for management, operations, and planning.

a) only i) is correct
b) only ii) is correct
c) both are correct.
d) both are wrong.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science- Business Intelligence (BTN06713)

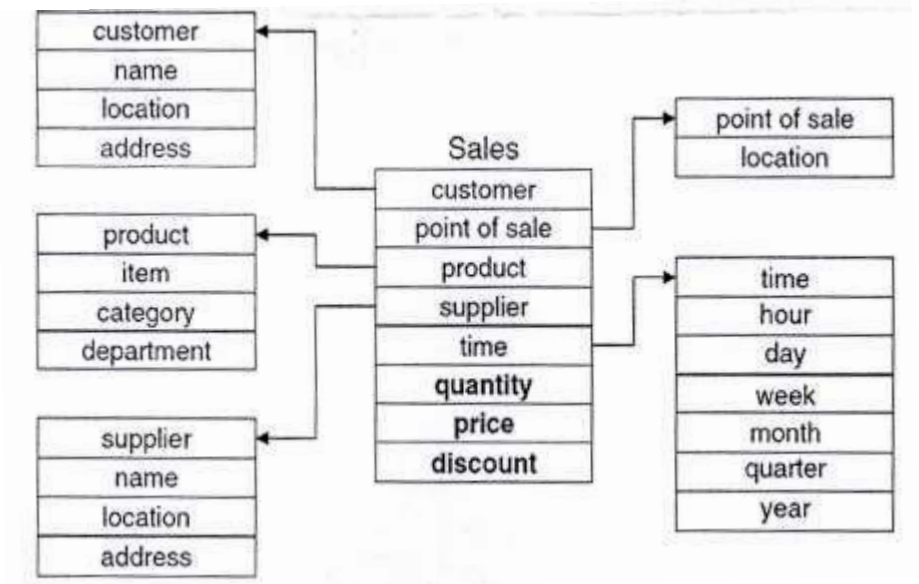
Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain importance of effective & timely decision.
b) What is data mining? List the real life application of data mining.
c) What are dimension tables? What are Fact Tables? What is the schema in the following diagram? Identify the fact tables and dimension tables in this schema.



d) What is decision support system (DSS)? Explain representation of DSS in brief.
e) What is ETL? Explain the process of extraction, transformation and loading of data in Data warehouse.

Q.3 Attempt Any Two. **12**

a) Explain the process of data mining with suitable diagram.
b) Describe the structure of Decision Support System with diagram
c) Explain business intelligence architecture with a neat diagram.

Section – II

Q.4 Attempt Any Four. **16**

a) What is a Business report? Outline the main components of a business reporting system.

b) Describe the concept of cross selling and up selling on optimization models for logistics planning.

c) Describe the objectives of salesforce management.

d) What is supply chain? In what ways can supply chain optimization be tailored to address specific challenges and demands encountered in logistic planning?

e) List and briefly describe the four phases of the business performance management cycle.

Q.5 Attempt Any Two. **12**

a) What is relational marketing? Describe the different components in an environment for relational marketing analysis.

b) What is revenue management systems? Describe the decision processes in revenue management.

c) Describe the use of bar charts, pie charts, bubble chart, line charts and scatter plot in data visualization with examples of situations where each type of chart is most effective.

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science- Business Intelligence (BTN06713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is a performance management tool that recapitulates an organization's performance from several standpoints on a single page.
a) Dashboard b) Data Cube
c) Balanced Scorecard d) All of the mentioned

2) Which of the following statements best describes Six Sigma?
a) A quality control program
b) A process improvement methodology
c) A customer satisfaction initiative
d) A human resource management strategy

3) Which type of models are commonly used for logistics planning to determine the most cost-effective distribution routes and schedules?
a) Descriptive models b) Predictive models
c) Optimization models d) Diagnostic models

4) A _____ encompasses all activities associated with the flow and transformation of goods from the raw material stage, through to the end user, as well as the associated information flows.
a) Production line b) Supply chain
c) Marketing channel d) Warehouse

5) _____ is a broad category of applications and technologies for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions.
a) Data Mart b) Data mining
c) Business intelligence d) Artificial intelligence

6) _____ is a system where operations like data extraction, transformation and loading operations are executed.
a) Data staging b) Data integration
c) ETL d) Data mart

7) A _____ can be considered as a functional or departmental data warehouse of a smaller size and a more specific type than the overall company data warehouse.
a) Warehouse b) Database
c) Data mart d) Data Table

8) _____ is the outcome of extraction and processing activities on data.
a) Knowledge b) Information
c) Data d) Raw Data

9) Decision support systems are essential for _____.
a) Day-to-day operation of an organization
b) Providing statutory information.
c) Top level strategic decision making.
d) Ensuring that organizations are profitable.

10) Full form of OLAP:
a) Online analytical process b) Online analog process
c) Online anal process d) Online analogy process

11) i) A decision support system helps in decision making but does not necessarily give a decision itself.
ii) decision support system is a computer-based application that collects organizes and analyses business data to facilitate quality business decision making for management, operations, and planning.
a) only i) is correct b) only ii) is correct
c) both are correct. d) both are wrong.

12) What kind of chart is described as an enhanced version of a scatter plot?
a) heat map b) bullet
c) pie chart d) bubble chart

13) Which term refers to the process of presenting data in a visual format to facilitate understanding and decision-making?
a) Business Intelligence b) Data Visualization
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14) Which of the following best describes relational marketing in the context of business intelligence (BI) applications?
a) Focusing on one-time sales and transactions
b) Building and maintaining long-term customer relationships
c) Analyzing financial data for marketing purposes
d) Implementing a single customer management platform

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science- Business Intelligence (BTN06713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain importance of effective & timely decision.
b) What is data mining? List the real life application of data mining.
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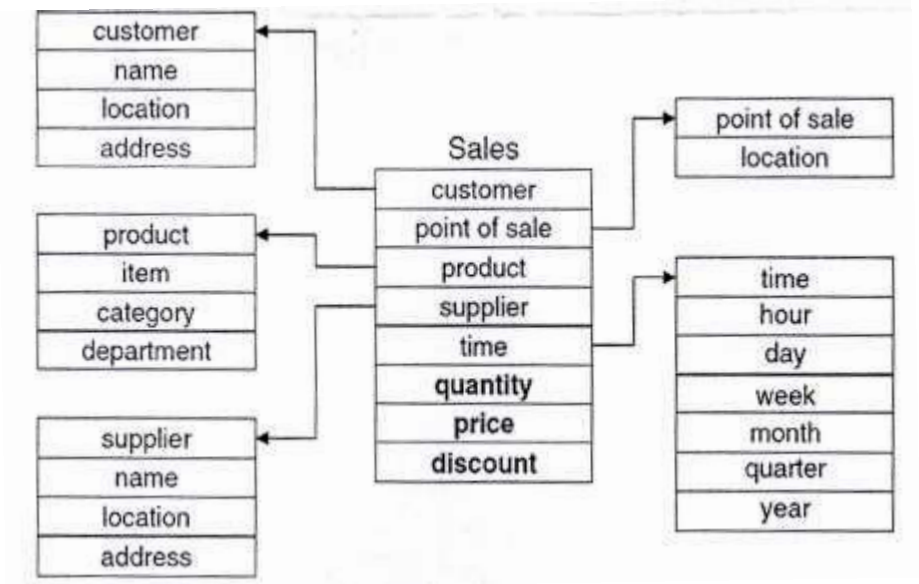

d) What is decision support system (DSS)? Explain representation of DSS in brief.
e) What is ETL? Explain the process of extraction, transformation and loading of data in Data warehouse.

Q.3 Attempt Any Two. **12**

a) Explain the process of data mining with suitable diagram.
b) Describe the structure of Decision Support System with diagram
c) Explain business intelligence architecture with a neat diagram.

Section – II

Q.4 Attempt Any Four. **16**

a) What is a Business report? Outline the main components of a business reporting system.

b) Describe the concept of cross selling and up selling on optimization models for logistics planning.

c) Describe the objectives of salesforce management.

d) What is supply chain? In what ways can supply chain optimization be tailored to address specific challenges and demands encountered in logistic planning?

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c) Describe the use of bar charts, pie charts, bubble chart, line charts and scatter plot in data visualization with examples of situations where each type of chart is most effective.

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science- Business Intelligence (BTN06713)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

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c) Online anal process d) Online analogy process

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c) Marketing channel
d) Warehouse

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d) Data Table

13) _____ is the outcome of extraction and processing activities on data.
a) Knowledge
b) Information
c) Data
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14) Decision support systems are essential for _____.
a) Day-to-day operation of an organization
b) Providing statutory information.
c) Top level strategic decision making.
d) Ensuring that organizations are profitable.

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Science- Business Intelligence (BTN06713)

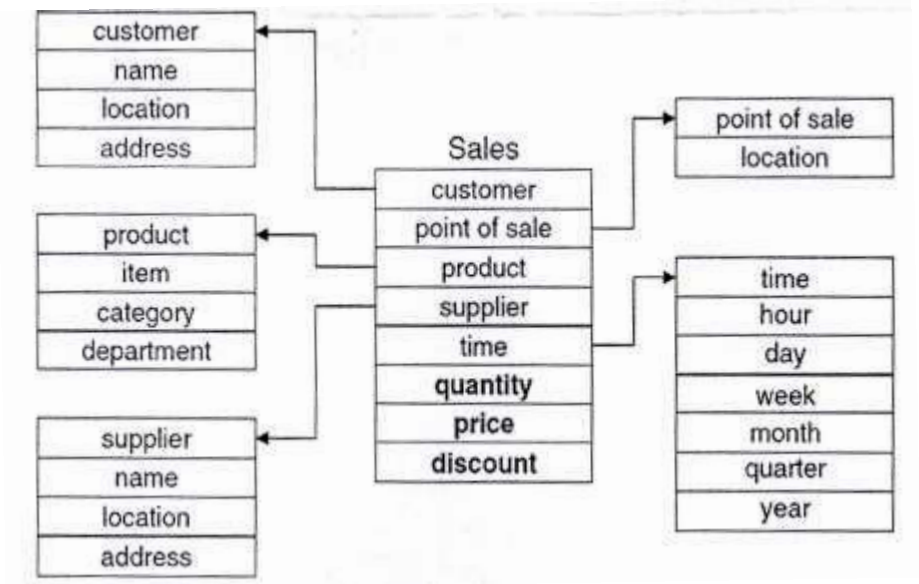
Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain importance of effective & timely decision.
b) What is data mining? List the real life application of data mining.
c) What are dimension tables? What are Fact Tables? What is the schema in the following diagram? Identify the fact tables and dimension tables in this schema.



d) What is decision support system (DSS)? Explain representation of DSS in brief.
e) What is ETL? Explain the process of extraction, transformation and loading of data in Data warehouse.

Q.3 Attempt Any Two. **12**

a) Explain the process of data mining with suitable diagram.
b) Describe the structure of Decision Support System with diagram
c) Explain business intelligence architecture with a neat diagram.

Section – II

Q.4 Attempt Any Four. **16**

a) What is a Business report? Outline the main components of a business reporting system.

b) Describe the concept of cross selling and up selling on optimization models for logistics planning.

c) Describe the objectives of salesforce management.

d) What is supply chain? In what ways can supply chain optimization be tailored to address specific challenges and demands encountered in logistic planning?

e) List and briefly describe the four phases of the business performance management cycle.

Q.5 Attempt Any Two. **12**

a) What is relational marketing? Describe the different components in an environment for relational marketing analysis.

b) What is revenue management systems? Describe the decision processes in revenue management.

c) Describe the use of bar charts, pie charts, bubble chart, line charts and scatter plot in data visualization with examples of situations where each type of chart is most effective.

SLR-GF-359

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Machine Learning (197044701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page No 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Identify the type of learning in which labeled training data is used?
a) Semi unsupervised learning b) Supervised learning
c) Reinforcement learning d) Unsupervised learning

2) Which Machine Learning models are trained to make a series of decisions based on rewards and feedback they receive for their actions?
a) Supervised Learning b) Unsupervised Learning
c) Reinforcement Learning d) All of these

3) Machine learning is a subset of which of the following?
a) Artificial intelligence b) Deep learning
c) Data learning d) None of the above

4) The decision tree algorithm reaches its destination using _____.
a) Single test b) Two tests
c) Sequence of tests d) No tests

5) Which of the following are common classes of problems in machine learning?
a) Regression b) Classification
c) Clustering d) All of the above

6) Back propagation is a learning technique that adjusts weight in the neural network by propagating weight changes _____.
a) Forward from source to sink
b) Backward from sink to source
c) Forward from source to hidden nodes
d) Backward from sink to hidden nodes

7) Identify the difficulties with the k-nearest neighbor algorithm?
a) Curse of dimensionality
b) Calculate the distance of the test case from all training cases
c) Both a) and b)
d) None of the above

8) What causes over fitting?
- a) Large number of features in data
- b) Noise in the data
- c) Both a and b
- d) None of these

9) A type of ANN system based on a unit called?
- a) Perceptron
- b) Cell
- c) Pigment
- d) Layer

10) How do you handle missing or corrupted data in a dataset?
- a) Drop missing rows or columns
- b) Replace missing values with mean/median/mode
- c) Assign a unique category to missing values
- d) All of the above

11) Which of the following distance measure do we use in case of categorical variable?
- a) Hamming distance
- b) Euclidean distance
- c) Manhattan distance
- d) All of the above

12) Which of the following is true about Naive Bayes?
- a) Assumes that all the features in a dataset are equally important
- b) Assumes that all the features in a dataset are independent
- c) Both a) and b)
- d) None of the above

13) Given an image of a person, _____.
- i) predicting the height of that person
- ii) finding the person is happy, angry or sad.

- a) (i) is classification while (ii) is regression problem
- b) (i) is regression while (ii) is classification problem
- c) Both are classification problems
- d) Both are regression problems

14) A subset of machine learning that involves systems that think and learn like humans using artificial neural networks.
- a) Artificial Intelligence
- b) Machine Learning
- c) Deep Learning
- d) All of these

Seat No.	

Set | P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Machine Learning (197044701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section –I

Q.2 Solve any four. **16**

a) Explain the various stages involved in designing a learning system.
b) Differentiate between Training data and Testing Data.
c) What do you meant by feature transformation and feature construction?
d) What is Reinforcement learning? Explain in details.
e) What do you meant by least square method? Explain least square method in the context of linear regression.

Q.3 a) What do you meant by support vectors and support vector machine? **06**

b) Solve any ONE **06**

1) What are different metrics of classification performance evaluation?
2) Describe in detail any two of applications machine learning.

Section – II

Q.4 Answer the following (Any Four) **16**

a) Describe back propagation algorithm of ANN.
b) Explain KNN algorithm.
c) Compare regression and classification with real life examples.
d) Explain in detail Naïve Bayes classifier.
e) Describe maximum likelihood estimation.

Q.5 a) Describe in detail the distance-based model of machine learning. **06**

b) Solve any ONE **06**

1) Explain the k-Means Algorithm with an example.
2) Describe Virtual Personal Assistant as an application of Machine learning.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Machine Learning (197044701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What causes over fitting?
a) Large number of features in data
b) Noise in the data
c) Both a and b
d) None of these

2) A type of ANN system based on a unit called?
a) Perceptron b) Cell
c) Pigment d) Layer

3) How do you handle missing or corrupted data in a dataset?
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a) Artificial Intelligence b) Machine Learning
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10) Machine learning is a subset of which of the following?
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11) The decision tree algorithm reaches its destination using _____.
a) Single test b) Two tests
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a) Regression b) Classification
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b) Backward from sink to source
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14) Identify the difficulties with the k-nearest neighbor algorithm?
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b) Calculate the distance of the test case from all training cases
c) Both a) and b)
d) None of the above

Seat No.	

Set | Q

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Machine Learning (197044701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section –I

Q.2 Solve any four. **16**

a) Explain the various stages involved in designing a learning system.
b) Differentiate between Training data and Testing Data.
c) What do you meant by feature transformation and feature construction?
d) What is Reinforcement learning? Explain in details.
e) What do you meant by least square method? Explain least square method in the context of linear regression.

Q.3 a) What do you meant by support vectors and support vector machine? **06**

b) Solve any ONE **06**

1) What are different metrics of classification performance evaluation?
2) Describe in detail any two of applications machine learning.

Section – II

Q.4 Answer the following (Any Four) **16**

a) Describe back propagation algorithm of ANN.
b) Explain KNN algorithm.
c) Compare regression and classification with real life examples.
d) Explain in detail Naïve Bayes classifier.
e) Describe maximum likelihood estimation.

Q.5 a) Describe in detail the distance-based model of machine learning. **06**

b) Solve any ONE **06**

1) Explain the k-Means Algorithm with an example.
2) Describe Virtual Personal Assistant as an application of Machine learning.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Machine Learning (197044701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page No 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following distance measure do we use in case of categorical variable?
a) Hamming distance b) Euclidean distance
c) Manhattan distance d) All of the above

2) Which of the following is true about Naive Bayes?
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c) Both a and b
d) None of these

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a) Perceptron b) Cell
c) Pigment d) Layer

14) How do you handle missing or corrupted data in a dataset?
a) Drop missing rows or columns
b) Replace missing values with mean/median/mode
c) Assign a unique category to missing values
d) All of the above

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Machine Learning (197044701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section –I

Q.2 Solve any four. **16**
- **a)** Explain the various stages involved in designing a learning system.
- **b)** Differentiate between Training data and Testing Data.
- **c)** What do you meant by feature transformation and feature construction?
- **d)** What is Reinforcement learning? Explain in details.
- **e)** What do you meant by least square method? Explain least square method in the context of linear regression.

Q.3 **a)** What do you meant by support vectors and support vector machine? **06**
b) Solve any ONE **06**
1) What are different metrics of classification performance evaluation?
2) Describe in detail any two of applications machine learning.

Section – II

Q.4 Answer the following (Any Four) **16**
- **a)** Describe back propagation algorithm of ANN.
- **b)** Explain KNN algorithm.
- **c)** Compare regression and classification with real life examples.
- **d)** Explain in detail Naïve Bayes classifier.
- **e)** Describe maximum likelihood estimation.

Q.5 **a)** Describe in detail the distance-based model of machine learning. **06**
b) Solve any ONE **06**
1) Explain the k-Means Algorithm with an example.
2) Describe Virtual Personal Assistant as an application of Machine learning.

Seat No.	

Set | S

Fourth Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Machine Learning (197044701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Back propagation is a learning technique that adjusts weight in the neural network by propagating weight changes _____.
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b) Calculate the distance of the test case from all training cases
c) Both a) and b)
d) None of the above

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c) Pigment d) Layer

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c) Assign a unique category to missing values
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c) Reinforcement Learning d) All of these

12) Machine learning is a subset of which of the following?
a) Artificial intelligence b) Deep learning
c) Data learning d) None of the above

13) The decision tree algorithm reaches its destination using _____.
a) Single test b) Two tests
c) Sequence of tests d) No tests

14) Which of the following are common classes of problems in machine learning?
a) Regression b) Classification
c) Clustering d) All of the above

SLR-GF-359

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Machine Learning (197044701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section –I

Q.2 Solve any four. **16**

a) Explain the various stages involved in designing a learning system.
b) Differentiate between Training data and Testing Data.
c) What do you meant by feature transformation and feature construction?
d) What is Reinforcement learning? Explain in details.
e) What do you meant by least square method? Explain least square method in the context of linear regression.

Q.3 a) What do you meant by support vectors and support vector machine? **06**

b) Solve any ONE **06**

1) What are different metrics of classification performance evaluation?
2) Describe in detail any two of applications machine learning.

Section – II

Q.4 Answer the following (Any Four) **16**

a) Describe back propagation algorithm of ANN.
b) Explain KNN algorithm.
c) Compare regression and classification with real life examples.
d) Explain in detail Naïve Bayes classifier.
e) Describe maximum likelihood estimation.

Q.5 a) Describe in detail the distance-based model of machine learning. **06**

b) Solve any ONE **06**

1) Explain the k-Means Algorithm with an example.
2) Describe Virtual Personal Assistant as an application of Machine learning.

SLR-GF-360

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (197044702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which network topology requires a central controller or hub?
a) Star b) Mesh
c) Ring d) Bus

2) Data communication system within a building or campus is _____.
a) MAN b) WAN
c) LAN d) PAN

3) Bluetooth is an example of _____.
a) wide area network b) local area network
c) virtual private network d) personal area network

4) A local telephone network is an example of a _____ network.
a) Packet switched b) Circuit switched
c) Bit switched d) Line switched

5) Sliding window protocol makes use of two types of frames namely _____.
a) Data frame b) Acknowledgement frame
c) both a & b d) none of these

6) What is the number of layers in the OSI model?
a) 4 b) 8
c) 7 d) 5

7) _____ refers to a family of IEEE standards dealing with local area network and metropolitan area network.
a) IEEE800 b) IEEE801
c) IEEE802 d) IEEE803

8) FTP stands for?
a) File Text Protocol b) File Transfer Protocol
c) Firm Transfer Protocol d) File Transplant Protocol

9) The network layer is concerned with _____ of data.
a) bits b) frames
c) packets d) bytes

10) A 4 byte IP address consists of _____.
a) only network address
b) only host address
c) network address & host address
d) network address & MAC address

11) Which of the following routing algorithms can be used for network layer design?
a) shortest path algorithm
b) distance vector routing
c) link state routing
d) all of the above

12) ICMP is primarily used for _____.
a) error and diagnostic functions
b) addressing
c) forwarding
d) routing

13) What is the main advantage of UDP?
a) More overload
b) Reliable
c) Low overhead
d) Fast

14) The size of an IP address in IPv6 is _____.
a) 4 bytes
b) 128 bits
c) 8 bytes
d) 100 bits

Seat No.	

Set **P**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (197044702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve Any Four **16**

a) Differentiate between ISO-OSI & TCP/IP model.
b) Explain CSMA/CD in detail.
c) What is framing? What are its different types? Explain any one in detail.
d) Classify different network devices and explain any two devices in detail.
e) Explain IEEE 802.4 in detail.

Q.3 Solve Any Two **12**

a) A bit stream 1100011011 is transmitted using the standard CRC method. The generator polynomial is $x_4 + x + 1$. What is the actual bit string transmitted?
b) Explain go-back-N & selective repeat techniques.
c) Give various categories of network & their application.

Section – II

Q.4 Solve Any Four terms **16**

a) UDP
b) ICMP
c) HTTP
d) TELNET
e) IPV6

Q.5 Solve Any Two. **12**

a) Draw TCP segment format. Explain various fields in it.
b) With suitable example, explain distance vector routing algorithm.
c) Explain three-way handshake.

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (197044702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

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SLR-GF-360

Seat No.	

Set Q

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ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (197044702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
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Section –I

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a) A bit stream 1100011011 is transmitted using the standard CRC method. The generator polynomial is $x_4 + x + 1$. What is the actual bit string transmitted?
b) Explain go-back-N & selective repeat techniques.
c) Give various categories of network & their application.

Section – II

Q.4 Solve Any Four terms **16**

a) UDP
b) ICMP
c) HTTP
d) TELNET
e) IPV6

Q.5 Solve Any Two. **12**

a) Draw TCP segment format. Explain various fields in it.
b) With suitable example, explain distance vector routing algorithm.
c) Explain three-way handshake.

SLR-GF-360

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (197044702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following routing algorithms can be used for network layer design?
a) shortest path algorithm b) distance vector routing
c) link state routing d) all of the above

2) ICMP is primarily used for _____.
a) error and diagnostic functions b) addressing
c) forwarding d) routing

3) What is the main advantage of UDP?
a) More overload b) Reliable
c) Low overhead d) Fast

4) The size of an IP address in IPv6 is _____.
a) 4 bytes b) 128 bits
c) 8 bytes d) 100 bits

5) Which network topology requires a central controller or hub?
a) Star b) Mesh
c) Ring d) Bus

6) Data communication system within a building or campus is _____.
a) MAN b) WAN
c) LAN d) PAN

7) Bluetooth is an example of _____.
a) wide area network b) local area network
c) virtual private network d) personal area network

8) A local telephone network is an example of a _____ network.
a) Packet switched b) Circuit switched
c) Bit switched d) Line switched

9) Sliding window protocol makes use of two types of frames namely _____.
a) Data frame b) Acknowledgement frame
c) both a & b d) none of these

10) What is the number of layers in the OSI model?
a) 4 b) 8
c) 7 d) 5

11) _____ refers to a family of IEEE standards dealing with local area network and metropolitan area network.
a) IEEE800 b) IEEE801
c) IEEE802 d) IEEE803

12) FTP stands for?
a) File Text Protocol b) File Transfer Protocol
c) Firm Transfer Protocol d) File Transplant Protocol

13) The network layer is concerned with _____ of data.
a) bits b) frames
c) packets d) bytes

14) A 4 byte IP address consists of _____.
a) only network address
b) only host address
c) network address & host address
d) network address & MAC address

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (197044702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve Any Four **16**

a) Differentiate between ISO-OSI & TCP/IP model.
b) Explain CSMA/CD in detail.
c) What is framing? What are its different types? Explain any one in detail.
d) Classify different network devices and explain any two devices in detail.
e) Explain IEEE 802.4 in detail.

Q.3 Solve Any Two **12**

a) A bit stream 1100011011 is transmitted using the standard CRC method. The generator polynomial is $x_4 + x + 1$. What is the actual bit string transmitted?
b) Explain go-back-N & selective repeat techniques.
c) Give various categories of network & their application.

Section – II

Q.4 Solve Any Four terms **16**

a) UDP
b) ICMP
c) HTTP
d) TELNET
e) IPV6

Q.5 Solve Any Two. **12**

a) Draw TCP segment format. Explain various fields in it.
b) With suitable example, explain distance vector routing algorithm.
c) Explain three-way handshake.

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (197044702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What is the number of layers in the OSI model?
a) 4 b) 8
c) 7 d) 5

2) _____ refers to a family of IEEE standards dealing with local area network and metropolitan area network.
a) IEEE800 b) IEEE801
c) IEEE802 d) IEEE803

3) FTP stands for?
a) File Text Protocol b) File Transfer Protocol
c) Firm Transfer Protocol d) File Transplant Protocol

4) The network layer is concerned with _____ of data.
a) bits b) frames
c) packets d) bytes

5) A 4 byte IP address consists of _____.
a) only network address
b) only host address
c) network address & host address
d) network address & MAC address

6) Which of the following routing algorithms can be used for network layer design?
a) shortest path algorithm b) distance vector routing
c) link state routing d) all of the above

7) ICMP is primarily used for _____.
a) error and diagnostic functions b) addressing
c) forwarding d) routing

8) What is the main advantage of UDP?
a) More overload b) Reliable
c) Low overhead d) Fast

9) The size of an IP address in IPv6 is _____.
a) 4 bytes b) 128 bits
c) 8 bytes d) 100 bits

10) Which network topology requires a central controller or hub?
a) Star b) Mesh
c) Ring d) Bus

11) Data communication system within a building or campus is _____.
a) MAN b) WAN
c) LAN d) PAN

12) Bluetooth is an example of _____.
a) wide area network b) local area network
c) virtual private network d) personal area network

13) A local telephone network is an example of a _____ network.
a) Packet switched b) Circuit switched
c) Bit switched d) Line switched

14) Sliding window protocol makes use of two types of frames namely _____.
a) Data frame b) Acknowledgement frame
c) both a & b d) none of these

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Data Communication (197044702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve Any Four **16**

a) Differentiate between ISO-OSI & TCP/IP model.
b) Explain CSMA/CD in detail.
c) What is framing? What are its different types? Explain any one in detail.
d) Classify different network devices and explain any two devices in detail.
e) Explain IEEE 802.4 in detail.

Q.3 Solve Any Two **12**

a) A bit stream 1100011011 is transmitted using the standard CRC method. The generator polynomial is $x_4 + x + 1$. What is the actual bit string transmitted?
b) Explain go-back-N & selective repeat techniques.
c) Give various categories of network & their application.

Section – II

Q.4 Solve Any Four terms **16**

a) UDP
b) ICMP
c) HTTP
d) TELNET
e) IPV6

Q.5 Solve Any Two. **12**

a) Draw TCP segment format. Explain various fields in it.
b) With suitable example, explain distance vector routing algorithm.
c) Explain three-way handshake.

SLR-GF-361

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Internet of Things (197044703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) Things in IoT support _____.
a) Actuation b) Sensing
c) Data Collection d) All of above

2) _____ can be considered as the skeleton for smart cities.
a) Buildings b) Transportation
c) Banks d) Sensors

3) In the current market scenario, IoT captures the maximum share in which one of these?
a) Industry b) Security
c) Healthcare d) Home automation

4) Embedded system is _____.
a) Reactive b) Real time
c) Proactive d) Reactive & Real time

5) Embedded systems are programmed using _____.
a) Machine Code
b) Low level
c) High level
d) Machine Code, Low level, High level

6) To force logic '0' on port pin P0.30, register is used in LPC1768.
a) FIO1CLR b) FIO2CLR
c) FIO0CLR d) FIO3CLR

7) LPC1768 has on-chip _____ KB flash memory and _____ KB SRAM.
a) 30, 16 b) 128, 32
c) 256, 40 d) 512, 64

8) Highest priority exception in ARM Cortex-M3 processor is _____.
a) Reset b) Hard fault
c) Bus fault d) NMI

9) LPC1768s maximum operating frequency is _____ MHz.
a) 100 b) 110
c) 12 d) 60

10) _____ supports a long-range communication.
a) ZigBee b) GPRS
c) Bluetooth d) All of the above

11) In MQTT the central communication point is _____.
a) MQTT broker b) MQTT publisher
c) MQTT subscriber d) None of the above

12) REST stands for _____.
a) Representational State Transfer
b) Resourceful Sensor Transfer
c) Resourceful State Transport
d) None of these

13) Sensor-Cloud deals with _____.
a) Sensor-for-Service b) Sensor-as-a-Service
c) Sensor-in-Cloud d) None of these

14) SaaS stands for _____.
a) Service as a Smartphone b) Service as a software
c) Smartphone as a service d) Software as a Service

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Internet of Things (197044703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt any four questions. **16**

a) Define IoT. Write IoT basic equation and conceptual framework equation given by Oracle.
b) Give example of IoT's used in a smart home with sensors, actuators and smart home automation software.
c) Explain various IDE's for embedded development.
d) Write different Features of ARM Cortex M3 Processor.
e) Interface LED with LPC1768. Write an embedded C program to blink LED continuously.

Q.3 Attempt any two questions. **12**

a) What are different applications of IoT in various domains?
b) Describe Cortex M-3 architecture with block diagram.
c) Draw format of Program Status Register in Cortex M-3 State function of each flag used in it.

Section – II

Q.4 Attempt any four questions. **16**

a) Explain the concept of WiFi.
b) Write applications of Bluetooth low energy technology.
c) Write in details the concept of APIs.
d) Discuss with neat diagram the MQTT publish-subscribe model and topology.
e) What is a Cloud? Discuss SaaS services supported in Cloud.

Q.5 Attempt any two questions. **12**

a) Discuss with neat diagram the MQTT publish-subscribe model and topology.
b) Explain IOT Cloud Architecture.
c) List down different messages used in CoAP and elaborate with neat diagram a CoAP message format.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Internet of Things (197044703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) Highest priority exception in ARM Cortex-M3 processor is _____.
a) Reset b) Hard fault
c) Bus fault d) NMI

2) LPC1768s maximum operating frequency is _____ MHz.
a) 100 b) 110
c) 12 d) 60

3) _____ supports a long-range communication.
a) ZigBee b) GPRS
c) Bluetooth d) All of the above

4) In MQTT the central communication point is _____.
a) MQTT broker b) MQTT publisher
c) MQTT subscriber d) None of the above

5) REST stands for _____.
a) Representational State Transfer
b) Resourceful Sensor Transfer
c) Resourceful State Transport
d) None of these

6) Sensor-Cloud deals with _____.
a) Sensor-for-Service b) Sensor-as-a-Service
c) Sensor-in-Cloud d) None of these

7) SaaS stands for _____.
a) Service as a Smartphone b) Service as a software
c) Smartphone as a service d) Software as a Service

8) Things in IoT support _____.
a) Actuation b) Sensing
c) Data Collection d) All of above

9) _____ can be considered as the skeleton for smart cities.
a) Buildings b) Transportation
c) Banks d) Sensors

10) In the current market scenario, IoT captures the maximum share in which one of these?

a) Industry
b) Security
c) Healthcare
d) Home automation

11) Embedded system is _____.

a) Reactive
b) Real time
c) Proactive
d) Reactive & Real time

12) Embedded systems are programmed using _____.

a) Machine Code
b) Low level
c) High level
d) Machine Code, Low level, High level

13) To force logic '0' on port pin P0.30, register is used in LPC1768.

a) FIO1CLR
b) FIO2CLR
c) FIO0CLR
d) FIO3CLR

14) LPC1768 has on-chip _____ KB flash memory and _____ KB SRAM.

a) 30, 16
b) 128, 32
c) 256, 40
d) 512, 64

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Internet of Things (197044703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt any four questions. **16**

a) Define IoT. Write IoT basic equation and conceptual framework equation given by Oracle.
b) Give example of IoT's used in a smart home with sensors, actuators and smart home automation software.
c) Explain various IDE's for embedded development.
d) Write different Features of ARM Cortex M3 Processor.
e) Interface LED with LPC1768. Write an embedded C program to blink LED continuously.

Q.3 Attempt any two questions. **12**

a) What are different applications of IoT in various domains?
b) Describe Cortex M-3 architecture with block diagram.
c) Draw format of Program Status Register in Cortex M-3 State function of each flag used in it.

Section – II

Q.4 Attempt any four questions. **16**

a) Explain the concept of WiFi.
b) Write applications of Bluetooth low energy technology.
c) Write in details the concept of APIs.
d) Discuss with neat diagram the MQTT publish-subscribe model and topology.
e) What is a Cloud? Discuss SaaS services supported in Cloud.

Q.5 Attempt any two questions. **12**

a) Discuss with neat diagram the MQTT publish-subscribe model and topology.
b) Explain IOT Cloud Architecture.
c) List down different messages used in CoAP and elaborate with neat diagram a CoAP message format.

SLR-GF-361

Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Internet of Things (197044703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) In MQTT the central communication point is _____.
a) MQTT broker b) MQTT publisher
c) MQTT subscriber d) None of the above

2) REST stands for _____.
a) Representational State Transfer
b) Resourceful Sensor Transfer
c) Resourceful State Transport
d) None of these

3) Sensor-Cloud deals with _____.
a) Sensor-for-Service b) Sensor-as-a-Service
c) Sensor-in-Cloud d) None of these

4) SaaS stands for _____.
a) Service as a Smartphone b) Service as a software
c) Smartphone as a service d) Software as a Service

5) Things in IoT support _____.
a) Actuation b) Sensing
c) Data Collection d) All of above

6) _____ can be considered as the skeleton for smart cities.
a) Buildings b) Transportation
c) Banks d) Sensors

7) In the current market scenario, IoT captures the maximum share in which one of these?
a) Industry b) Security
c) Healthcare d) Home automation

8) Embedded system is _____.
a) Reactive b) Real time
c) Proactive d) Reactive & Real time

9) Embedded systems are programmed using _____.
a) Machine Code
b) Low level
c) High level
d) Machine Code, Low level, High level

10) To force logic '0' on port pin P0.30, register is used in LPC1768.
a) FIO1CLR b) FIO2CLR
c) FIO0CLR d) FIO3CLR

11) LPC1768 has on-chip _____ KB flash memory and _____ KB SRAM.
a) 30, 16 b) 128, 32
c) 256, 40 d) 512, 64

12) Highest priority exception in ARM Cortex-M3 processor is _____.
a) Reset b) Hard fault
c) Bus fault d) NMI

13) LPC1768s maximum operating frequency is _____ MHz.
a) 100 b) 110
c) 12 d) 60

14) _____ supports a long-range communication.
a) ZigBee b) GPRS
c) Bluetooth d) All of the above

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Internet of Things (197044703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt any four questions. **16**

a) Define IoT. Write IoT basic equation and conceptual framework equation given by Oracle.
b) Give example of IoT's used in a smart home with sensors, actuators and smart home automation software.
c) Explain various IDE's for embedded development.
d) Write different Features of ARM Cortex M3 Processor.
e) Interface LED with LPC1768. Write an embedded C program to blink LED continuously.

Q.3 Attempt any two questions. **12**

a) What are different applications of IoT in various domains?
b) Describe Cortex M-3 architecture with block diagram.
c) Draw format of Program Status Register in Cortex M-3 State function of each flag used in it.

Section – II

Q.4 Attempt any four questions. **16**

a) Explain the concept of WiFi.
b) Write applications of Bluetooth low energy technology.
c) Write in details the concept of APIs.
d) Discuss with neat diagram the MQTT publish-subscribe model and topology.
e) What is a Cloud? Discuss SaaS services supported in Cloud.

Q.5 Attempt any two questions. **12**

a) Discuss with neat diagram the MQTT publish-subscribe model and topology.
b) Explain IOT Cloud Architecture.
c) List down different messages used in CoAP and elaborate with neat diagram a CoAP message format.

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Internet of Things (197044703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) To force logic '0' on port pin P0.30, register is used in LPC1768.
a) FIO1CLR b) FIO2CLR
c) FIO0CLR d) FIO3CLR

2) LPC1768 has on-chip _____ KB flash memory and _____ KB SRAM.
a) 30, 16 b) 128, 32
c) 256, 40 d) 512, 64

3) Highest priority exception in ARM Cortex-M3 processor is _____.
a) Reset b) Hard fault
c) Bus fault d) NMI

4) LPC1768s maximum operating frequency is _____ MHz.
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c) 12 d) 60

5) _____ supports a long-range communication.
a) ZigBee b) GPRS
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6) In MQTT the central communication point is _____.
a) MQTT broker b) MQTT publisher
c) MQTT subscriber d) None of the above

7) REST stands for _____.
a) Representational State Transfer
b) Resourceful Sensor Transfer
c) Resourceful State Transport
d) None of these

8) Sensor-Cloud deals with _____.
a) Sensor-for-Service b) Sensor-as-a-Service
c) Sensor-in-Cloud d) None of these

9) SaaS stands for _____.
a) Service as a Smartphone b) Service as a software
c) Smartphone as a service d) Software as a Service

10) Things in IoT support _____.
a) Actuation
b) Sensing
c) Data Collection
d) All of above

11) _____ can be considered as the skeleton for smart cities.
a) Buildings
b) Transportation
c) Banks
d) Sensors

12) In the current market scenario, IoT captures the maximum share in which one of these?
a) Industry
b) Security
c) Healthcare
d) Home automation

13) Embedded system is _____.
a) Reactive
b) Real time
c) Proactive
d) Reactive & Real time

14) Embedded systems are programmed using _____.
a) Machine Code
b) Low level
c) High level
d) Machine Code, Low level, High level

SLR-GF-361

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Internet of Things (197044703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt any four questions. **16**

a) Define IoT. Write IoT basic equation and conceptual framework equation given by Oracle.
b) Give example of IoT's used in a smart home with sensors, actuators and smart home automation software.
c) Explain various IDE's for embedded development.
d) Write different Features of ARM Cortex M3 Processor.
e) Interface LED with LPC1768. Write an embedded C program to blink LED continuously.

Q.3 Attempt any two questions. **12**

a) What are different applications of IoT in various domains?
b) Describe Cortex M-3 architecture with block diagram.
c) Draw format of Program Status Register in Cortex M-3 State function of each flag used in it.

Section – II

Q.4 Attempt any four questions. **16**

a) Explain the concept of WiFi.
b) Write applications of Bluetooth low energy technology.
c) Write in details the concept of APIs.
d) Discuss with neat diagram the MQTT publish-subscribe model and topology.
e) What is a Cloud? Discuss SaaS services supported in Cloud.

Q.5 Attempt any two questions. **12**

a) Discuss with neat diagram the MQTT publish-subscribe model and topology.
b) Explain IOT Cloud Architecture.
c) List down different messages used in CoAP and elaborate with neat diagram a CoAP message format.

SLR-GF-363

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management System (197044704)

Day & Date: Tuesday 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) An E-R diagram can graphically represent the _____
a) Physical structure b) Logical structure
c) View structure d) Virtual structure

2) An entity set that does not have sufficient attributes to form a primary key is a _____
a) strong entity set b) weak entity set
c) simple entity set d) primary entity set

3) Non leaf nodes of B+- tree structure form a _____
a) Multilevel clustered indices b) Sparse indices
c) Multilevel dense indices d) multilevel sparse indices

4) A collection of interrelated records is called a
a) Database
b) Spreadsheet
c) Management information system
d) Text file

5) Data Manipulation Language (DML) is not to
a) Create information table in the Database
b) Insertion of new information into the Database
c) Deletion of information in the Database
d) Modification of information in the Database

6) The minimal set of super key is called
a) Primary key b) Secondary key
c) Candidate key d) Foreign key

7) A type of query that is placed within a WHERE or HAVING clause of another query is called
a) Super query b) Sub query
c) Master query d) Multi-query

8) In SQL, which command is used to select only one copy of each set of duplicable rows

a) SELECT DISTINCT b) SELECT UNIQUE
c) SELECT DIFFERENT d) All of the above

9) A _____ means that one record in a particular record type is related to only one record of another record type.

a) One-to-one relationship
b) One-to-many relationship
c) Many-to-one relationship
d) Many-to-many relationship

10) In SQL, which command(s) is (are) used to enable/disable all triggers on a table?

a) ALTER TRIGGERS
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a) Sorts a file using a single key b) Sorts file using two keys
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13) What are ACID properties of Transactions?

a) Atomicity, Consistency, Isolation, Database
b) Atomicity, Consistency, Isolation, Durability
c) Atomicity, Consistency, Inconsistent, Durability
d) Automatically, Concurrency, Isolation, Durability

14) A relation that has no partial dependencies is in which normal form

a) First b) Second
c) Third d) BCNF

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management System (197044704)

Day & Date: Tuesday 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **16**

a) Explain Tuple relational calculus and domain relational calculus with example?
b) Explain view in SQL?
c) Explain group by and having clause with example?
d) Explain the different levels of abstraction?
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Q.3 Attempt any one. **06**

a) Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer.
1) A university registrar's office maintains data about the following entities:
2) courses, including number, title, credits, syllabus, and prerequisites;
3) course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom;
4) students, including student-id, name, and program;
5) Instructors, including identification number, name, department, and title.
6) Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled. Construct an E-R diagram for the registrar's office. Document all assumptions that you make about the mapping constraints.

b) Write SQL Queries for following set of tables:
1) EMPLOYEE (EmpNo, Name, DoB, Address, Gender, Salary, DNumber)
2) DEPARTMENT (DNumber, Dname, ManagerEmpNo, MnagerStartDate).
   i) Display the Age of 'male' employees.
   ii) Display all employees in Department named 'Marketing'.
   iii) Display the name of highest salary paid 'female' employee.
   iv) Which employee is oldest manger in company?
   v) Display the name of department of the employee 'SMITH'.

Section – II

Q.4 Attempt the following. **06**

Write short note on conflict and view serializability.

Q.5 Attempt any four **16**

a) What is super key, candidate key, primary key and foreign key explain with example?

b) What is BCNF? Explain a decomposition example?

c) Explain B+ tree with an example and how insertion works?

d) What is concurrency control problem in DBMS?

e) Explain difference between dense and sparse index.

Q.6 Attempt any one. **06**

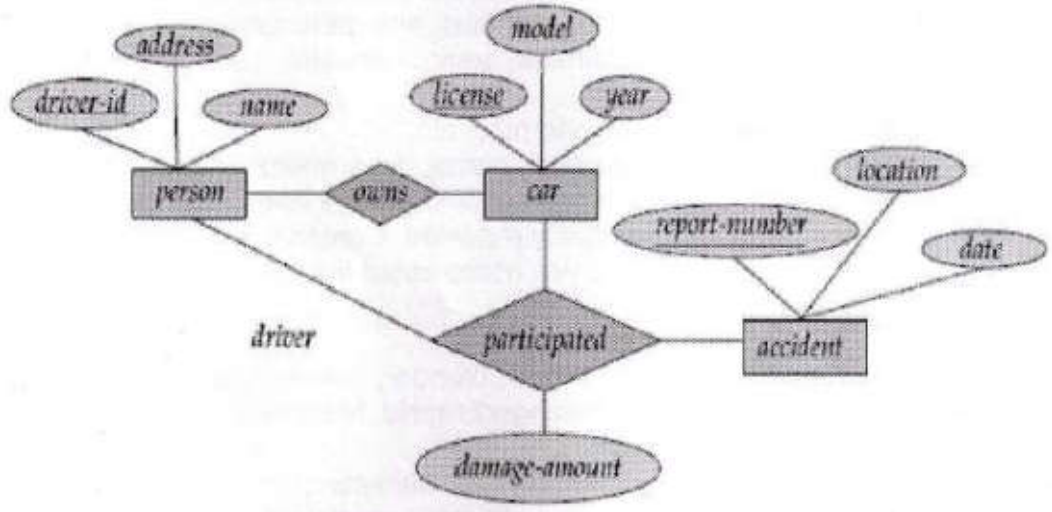
a) Explain how to convert the created database into 1NF,2NF,3NF?

b) Define the following terms with an example.

1) Functional Dependency
2) Atomic Domain
3) Static Hashing
4) Types of Lock.

Q.7 Attempt the following **06**

Construct appropriate tales for the ER diagram?



E-R diagram for a Car-insurance company.

SLR-GF-363

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management System (197044704)

Day & Date: Tuesday 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In SQL, which command is used to select only one copy of each set of duplicable rows
a) SELECT DISTINCT b) SELECT UNIQUE
c) SELECT DIFFERENT d) All of the above

2) A _____ means that one record in a particular record type is related to only one record of another record type.
a) One-to-one relationship
b) One-to-many relationship
c) Many-to-one relationship
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3) In SQL, which command(s) is (are) used to enable/disable all triggers on a table?
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b) ALTER TABLE
c) MODIFY TRIGGERS IN TABLE
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8) An E-R diagram can graphically represent the _____
a) Physical structure b) Logical structure
c) View structure d) Virtual structure

9) An entity set that does not have sufficient attributes to form a primary key is a _____
a) strong entity set b) weak entity set
c) simple entity set d) primary entity set

10) Non leaf nodes of B+- tree structure form a _____
a) Multilevel clustered indices b) Sparse indices
c) Multilevel dense indices d) multilevel sparse indices

11) A collection of interrelated records is called a
a) Database
b) Spreadsheet
c) Management information system
d) Text file

12) Data Manipulation Language (DML) is not to
a) Create information table in the Database
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d) Modification of information in the Database

13) The minimal set of super key is called
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Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management System (197044704)

Day & Date: Tuesday 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any three. **16**

a) Explain Tuple relational calculus and domain relational calculus with example?
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a) Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer.
1) A university registrar's office maintains data about the following entities:
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2) DEPARTMENT (DNumber, Dname, ManagerEmpNo, MnagerStartDate).
   i) Display the Age of 'male' employees.
   ii) Display all employees in Department named 'Marketing'.
   iii) Display the name of highest salary paid 'female' employee.
   iv) Which employee is oldest manger in company?
   v) Display the name of department of the employee 'SMITH'.

Section – II

Q.4 Attempt the following. **06**

Write short note on conflict and view serializability.

Q.5 Attempt any four **16**

a) What is super key, candidate key, primary key and foreign key explain with example?

b) What is BCNF? Explain a decomposition example?

c) Explain B+ tree with an example and how insertion works?

d) What is concurrency control problem in DBMS?

e) Explain difference between dense and sparse index.

Q.6 Attempt any one. **06**

a) Explain how to convert the created database into 1NF,2NF,3NF?

b) Define the following terms with an example.

1) Functional Dependency
2) Atomic Domain
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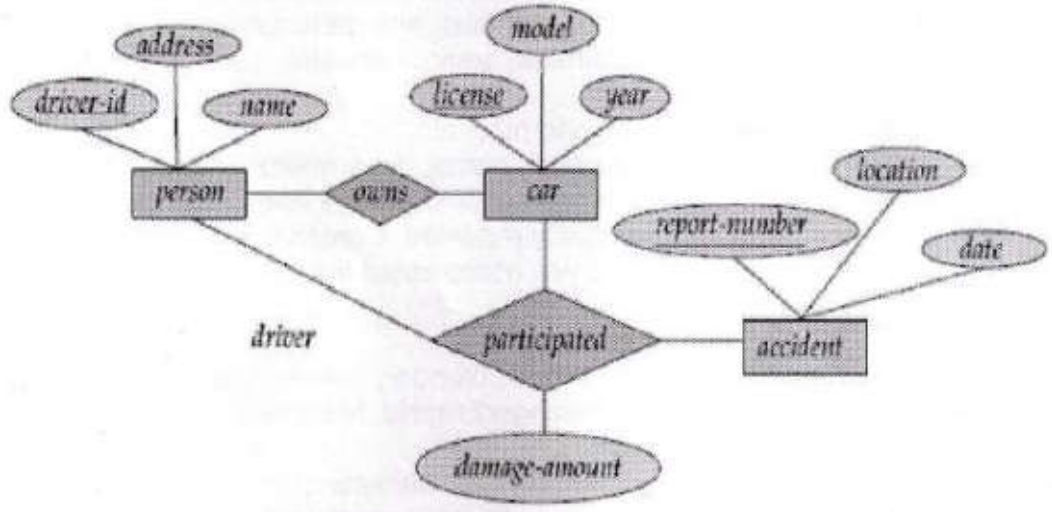
Q.7 Attempt the following **06**

Construct appropriate tales for the ER diagram?



E-R diagram for a Car-insurance company.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management System (197044704)

Day & Date: Tuesday 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In SQL, which command is used to changes data in a table?
a) UPDATE b) INSERT
c) BROWSE d) APPEND

2) An indexing operation
a) Sorts a file using a single key b) Sorts file using two keys
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3) What are ACID properties of Transactions?
a) Atomicity, Consistency, Isolation, Database
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4) A relation that has no partial dependencies is in which normal form
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10) The minimal set of super key is called
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Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management System (197044704)

Day & Date: Tuesday 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any three. **16**

a) Explain Tuple relational calculus and domain relational calculus with example?
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a) Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer.
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   iii) Display the name of highest salary paid 'female' employee.
   iv) Which employee is oldest manger in company?
   v) Display the name of department of the employee 'SMITH'.

Section – II

Q.4 Attempt the following. **06**

Write short note on conflict and view serializability.

Q.5 Attempt any four **16**

a) What is super key, candidate key, primary key and foreign key explain with example?

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e) Explain difference between dense and sparse index.

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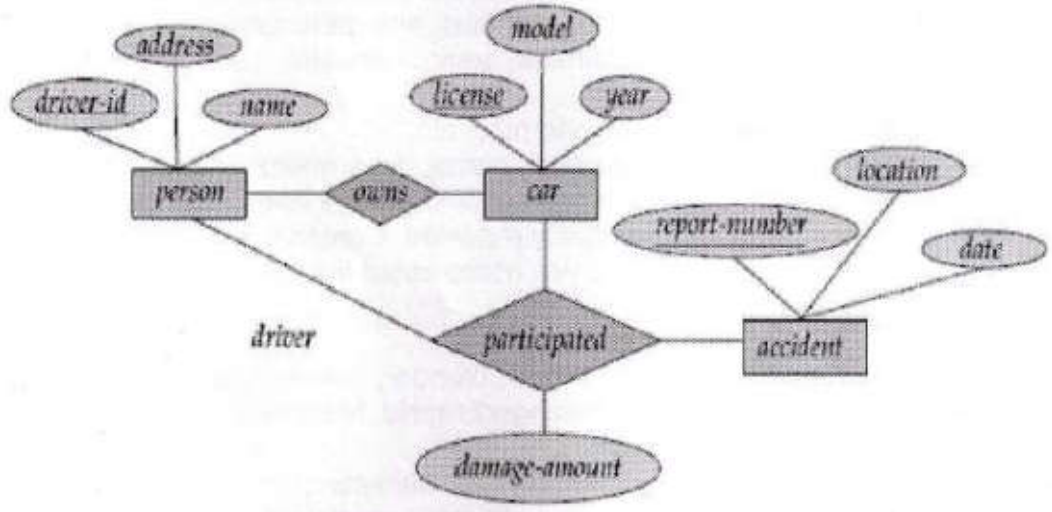

E-R diagram for a Car-insurance company.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management System (197044704)

Day & Date: Tuesday 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management System (197044704)

Day & Date: Tuesday 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any three. **16**

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Section – II

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Write short note on conflict and view serializability.

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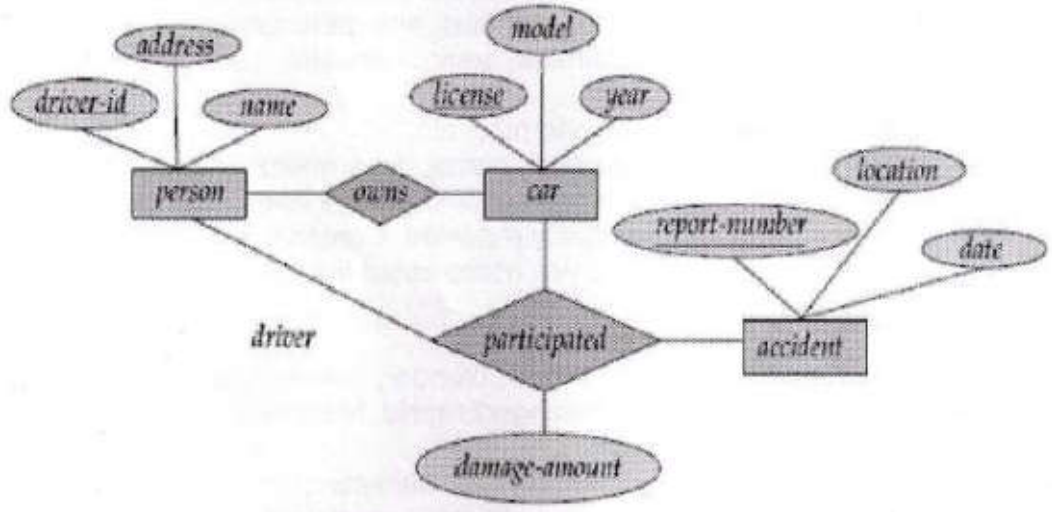
Construct appropriate tales for the ER diagram?



E-R diagram for a Car-insurance company.

SLR-GF-364

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image & Video Processing (197044707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) DPI stands for _____.
a) dots per image b) dots per intensity
c) dots per inches d) diameter per inches

2) Digitizing amplitude values is called _____.
a) Radiance b) sampling
c) Illuminance d) quantization

3) Inserting data on to images is called _____.
a) image watermarking b) image compression
c) image enhancement d) image equalization

4) Gaussian noise is referred to as _____.
a) red noise b) white noise
c) black noise d) normal noise

5) Filter that replaces pixel value with medians of intensity levels is _____.
a) geometric mean filter b) median filter
c) arithmetic mean filter d) sequence mean filter

6) Purpose of restoration is to gain _____.
a) degraded image b) pixels
c) original image d) coordinates

7) Dilation followed by erosion is called _____.
a) opening b) blurring
c) closing d) translation

8) Reflection and translation of image objects are based on _____.
a) pixels b) frames
c) coordinates d) structuring elements

9) Filter that performs opposite to band rejected filter is called _____.
a) Low pass filter b) High pass filter
c) bandpass filter d) max filter

10) Computer device which is able to capture image of any type including solid objects is known as _____.

a) web cam b) video cam
c) scanner d) image viewer

11) What are the types of motion model?

a) Spatial motion model b) Temporal motion model
c) Observable motion model d) All of above

12) Images usually gets corrupted during _____.

a) transmission b) restoration
c) degradation d) acquisition

13) Filter that replaces pixel value with maximum values of intensity levels is ____.

a) min filter b) median filter
c) max filter d) geometric mean filter

14) One that is not a method of image segmentation is _____.

a) line b) area
c) point d) edge

SLR-GF-364

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image & Video Processing (197044707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any FOUR: **16**

a) What do you mean by sampling and quantization?
b) What do you mean by basic gray level transformations? Explain anyone.
c) What is Line detection? Explain.
d) What do you mean by HSI model?
e) What is digital negative? Give an application of it. Find the digital Negative of the image f(x,y).

$$f(x,y) = \begin{matrix} 4 & 3 & 2 & 1 \\ 3 & 1 & 2 & 4 \\ 5 & 1 & 6 & 2 \\ 2 & 3 & 5 & 6 \end{matrix}$$

Q.3 Solve Any Two: **12**

a) What is sharpening by spatial filters? Explain first order and second order derivative operators used for sharpening in image enhancement.
b) What do you mean by basic gray level transformation? Explain any two with neat sketch.
c) Explain with block diagram components of Image processing system.

Section – II

Q.4 Solve Any Four: **16**

a) Explain the inverse filtering in reaction to restoration.
b) Write a note on degradation model.
c) Explain principal of color video camera.
d) Write a note on video frame classification.
e) Explain Pixel based motion estimation.

Q.5 Solve Any Two: **12**

a) Briefly explain motion estimate criteria.
b) Explain block matching algorithm.
c) Write a note on restoration using Wiener Filter.

SLR-GF-364

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Reflection and translation of image objects are based on _____.
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c) degradation d) acquisition

6) Filter that replaces pixel value with maximum values of intensity levels is ____.
a) min filter b) median filter
c) max filter d) geometric mean filter

7) One that is not a method of image segmentation is _____.
a) line b) area
c) point d) edge

8) DPI stands for _____.
a) dots per image b) dots per intensity
c) dots per inches d) diameter per inches

9) Digitizing amplitude values is called _____.
a) Radiance b) sampling
c) Illuminance d) quantization

10) Inserting data on to images is called _____.
a) image watermarking b) image compression
c) image enhancement d) image equalization

11) Gaussian noise is referred to as _____.
a) red noise b) white noise
c) black noise d) normal noise

12) Filter that replaces pixel value with medians of intensity levels is _____.
a) geometric mean filter b) median filter
c) arithmetic mean filter d) sequence mean filter

13) Purpose of restoration is to gain _____.
a) degraded image b) pixels
c) original image d) coordinates

14) Dilation followed by erosion is called _____.
a) opening b) blurring
c) closing d) translation

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image & Video Processing (197044707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any FOUR: **16**

a) What do you mean by sampling and quantization?
b) What do you mean by basic gray level transformations? Explain anyone.
c) What is Line detection? Explain.
d) What do you mean by HSI model?
e) What is digital negative? Give an application of it. Find the digital Negative of the image f(x,y).

$$f(x,y) = \begin{matrix} 4 & 3 & 2 & 1 \\ 3 & 1 & 2 & 4 \\ 5 & 1 & 6 & 2 \\ 2 & 3 & 5 & 6 \end{matrix}$$

Q.3 Solve Any Two: **12**

a) What is sharpening by spatial filters? Explain first order and second order derivative operators used for sharpening in image enhancement.
b) What do you mean by basic gray level transformation? Explain any two with neat sketch.
c) Explain with block diagram components of Image processing system.

Section – II

Q.4 Solve Any Four: **16**

a) Explain the inverse filtering in reaction to restoration.
b) Write a note on degradation model.
c) Explain principal of color video camera.
d) Write a note on video frame classification.
e) Explain Pixel based motion estimation.

Q.5 Solve Any Two: **12**

a) Briefly explain motion estimate criteria.
b) Explain block matching algorithm.
c) Write a note on restoration using Wiener Filter.

SLR-GF-364

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image & Video Processing (197044707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) What are the types of motion model?
a) Spatial motion model b) Temporal motion model
c) Observable motion model d) All of above

2) Images usually gets corrupted during _____.
a) transmission b) restoration
c) degradation d) acquisition

3) Filter that replaces pixel value with maximum values of intensity levels is ____.
a) min filter b) median filter
c) max filter d) geometric mean filter

4) One that is not a method of image segmentation is _____.
a) line b) area
c) point d) edge

5) DPI stands for _____.
a) dots per image b) dots per intensity
c) dots per inches d) diameter per inches

6) Digitizing amplitude values is called _____.
a) Radiance b) sampling
c) Illuminance d) quantization

7) Inserting data on to images is called _____.
a) image watermarking b) image compression
c) image enhancement d) image equalization

8) Gaussian noise is referred to as _____.
a) red noise b) white noise
c) black noise d) normal noise

9) Filter that replaces pixel value with medians of intensity levels is _____.
a) geometric mean filter b) median filter
c) arithmetic mean filter d) sequence mean filter

10) Purpose of restoration is to gain _____.

a) degraded image b) pixels
c) original image d) coordinates

11) Dilation followed by erosion is called _____.

a) opening b) blurring
c) closing d) translation

12) Reflection and translation of image objects are based on _____.

a) pixels b) frames
c) coordinates d) structuring elements

13) Filter that performs opposite to band rejected filter is called _____.

a) Low pass filter b) High pass filter
c) bandpass filter d) max filter

14) Computer device which is able to capture image of any type including solid objects is known as _____.

a) web cam b) video cam
c) scanner d) image viewer

SLR-GF-364

Seat No.		Set	R

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image & Video Processing (197044707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any FOUR: **16**

a) What do you mean by sampling and quantization?
b) What do you mean by basic gray level transformations? Explain anyone.
c) What is Line detection? Explain.
d) What do you mean by HSI model?
e) What is digital negative? Give an application of it. Find the digital Negative of the image f(x,y).

$$f(x,y) = \begin{matrix} 4 & 3 & 2 & 1 \\ 3 & 1 & 2 & 4 \\ 5 & 1 & 6 & 2 \\ 2 & 3 & 5 & 6 \end{matrix}$$

Q.3 Solve Any Two: **12**

a) What is sharpening by spatial filters? Explain first order and second order derivative operators used for sharpening in image enhancement.
b) What do you mean by basic gray level transformation? Explain any two with neat sketch.
c) Explain with block diagram components of Image processing system.

Section – II

Q.4 Solve Any Four: **16**

a) Explain the inverse filtering in reaction to restoration.
b) Write a note on degradation model.
c) Explain principal of color video camera.
d) Write a note on video frame classification.
e) Explain Pixel based motion estimation.

Q.5 Solve Any Two: **12**

a) Briefly explain motion estimate criteria.
b) Explain block matching algorithm.
c) Write a note on restoration using Wiener Filter.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image & Video Processing (197044707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Purpose of restoration is to gain _____.
a) degraded image b) pixels
c) original image d) coordinates

2) Dilation followed by erosion is called _____.
a) opening b) blurring
c) closing d) translation

3) Reflection and translation of image objects are based on _____.
a) pixels b) frames
c) coordinates d) structuring elements

4) Filter that performs opposite to band rejected filter is called _____.
a) Low pass filter b) High pass filter
c) bandpass filter d) max filter

5) Computer device which is able to capture image of any type including solid objects is known as _____.
a) web cam b) video cam
c) scanner d) image viewer

6) What are the types of motion model?
a) Spatial motion model b) Temporal motion model
c) Observable motion model d) All of above

7) Images usually gets corrupted during _____.
a) transmission b) restoration
c) degradation d) acquisition

8) Filter that replaces pixel value with maximum values of intensity levels is ____.
a) min filter b) median filter
c) max filter d) geometric mean filter

9) One that is not a method of image segmentation is _____.
a) line b) area
c) point d) edge

10) DPI stands for _____.

a) dots per image
b) dots per intensity
c) dots per inches
d) diameter per inches

11) Digitizing amplitude values is called _____.

a) Radiance
b) sampling
c) Illuminance
d) quantization

12) Inserting data on to images is called _____.

a) image watermarking
b) image compression
c) image enhancement
d) image equalization

13) Gaussian noise is referred to as _____.

a) red noise
b) white noise
c) black noise
d) normal noise

14) Filter that replaces pixel value with medians of intensity levels is _____.

a) geometric mean filter
b) median filter
c) arithmetic mean filter
d) sequence mean filter

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Image & Video Processing (197044707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any FOUR: **16**

a) What do you mean by sampling and quantization?
b) What do you mean by basic gray level transformations? Explain anyone.
c) What is Line detection? Explain.
d) What do you mean by HSI model?
e) What is digital negative? Give an application of it. Find the digital Negative of the image f(x,y).

$$f(x,y) = \begin{matrix} 4 & 3 & 2 & 1 \\ 3 & 1 & 2 & 4 \\ 5 & 1 & 6 & 2 \\ 2 & 3 & 5 & 6 \end{matrix}$$

Q.3 Solve Any Two: **12**

a) What is sharpening by spatial filters? Explain first order and second order derivative operators used for sharpening in image enhancement.
b) What do you mean by basic gray level transformation? Explain any two with neat sketch.
c) Explain with block diagram components of Image processing system.

Section – II

Q.4 Solve Any Four: **16**

a) Explain the inverse filtering in reaction to restoration.
b) Write a note on degradation model.
c) Explain principal of color video camera.
d) Write a note on video frame classification.
e) Explain Pixel based motion estimation.

Q.5 Solve Any Two: **12**

a) Briefly explain motion estimate criteria.
b) Explain block matching algorithm.
c) Write a note on restoration using Wiener Filter.

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Wireless Sensor Network (197044708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

1) Wireless Sensor network is subject to a unique set of resource constraints such as _____.
a) finite on-board battery power
b) limited network communication bandwidth
c) a and b both
d) none of the above

2) The size of the wireless sensor system is limited mostly by _____.
a) the cost of maintaining communication links
b) the cost of sensor hardware
c) environmental monitoring
d) a and b

3) Network for sensor networks is _____ centric but not _____ centric.
a) node, data b) data, node
c) node, information d) link, data

4) _____ allows the same time or frequency division multiplexing to be reused across non-overlapping clusters in WSNs.
a) Migration b) Clustering
c) Classification d) Centralization

5) In wireless sensor network _____.
a) no special master clocks are available
b) connections are ephemeral
c) communication delays are inconsistent and unpredictable
d) all of above

6) In Wireless Sensor Networks, the nodes are of different capabilities in terms of computation, communication, memory, energy level, and reliability, it is called as _____.
a) centralized b) heterogeneous
c) distributed d) homogeneous

7) The main goal of the _____ is to reduce energy waste caused by idle listening, collisions, overhearing, and control overhead.
a) s-mac protocol b) ieee802.15.4 standard
c) a and b d) none of these

8) In WSN within the coverage range, nodes communication is by _____.
a) multicast b) broadcast
c) both d) none of above

9) Following characteristics of wireless sensor networks point to the need for a specialized MAC protocol _____.
a) most sensor nodes are idle much of the time
b) in-network processing can greatly improve bandwidth utilization
c) issues of energy efficiency, scalability, and robustness remain paramount
d) all of above

10) Following aspects of the energy cost in a sensor network make it challenging to reason about optimizing energy _____.
a) multi-hop communication can be more efficient than direct transmission
b) when a node transmits, all other nodes within range can hear
c) neither a nor b
d) a and b both

11) _____ is essential for any WSN application.
a) Time synchronization
b) Localization
c) Time synchronization & Localization
d) a or b anyone

12) Range Based target tracking algorithm relies on _____.
a) distance calculation b) range calculation
c) connectivity of nodes d) a and b both

13) For trilateration, we measure _____ between the node and anchors.
a) angle b) distance
c) angle and distance d) angle and height

14) From a data storage point of view, one may think of a sensor network as a distributed database that _____.
a) collects physical measurements of the environment
b) indexes them
c) serves queries from users and other applications external to or from within the network
d) all of above

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Wireless Sensor Network (197044708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Give differences between MANET & WSN.
b) Explain in detail the Gateway concepts.
c) Explain Energy Scavenging in WSNs.
d) Explain the necessity of Time Synchronization & how it is achieved in WSNs.
e) Explain in short Localization & Positioning in WSNs.

Q.3 Attempt Any Two. **12**

a) What are the challenges for Wireless Sensor Networks?
b) Explain operating systems & execution environments for WSN.
c) Explain Sensor tasking & control in WSNs.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain in short any one of the low-duty cycle protocols.
b) Explain issues & challenges in providing QoS in WSNs.
c) Explain any one of the QoS routing protocols in wireless network.
d) Give a classification of energy management schemes.
e) Give applications of Wireless Sensor Networks.

Q.5 Attempt Any Two. **12**

a) Explain any one of the schedule-based protocol.
b) Explain any one QoS frameworks model.
c) Explain how WSN is used for Industrial Automation.

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Wireless Sensor Network (197044708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

1) In WSN within the coverage range, nodes communication is by _____.
a) multicast b) broadcast
c) both d) none of above

2) Following characteristics of wireless sensor networks point to the need for a specialized MAC protocol _____.
a) most sensor nodes are idle much of the time
b) in-network processing can greatly improve bandwidth utilization
c) issues of energy efficiency, scalability, and robustness remain paramount
d) all of above

3) Following aspects of the energy cost in a sensor network make it challenging to reason about optimizing energy _____.
a) multi-hop communication can be more efficient than direct transmission
b) when a node transmits, all other nodes within range can hear
c) neither a nor b
d) a and b both

4) _____ is essential for any WSN application.
a) Time synchronization
b) Localization
c) Time synchronization & Localization
d) a or b anyone

5) Range Based target tracking algorithm relies on _____.
a) distance calculation b) range calculation
c) connectivity of nodes d) a and b both

6) For trilateration, we measure _____ between the node and anchors.
a) angle b) distance
c) angle and distance d) angle and height

7) From a data storage point of view, one may think of a sensor network as a distributed database that _____.
a) collects physical measurements of the environment
b) indexes them
c) serves queries from users and other applications external to or from within the network
d) all of above

8) Wireless Sensor network is subject to a unique set of resource constraints such as _____.
a) finite on-board battery power
b) limited network communication bandwidth
c) a and b both
d) none of the above

9) The size of the wireless sensor system is limited mostly by _____.
a) the cost of maintaining communication links
b) the cost of sensor hardware
c) environmental monitoring
d) a and b

10) Network for sensor networks is _____ centric but not _____ centric.
a) node, data
b) data, node
c) node, information
d) link, data

11) _____ allows the same time or frequency division multiplexing to be reused across non-overlapping clusters in WSNs.
a) Migration
b) Clustering
c) Classification
d) Centralization

12) In wireless sensor network _____.
a) no special master clocks are available
b) connections are ephemeral
c) communication delays are inconsistent and unpredictable
d) all of above

13) In Wireless Sensor Networks, the nodes are of different capabilities in terms of computation, communication, memory, energy level, and reliability, it is called as _____.
a) centralized
b) heterogeneous
c) distributed
d) homogeneous

14) The main goal of the _____ is to reduce energy waste caused by idle listening, collisions, overhearing, and control overhead.
a) s-mac protocol
b) ieee802.15.4 standard
c) a and b
d) none of these

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Wireless Sensor Network (197044708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Give differences between MANET & WSN.
b) Explain in detail the Gateway concepts.
c) Explain Energy Scavenging in WSNs.
d) Explain the necessity of Time Synchronization & how it is achieved in WSNs.
e) Explain in short Localization & Positioning in WSNs.

Q.3 Attempt Any Two. **12**

a) What are the challenges for Wireless Sensor Networks?
b) Explain operating systems & execution environments for WSN.
c) Explain Sensor tasking & control in WSNs.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain in short any one of the low-duty cycle protocols.
b) Explain issues & challenges in providing QoS in WSNs.
c) Explain any one of the QoS routing protocols in wireless network.
d) Give a classification of energy management schemes.
e) Give applications of Wireless Sensor Networks.

Q.5 Attempt Any Two. **12**

a) Explain any one of the schedule-based protocol.
b) Explain any one QoS frameworks model.
c) Explain how WSN is used for Industrial Automation.

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Wireless Sensor Network (197044708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

1) _____ is essential for any WSN application.
a) Time synchronization
b) Localization
c) Time synchronization & Localization
d) a or b anyone

2) Range Based target tracking algorithm relies on _____.
a) distance calculation b) range calculation
c) connectivity of nodes d) a and b both

3) For trilateration, we measure _____ between the node and anchors.
a) angle b) distance
c) angle and distance d) angle and height

4) From a data storage point of view, one may think of a sensor network as a distributed database that _____.
a) collects physical measurements of the environment
b) indexes them
c) serves queries from users and other applications external to or from within the network
d) all of above

5) Wireless Sensor network is subject to a unique set of resource constraints such as _____.
a) finite on-board battery power
b) limited network communication bandwidth
c) a and b both
d) none of the above

6) The size of the wireless sensor system is limited mostly by _____.
a) the cost of maintaining communication links
b) the cost of sensor hardware
c) environmental monitoring
d) a and b

7) Network for sensor networks is _____ centric but not _____ centric.
a) node, data b) data, node
c) node, information d) link, data

8) _____ allows the same time or frequency division multiplexing to be reused across non-overlapping clusters in WSNs.
a) Migration b) Clustering
c) Classification d) Centralization

9) In wireless sensor network _____.
a) no special master clocks are available
b) connections are ephemeral
c) communication delays are inconsistent and unpredictable
d) all of above

10) In Wireless Sensor Networks, the nodes are of different capabilities in terms of computation, communication, memory, energy level, and reliability, it is called as _____.
a) centralized b) heterogeneous
c) distributed d) homogeneous

11) The main goal of the _____ is to reduce energy waste caused by idle listening, collisions, overhearing, and control overhead.
a) s-mac protocol b) ieee802.15.4 standard
c) a and b d) none of these

12) In WSN within the coverage range, nodes communication is by _____.
a) multicast b) broadcast
c) both d) none of above

13) Following characteristics of wireless sensor networks point to the need for a specialized MAC protocol _____.
a) most sensor nodes are idle much of the time
b) in-network processing can greatly improve bandwidth utilization
c) issues of energy efficiency, scalability, and robustness remain paramount
d) all of above

14) Following aspects of the energy cost in a sensor network make it challenging to reason about optimizing energy _____.
a) multi-hop communication can be more efficient than direct transmission
b) when a node transmits, all other nodes within range can hear
c) neither a nor b
d) a and b both

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Wireless Sensor Network (197044708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**
- **a)** Give differences between MANET & WSN.
- **b)** Explain in detail the Gateway concepts.
- **c)** Explain Energy Scavenging in WSNs.
- **d)** Explain the necessity of Time Synchronization & how it is achieved in WSNs.
- **e)** Explain in short Localization & Positioning in WSNs.

Q.3 Attempt Any Two. **12**
- **a)** What are the challenges for Wireless Sensor Networks?
- **b)** Explain operating systems & execution environments for WSN.
- **c)** Explain Sensor tasking & control in WSNs.

Section – II

Q.4 Attempt Any Four. **16**
- **a)** Explain in short any one of the low-duty cycle protocols.
- **b)** Explain issues & challenges in providing QoS in WSNs.
- **c)** Explain any one of the QoS routing protocols in wireless network.
- **d)** Give a classification of energy management schemes.
- **e)** Give applications of Wireless Sensor Networks.

Q.5 Attempt Any Two. **12**
- **a)** Explain any one of the schedule-based protocol.
- **b)** Explain any one QoS frameworks model.
- **c)** Explain how WSN is used for Industrial Automation.

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Wireless Sensor Network (197044708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

1) In Wireless Sensor Networks, the nodes are of different capabilities in terms of computation, communication, memory, energy level, and reliability, it is called as _____.
a) centralized b) heterogeneous
c) distributed d) homogeneous

2) The main goal of the _____ is to reduce energy waste caused by idle listening, collisions, overhearing, and control overhead.
a) s-mac protocol b) ieee802.15.4 standard
c) a and b d) none of these

3) In WSN within the coverage range, nodes communication is by _____.
a) multicast b) broadcast
c) both d) none of above

4) Following characteristics of wireless sensor networks point to the need for a specialized MAC protocol _____.
a) most sensor nodes are idle much of the time
b) in-network processing can greatly improve bandwidth utilization
c) issues of energy efficiency, scalability, and robustness remain paramount
d) all of above

5) Following aspects of the energy cost in a sensor network make it challenging to reason about optimizing energy _____.
a) multi-hop communication can be more efficient than direct transmission
b) when a node transmits, all other nodes within range can hear
c) neither a nor b
d) a and b both

6) _____ is essential for any WSN application.
a) Time synchronization
b) Localization
c) Time synchronization & Localization
d) a or b anyone

7) Range Based target tracking algorithm relies on _____.
a) distance calculation b) range calculation
c) connectivity of nodes d) a and b both

8) For trilateration, we measure _____ between the node and anchors.
a) angle b) distance
c) angle and distance d) angle and height

9) From a data storage point of view, one may think of a sensor network as a distributed database that _____.
a) collects physical measurements of the environment
b) indexes them
c) serves queries from users and other applications external to or from within the network
d) all of above

10) Wireless Sensor network is subject to a unique set of resource constraints such as _____.
a) finite on-board battery power
b) limited network communication bandwidth
c) a and b both
d) none of the above

11) The size of the wireless sensor system is limited mostly by _____.
a) the cost of maintaining communication links
b) the cost of sensor hardware
c) environmental monitoring
d) a and b

12) Network for sensor networks is _____ centric but not _____ centric.
a) node, data b) data, node
c) node, information d) link, data

13) _____ allows the same time or frequency division multiplexing to be reused across non-overlapping clusters in WSNs.
a) Migration b) Clustering
c) Classification d) Centralization

14) In wireless sensor network _____.
a) no special master clocks are available
b) connections are ephemeral
c) communication delays are inconsistent and unpredictable
d) all of above

SLR-GF-365

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Wireless Sensor Network (197044708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Give differences between MANET & WSN.
b) Explain in detail the Gateway concepts.
c) Explain Energy Scavenging in WSNs.
d) Explain the necessity of Time Synchronization & how it is achieved in WSNs.
e) Explain in short Localization & Positioning in WSNs.

Q.3 Attempt Any Two. **12**

a) What are the challenges for Wireless Sensor Networks?
b) Explain operating systems & execution environments for WSN.
c) Explain Sensor tasking & control in WSNs.

Section – II

Q.4 Attempt Any Four. **16**

a) Explain in short any one of the low-duty cycle protocols.
b) Explain issues & challenges in providing QoS in WSNs.
c) Explain any one of the QoS routing protocols in wireless network.
d) Give a classification of energy management schemes.
e) Give applications of Wireless Sensor Networks.

Q.5 Attempt Any Two. **12**

a) Explain any one of the schedule-based protocol.
b) Explain any one QoS frameworks model.
c) Explain how WSN is used for Industrial Automation.

SLR-GF-366

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (197044801)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of nonprogrammable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Maxwell's equation for electromagnetic waves in a waveguide is: _____.
a) $\nabla \times \mathrm{E} = -\mathrm{j}\omega\mu(\mathrm{vector\ H})$ b) $\nabla \times \mathrm{E} = -\mathrm{j}\omega\mu(\mathrm{vector\ E})$
c) $\nabla \times \mathrm{H} = -\mathrm{j}\omega\mu(\mathrm{vector\ H})$ d) $\nabla \times \mathrm{H} = \mathrm{j}\omega\mu(\mathrm{vector\ H})$

2) The losses that occur in a transmission line is: _____.
a) Conduction losses b) Di-electric loss
c) Both of the mentioned d) None of the mentioned

3) The modes of wave propagation that a parallel plate waveguide can support are: _____.
a) TEM, TE, TM modes b) TM, TE modes
c) TEM, TM modes d) TEM, TE modes

4) In TM mode, if the direction of wave propagation is in 'z' direction, then:
a) HZ=0 b) EZ=0
c) EY=0 d) HY=0

5) The wave impedance for a non-propagating mode in TE mode is: _____.
a) K/β b) Imaginary
c) Zero d) Non-existing

6) A hollow rectangular waveguide cannot propagate TEM waves because: ____.
a) Of the existence of only one conductor
b) Of the losses caused
c) It is dependent on the type of the material used
d) None of the mentioned

7) In TE mode of wave propagation in a rectangular waveguide, what is the equation that has to be satisfied?
a) $(\partial 2/\partial x2 + \partial 2/\partial y2 + kC2).HZ(x,y) = 0$
b) $(\partial 2/\partial x2 + \partial 2/\partial y2 - kC2).HZ(x,y) = 0$
c) $(\partial 2/\partial x2 - \partial 2/\partial y2 + kC2).HZ(x,y) = 0$
d) None of the mentioned

8) Which mode of propagation is supported by a strip line?
a) TEM mode b) TM mode
c) TE mode d) None of the mentioned

9) If the dielectric material filled between the round plates of a microstrip line has a relative permittivity of 2.4, then the phase velocity is: _____.
a) 1.3*108 m/s b) 1.9*108 m/s
c) 3*108 m/s d) 2*108 m/s

10) A major disadvantage of klystron amplifier is: _____.
a) Low power gain b) Low bandwidth
c) High source power d) Design complexity

11) The klystron tube used in a klystron amplifier is a _____ type beam amplifier.
a) Linear beam b) Crossed field
c) Parallel field d) None of the mentioned

12) The number of semiconductor layers in IMPATT diode is: _____.
a) two b) three
c) four d) none of the mentioned

13) GaAs is used in the fabrication of GUNN diodes because: _____.
a) GaAs is cost effective
b) It less temperature sensitive
c) it has low conduction band electrons
d) less forbidden energy gap

14) A PIN diode can be used in either a series or a shunt configuration to form a _____.
a) Single pole single throw switch
b) Single pole double throw switch
c) Amplifier
d) Oscillator

Seat No.	

Set | P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (197044801)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of nonprogrammable calculator is allowed.

Section – I

Q.2 Solve any Four of the Followings. **16**

a) Derive an expression for power transmission in rectangular waveguides.
b) Explain the construction and operation of E plane and H plane Tee.
c) A gold parallel strip line of width 20mm contains polyethylene dielectric material between strip lines having a dielectric constant of 2.25 and thickness of dielectric as 4mm. Determine the characteristic impedance and the phase velocity of the propagating microwave.
d) Explain the construction and operation of circulator.
e) Explain the significance and properties of scattering matrix.

Q.3 Solve any two of the followings. **12**

a) Derive the solution for wave equation for TM mode.
b) Explain the working principle of Directional Coupler and derive its scattering matrix.
c) Explain the construction and applications of strip lines and parallel strip lines.

Section – II

Q.4 Solve any Four of the Followings. **16**

a) What are the performance characteristic and applications of klystron amplifier?
b) A reflex klystron operates at the peak mode of n=2 with beam voltage V_0=300V. Beam current I_0=20mA, signal voltage V_1=40V. Determine:
1) input power in watts
2) output power in watts
3) efficiency
c) Explain the working principal of tunnel diode with neat diagram.
d) What is GUNN EFFECT? With a neat diagram explain the constructional details of a Gunn Diode.
e) Explain the steps for power measurements.

Q.5 Solve any two of the followings **12**

a) Explain the construction and operation of Travelling wave tube.
b) What is Avalanche transit time device? Explain the principal of operation of IMPAT diode.
c) With a neat block diagram explain insertion and attenuation measurements.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (197044801)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of nonprogrammable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which mode of propagation is supported by a strip line?
a) TEM mode b) TM mode
c) TE mode d) None of the mentioned

2) If the dielectric material filled between the round plates of a microstrip line has a relative permittivity of 2.4, then the phase velocity is: _____.
a) 1.3*108 m/s b) 1.9*108 m/s
c) 3*108 m/s d) 2*108 m/s

3) A major disadvantage of klystron amplifier is: _____.
a) Low power gain b) Low bandwidth
c) High source power d) Design complexity

4) The klystron tube used in a klystron amplifier is a _____ type beam amplifier.
a) Linear beam b) Crossed field
c) Parallel field d) None of the mentioned

5) The number of semiconductor layers in IMPATT diode is: _____.
a) two b) three
c) four d) none of the mentioned

6) GaAs is used in the fabrication of GUNN diodes because: _____.
a) GaAs is cost effective
b) It less temperature sensitive
c) it has low conduction band electrons
d) less forbidden energy gap

7) A PIN diode can be used in either a series or a shunt configuration to form a _____.
a) Single pole single throw switch
b) Single pole double throw switch
c) Amplifier
d) Oscillator

8) Maxwell's equation for electromagnetic waves in a waveguide is: _____.
a) $\nabla \times \mathrm{E} = -\mathrm{j}\omega\mu(\mathrm{vector\ H})$ b) $\nabla \times \mathrm{E} = -\mathrm{j}\omega\mu(\mathrm{vector\ E})$
c) $\nabla \times \mathrm{H} = -\mathrm{j}\omega\mu(\mathrm{vector\ H})$ d) $\nabla \times \mathrm{H} = \mathrm{j}\omega\mu(\mathrm{vector\ H})$

9) The losses that occur in a transmission line is: _____.
a) Conduction losses b) Di-electric loss
c) Both of the mentioned d) None of the mentioned

10) The modes of wave propagation that a parallel plate waveguide can support are: _____.
a) TEM, TE, TM modes b) TM, TE modes
c) TEM, TM modes d) TEM, TE modes

11) In TM mode, if the direction of wave propagation is in 'z' direction, then:
a) HZ=0 b) EZ=0
c) EY=0 d) HY=0

12) The wave impedance for a non-propagating mode in TE mode is: _____.
a) K/β b) Imaginary
c) Zero d) Non-existing

13) A hollow rectangular waveguide cannot propagate TEM waves because: ____.
a) Of the existence of only one conductor
b) Of the losses caused
c) It is dependent on the type of the material used
d) None of the mentioned

14) In TE mode of wave propagation in a rectangular waveguide, what is the equation that has to be satisfied?
a) $(\partial 2/\partial x2 + \partial 2/\partial y2 + kC2).HZ(x,y) = 0$
b) $(\partial 2/\partial x2 + \partial 2/\partial y2 - kC2).HZ(x,y) = 0$
c) $(\partial 2/\partial x2 - \partial 2/\partial y2 + kC2).HZ(x,y) = 0$
d) None of the mentioned

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (197044801)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of nonprogrammable calculator is allowed.

Section – I

Q.2 Solve any Four of the Followings. **16**

a) Derive an expression for power transmission in rectangular waveguides.
b) Explain the construction and operation of E plane and H plane Tee.
c) A gold parallel strip line of width 20mm contains polyethylene dielectric material between strip lines having a dielectric constant of 2.25 and thickness of dielectric as 4mm. Determine the characteristic impedance and the phase velocity of the propagating microwave.
d) Explain the construction and operation of circulator.
e) Explain the significance and properties of scattering matrix.

Q.3 Solve any two of the followings. **12**

a) Derive the solution for wave equation for TM mode.
b) Explain the working principle of Directional Coupler and derive its scattering matrix.
c) Explain the construction and applications of strip lines and parallel strip lines.

Section – II

Q.4 Solve any Four of the Followings. **16**

a) What are the performance characteristic and applications of klystron amplifier?
b) A reflex klystron operates at the peak mode of n=2 with beam voltage V_0=300V. Beam current I_0=20mA, signal voltage V_1=40V. Determine:
1) input power in watts
2) output power in watts
3) efficiency
c) Explain the working principal of tunnel diode with neat diagram.
d) What is GUNN EFFECT? With a neat diagram explain the constructional details of a Gunn Diode.
e) Explain the steps for power measurements.

Q.5 Solve any two of the followings **12**

a) Explain the construction and operation of Travelling wave tube.
b) What is Avalanche transit time device? Explain the principal of operation of IMPAT diode.
c) With a neat block diagram explain insertion and attenuation measurements.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (197044801)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of nonprogrammable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The klystron tube used in a klystron amplifier is a _____ type beam amplifier.
a) Linear beam b) Crossed field
c) Parallel field d) None of the mentioned

2) The number of semiconductor layers in IMPATT diode is: _____.
a) two b) three
c) four d) none of the mentioned

3) GaAs is used in the fabrication of GUNN diodes because: _____.
a) GaAs is cost effective
b) It less temperature sensitive
c) it has low conduction band electrons
d) less forbidden energy gap

4) A PIN diode can be used in either a series or a shunt configuration to form a _____.
a) Single pole single throw switch
b) Single pole double throw switch
c) Amplifier
d) Oscillator

5) Maxwell's equation for electromagnetic waves in a waveguide is: _____.
a) $\nabla \times \mathrm{E} = -\mathrm{j}\omega\mu(\mathrm{vector\ H})$ b) $\nabla \times \mathrm{E} = -\mathrm{j}\omega\mu(\mathrm{vector\ E})$
c) $\nabla \times \mathrm{H} = -\mathrm{j}\omega\mu(\mathrm{vector\ H})$ d) $\nabla \times \mathrm{H} = \mathrm{j}\omega\mu(\mathrm{vector\ H})$

6) The losses that occur in a transmission line is: _____.
a) Conduction losses b) Di-electric loss
c) Both of the mentioned d) None of the mentioned

7) The modes of wave propagation that a parallel plate waveguide can support are: _____.
a) TEM, TE, TM modes b) TM, TE modes
c) TEM, TM modes d) TEM, TE modes

8) In TM mode, if the direction of wave propagation is in 'z' direction, then:
a) HZ=0 b) EZ=0
c) EY=0 d) HY=0

9) The wave impedance for a non-propagating mode in TE mode is: _____.
a) K/β b) Imaginary
c) Zero d) Non-existing

10) A hollow rectangular waveguide cannot propagate TEM waves because: ____.
a) Of the existence of only one conductor
b) Of the losses caused
c) It is dependent on the type of the material used
d) None of the mentioned

11) In TE mode of wave propagation in a rectangular waveguide, what is the equation that has to be satisfied?
a) $(\partial 2/\partial x2 + \partial 2/\partial y2 + kC2).HZ(x,y) = 0$
b) $(\partial 2/\partial x2 + \partial 2/\partial y2 - kC2).HZ(x,y) = 0$
c) $(\partial 2/\partial x2 - \partial 2/\partial y2 + kC2).HZ(x,y) = 0$
d) None of the mentioned

12) Which mode of propagation is supported by a strip line?
a) TEM mode b) TM mode
c) TE mode d) None of the mentioned

13) If the dielectric material filled between the round plates of a microstrip line has a relative permittivity of 2.4, then the phase velocity is: _____.
a) 1.3*108 m/s b) 1.9*108 m/s
c) 3*108 m/s d) 2*108 m/s

14) A major disadvantage of klystron amplifier is: _____.
a) Low power gain b) Low bandwidth
c) High source power d) Design complexity

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (197044801)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of nonprogrammable calculator is allowed.

Section – I

Q.2 Solve any Four of the Followings. **16**

a) Derive an expression for power transmission in rectangular waveguides.
b) Explain the construction and operation of E plane and H plane Tee.
c) A gold parallel strip line of width 20mm contains polyethylene dielectric material between strip lines having a dielectric constant of 2.25 and thickness of dielectric as 4mm. Determine the characteristic impedance and the phase velocity of the propagating microwave.
d) Explain the construction and operation of circulator.
e) Explain the significance and properties of scattering matrix.

Q.3 Solve any two of the followings. **12**

a) Derive the solution for wave equation for TM mode.
b) Explain the working principle of Directional Coupler and derive its scattering matrix.
c) Explain the construction and applications of strip lines and parallel strip lines.

Section – II

Q.4 Solve any Four of the Followings. **16**

a) What are the performance characteristic and applications of klystron amplifier?
b) A reflex klystron operates at the peak mode of n=2 with beam voltage V_0=300V. Beam current I_0=20mA, signal voltage V_1=40V. Determine:
1) input power in watts
2) output power in watts
3) efficiency
c) Explain the working principal of tunnel diode with neat diagram.
d) What is GUNN EFFECT? With a neat diagram explain the constructional details of a Gunn Diode.
e) Explain the steps for power measurements.

Q.5 Solve any two of the followings **12**

a) Explain the construction and operation of Travelling wave tube.
b) What is Avalanche transit time device? Explain the principal of operation of IMPAT diode.
c) With a neat block diagram explain insertion and attenuation measurements.

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (197044801)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of nonprogrammable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) A hollow rectangular waveguide cannot propagate TEM waves because: ____.
a) Of the existence of only one conductor
b) Of the losses caused
c) It is dependent on the type of the material used
d) None of the mentioned

2) In TE mode of wave propagation in a rectangular waveguide, what is the equation that has to be satisfied?
a) $(\partial 2/\partial x2 + \partial 2/\partial y2 + kC2).HZ(x,y) = 0$
b) $(\partial 2/\partial x2 + \partial 2/\partial y2 - kC2).HZ(x,y) = 0$
c) $(\partial 2/\partial x2 - \partial 2/\partial y2 + kC2).HZ(x,y) = 0$
d) None of the mentioned

3) Which mode of propagation is supported by a strip line?
a) TEM mode b) TM mode
c) TE mode d) None of the mentioned

4) If the dielectric material filled between the round plates of a microstrip line has a relative permittivity of 2.4, then the phase velocity is: _____.
a) 1.3*108 m/s b) 1.9*108 m/s
c) 3*108 m/s d) 2*108 m/s

5) A major disadvantage of klystron amplifier is: _____.
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c) High source power d) Design complexity

6) The klystron tube used in a klystron amplifier is a _____ type beam amplifier.
a) Linear beam b) Crossed field
c) Parallel field d) None of the mentioned

7) The number of semiconductor layers in IMPATT diode is: _____.
a) two b) three
c) four d) none of the mentioned

8) GaAs is used in the fabrication of GUNN diodes because: _____.
a) GaAs is cost effective
b) It less temperature sensitive
c) it has low conduction band electrons
d) less forbidden energy gap

9) A PIN diode can be used in either a series or a shunt configuration to form a _____.
a) Single pole single throw switch
b) Single pole double throw switch
c) Amplifier
d) Oscillator

10) Maxwell's equation for electromagnetic waves in a waveguide is: _____.
a) $\nabla \times \mathrm{E} = -\mathrm{j}\omega\mu(\mathrm{vector\ H})$ b) $\nabla \times \mathrm{E} = -\mathrm{j}\omega\mu(\mathrm{vector\ E})$
c) $\nabla \times \mathrm{H} = -\mathrm{j}\omega\mu(\mathrm{vector\ H})$ d) $\nabla \times \mathrm{H} = \mathrm{j}\omega\mu(\mathrm{vector\ H})$

11) The losses that occur in a transmission line is: _____.
a) Conduction losses b) Di-electric loss
c) Both of the mentioned d) None of the mentioned

12) The modes of wave propagation that a parallel plate waveguide can support are: _____.
a) TEM, TE, TM modes b) TM, TE modes
c) TEM, TM modes d) TEM, TE modes

13) In TM mode, if the direction of wave propagation is in 'z' direction, then:
a) HZ=0 b) EZ=0
c) EY=0 d) HY=0

14) The wave impedance for a non-propagating mode in TE mode is: _____.
a) K/β b) Imaginary
c) Zero d) Non-existing

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC AND TELECOMMUNICATION ENGINEERING
Microwave Engineering (197044801)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of nonprogrammable calculator is allowed.

Section – I

Q.2 Solve any Four of the Followings. **16**

a) Derive an expression for power transmission in rectangular waveguides.
b) Explain the construction and operation of E plane and H plane Tee.
c) A gold parallel strip line of width 20mm contains polyethylene dielectric material between strip lines having a dielectric constant of 2.25 and thickness of dielectric as 4mm. Determine the characteristic impedance and the phase velocity of the propagating microwave.
d) Explain the construction and operation of circulator.
e) Explain the significance and properties of scattering matrix.

Q.3 Solve any two of the followings. **12**

a) Derive the solution for wave equation for TM mode.
b) Explain the working principle of Directional Coupler and derive its scattering matrix.
c) Explain the construction and applications of strip lines and parallel strip lines.

Section – II

Q.4 Solve any Four of the Followings. **16**

a) What are the performance characteristic and applications of klystron amplifier?
b) A reflex klystron operates at the peak mode of n=2 with beam voltage V_0=300V. Beam current I_0=20mA, signal voltage V_1=40V. Determine:
1) input power in watts
2) output power in watts
3) efficiency
c) Explain the working principal of tunnel diode with neat diagram.
d) What is GUNN EFFECT? With a neat diagram explain the constructional details of a Gunn Diode.
e) Explain the steps for power measurements.

Q.5 Solve any two of the followings **12**

a) Explain the construction and operation of Travelling wave tube.
b) What is Avalanche transit time device? Explain the principal of operation of IMPAT diode.
c) With a neat block diagram explain insertion and attenuation measurements.

SLR-GF-367

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
CMOSVLSI Design (197044802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The oxide layer formed in the MOSFET is: _____.
a) Metal oxide b) Silicon dioxide
c) Poly Silicon oxide d) Oxides of Non metals

2) The n-MOSFET is working as accumulation mode when: _____.
a) Gate is applied with positive voltage
b) Gate is grounded
c) Gate is applied with negative voltage
d) Gate is connected to source

3) The n-MOS invertor is better than BJT in terms of: _____.
a) Fast switching time b) Low power loss
c) Smaller overall layout area d) All the mentioned

4) The depletion mode n-MOS as an active load is better than enhancement load n-MOS in: _____.
a) Sharp VTC transition and better noise margins
b) Single power supply
c) Smaller overall layout area
d) All of the mentioned

5) Flicker noise is found in MOSFET at: _____.
a) Gate and oxide interface
b) Gate oxide and silicon interface
c) Source and substrate interface
d) Drain and substrate interface

6) As die size shrinks, the complexity of making the photomasks _____.
a) increases b) decrease
c) remains the same d) cannot be determined

7) Stick diagrams are those which convey layer information through?
a) thickness b) color
c) shapes d) layers

8) Which color is used for polysilicon?
a) brown b) red
c) white d) orange

9) What should be the width of metal 1 and metal 2 layers?
a) $3\lambda, 3\lambda$ b) $2\lambda, 3\lambda$
c) $3\lambda, 4\lambda$ d) $4\lambda, 3\lambda$

10) In combinational circuits output depends on _____.
a) Previous output b) Present inputs
c) Previous inputs d) Both a & b

11) How is the relation specified between input and output in logic circuits?
a) Switching equations b) Truth-table
c) Logic diagram d) All of the above

12) _____ is used to drive high capacitance load.
a) single polar capability b) bipolar capability
c) tripolar capability d) bi and tri polar capability

13) Register cell consists of _____.
a) inverter b) pass transistor
c) inverter & pass transistor d) none of the mentioned

14) The basic building blocks of the arithmetic unit in digital computers are _____.
a) Subtractors b) Adders
c) Multiplexer d) Comparator

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
CMOSVLSI Design (197044802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) What are second order effects for E MOSFET? Explain any one of them.
b) What is technology scaling for MOSFET?
c) What is complimentary CMOS logic? Design half adder using CMOS logic.
d) Comment on delay of four input dynamic NAND gate.

Q.3 Attempt any two. **16**

a) What is noise margin for CMOS inverter? How it is obtained from DC characteristics of CMOS inverter?
b) What is power dissipation of CMOS inverter? Derive necessary equations.
c) What are universal gates? How to design these gates using pass transistor logic?

Section – II

Q.4 Attempt any three. **12**

a) What is master slave edge triggered register?
b) What is C2MOS based dual edge triggered register?
c) Draw positive edge triggered register in TSPC and explain.
d) What are Plesiochronous interconnect?

Q.5 Attempt any two **16**

a) What are problems in using two phase clock for latches & registers? How to overcome this?
b) What are different types of RAM cell? Explain any one in detail.
c) What are Arbiters and how they are implemented?

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
CMOSVLSI Design (197044802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which color is used for polysilicon?
a) brown b) red
c) white d) orange

2) What should be the width of metal 1 and metal 2 layers?
a) $3\lambda, 3\lambda$ b) $2\lambda, 3\lambda$
c) $3\lambda, 4\lambda$ d) $4\lambda, 3\lambda$

3) In combinational circuits output depends on _____.
a) Previous output b) Present inputs
c) Previous inputs d) Both a & b

4) How is the relation specified between input and output in logic circuits?
a) Switching equations b) Truth-table
c) Logic diagram d) All of the above

5) _____ is used to drive high capacitance load.
a) single polar capability b) bipolar capability
c) tripolar capability d) bi and tri polar capability

6) Register cell consists of _____.
a) inverter b) pass transistor
c) inverter & pass transistor d) none of the mentioned

7) The basic building blocks of the arithmetic unit in digital computers are _____.
a) Subtractors b) Adders
c) Multiplexer d) Comparator

8) The oxide layer formed in the MOSFET is: _____.
a) Metal oxide b) Silicon dioxide
c) Poly Silicon oxide d) Oxides of Non metals

9) The n-MOSFET is working as accumulation mode when: _____.
a) Gate is applied with positive voltage
b) Gate is grounded
c) Gate is applied with negative voltage
d) Gate is connected to source

10) The n-MOS invertor is better than BJT in terms of: _____.
a) Fast switching time b) Low power loss
c) Smaller overall layout area d) All the mentioned

11) The depletion mode n-MOS as an active load is better than enhancement load n-MOS in: _____.
a) Sharp VTC transition and better noise margins
b) Single power supply
c) Smaller overall layout area
d) All of the mentioned

12) Flicker noise is found in MOSFET at: _____.
a) Gate and oxide interface
b) Gate oxide and silicon interface
c) Source and substrate interface
d) Drain and substrate interface

13) As die size shrinks, the complexity of making the photomasks _____.
a) increases b) decrease
c) remains the same d) cannot be determined

14) Stick diagrams are those which convey layer information through?
a) thickness b) color
c) shapes d) layers

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
CMOSVLSI Design (197044802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) What are second order effects for E MOSFET? Explain any one of them.
b) What is technology scaling for MOSFET?
c) What is complimentary CMOS logic? Design half adder using CMOS logic.
d) Comment on delay of four input dynamic NAND gate.

Q.3 Attempt any two. **16**

a) What is noise margin for CMOS inverter? How it is obtained from DC characteristics of CMOS inverter?
b) What is power dissipation of CMOS inverter? Derive necessary equations.
c) What are universal gates? How to design these gates using pass transistor logic?

Section – II

Q.4 Attempt any three. **12**

a) What is master slave edge triggered register?
b) What is C2MOS based dual edge triggered register?
c) Draw positive edge triggered register in TSPC and explain.
d) What are Plesiochronous interconnect?

Q.5 Attempt any two **16**

a) What are problems in using two phase clock for latches & registers? How to overcome this?
b) What are different types of RAM cell? Explain any one in detail.
c) What are Arbiters and how they are implemented?

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
CMOSVLSI Design (197044802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) How is the relation specified between input and output in logic circuits?
a) Switching equations b) Truth-table
c) Logic diagram d) All of the above

2) _____ is used to drive high capacitance load.
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3) Register cell consists of _____.
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4) The basic building blocks of the arithmetic unit in digital computers are _____.
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5) The oxide layer formed in the MOSFET is: _____.
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6) The n-MOSFET is working as accumulation mode when: _____.
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c) Gate is applied with negative voltage
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b) Single power supply
c) Smaller overall layout area
d) All of the mentioned

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d) Drain and substrate interface

10) As die size shrinks, the complexity of making the photomasks _____.
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11) Stick diagrams are those which convey layer information through?
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13) What should be the width of metal 1 and metal 2 layers?
a) $3\lambda, 3\lambda$ b) $2\lambda, 3\lambda$
c) $3\lambda, 4\lambda$ d) $4\lambda, 3\lambda$

14) In combinational circuits output depends on _____.
a) Previous output b) Present inputs
c) Previous inputs d) Both a & b

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
CMOSVLSI Design (197044802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) What are second order effects for E MOSFET? Explain any one of them.
b) What is technology scaling for MOSFET?
c) What is complimentary CMOS logic? Design half adder using CMOS logic.
d) Comment on delay of four input dynamic NAND gate.

Q.3 Attempt any two. **16**

a) What is noise margin for CMOS inverter? How it is obtained from DC characteristics of CMOS inverter?
b) What is power dissipation of CMOS inverter? Derive necessary equations.
c) What are universal gates? How to design these gates using pass transistor logic?

Section – II

Q.4 Attempt any three. **12**

a) What is master slave edge triggered register?
b) What is C2MOS based dual edge triggered register?
c) Draw positive edge triggered register in TSPC and explain.
d) What are Plesiochronous interconnect?

Q.5 Attempt any two **16**

a) What are problems in using two phase clock for latches & registers? How to overcome this?
b) What are different types of RAM cell? Explain any one in detail.
c) What are Arbiters and how they are implemented?

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
CMOSVLSI Design (197044802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) As die size shrinks, the complexity of making the photomasks _____.
a) increases b) decrease
c) remains the same d) cannot be determined

2) Stick diagrams are those which convey layer information through?
a) thickness b) color
c) shapes d) layers

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c) white d) orange

4) What should be the width of metal 1 and metal 2 layers?
a) $3\lambda, 3\lambda$ b) $2\lambda, 3\lambda$
c) $3\lambda, 4\lambda$ d) $4\lambda, 3\lambda$

5) In combinational circuits output depends on _____.
a) Previous output b) Present inputs
c) Previous inputs d) Both a & b

6) How is the relation specified between input and output in logic circuits?
a) Switching equations b) Truth-table
c) Logic diagram d) All of the above

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c) tripolar capability d) bi and tri polar capability

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c) inverter & pass transistor d) none of the mentioned

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c) Multiplexer d) Comparator

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b) Gate is grounded
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d) Gate is connected to source

12) The n-MOS invertor is better than BJT in terms of: _____.
a) Fast switching time
b) Low power loss
c) Smaller overall layout area
d) All the mentioned

13) The depletion mode n-MOS as an active load is better than enhancement load n-MOS in: _____.
a) Sharp VTC transition and better noise margins
b) Single power supply
c) Smaller overall layout area
d) All of the mentioned

14) Flicker noise is found in MOSFET at: _____.
a) Gate and oxide interface
b) Gate oxide and silicon interface
c) Source and substrate interface
d) Drain and substrate interface

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
CMOSVLSI Design (197044802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) What are second order effects for E MOSFET? Explain any one of them.
b) What is technology scaling for MOSFET?
c) What is complimentary CMOS logic? Design half adder using CMOS logic.
d) Comment on delay of four input dynamic NAND gate.

Q.3 Attempt any two. **16**

a) What is noise margin for CMOS inverter? How it is obtained from DC characteristics of CMOS inverter?
b) What is power dissipation of CMOS inverter? Derive necessary equations.
c) What are universal gates? How to design these gates using pass transistor logic?

Section – II

Q.4 Attempt any three. **12**

a) What is master slave edge triggered register?
b) What is C2MOS based dual edge triggered register?
c) Draw positive edge triggered register in TSPC and explain.
d) What are Plesiochronous interconnect?

Q.5 Attempt any two **16**

a) What are problems in using two phase clock for latches & registers? How to overcome this?
b) What are different types of RAM cell? Explain any one in detail.
c) What are Arbiters and how they are implemented?

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IOT (197044804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What are the benefits of IIoT?
a) Improves productivity b) Enables remote diagnosis
c) Reduces operation time d) All of the above

2) How many key elements are there in the industrial internet?
a) 5 b) 3
c) 2 d) None of there

3) Which of the following best describes a smart sensor?
a) Sensor with smart memory, processor and communication interface
b) Sensor with only memory
c) Sensor with LED
d) Sensor with buzzer

4) What is the frequency range in which 6LoWPAN works worldwide?
a) 2400- 2483.5 MHz b) 2300- 2345 MHz
c) 2400- 2843.5 MHz d) 2400-2583.5 MHz

5) Mention some characteristics of IoT devices _____.
a) Low processing power b) Smart in size
c) Energy constrained in nature d) All of the above

6) What are three basic goals of IIoT security?
a) Adversity, integrity, central security
b) Adversity, integrity, confidentiality
c) Availability, instantaneous, confidentiality
d) Availability, integrity, confidentiality

7) Which of the following is/are considered to be the attack vectors observed in the network layer?
a) Misrouting b) DDoS
c) Both a and b d) None of these

8) What are the different communication protection techniques used in a secured IIoT?

a) Security gateways
b) Network firewalls
c) Network access control
d) all of the above

9) Point out the wrong statement with reference to AWS _____.

a) Amazon Machine Instances are sized at various levels and rented on a computing/hour basis
b) The metrics obtained by CloudWatch may be used to enable a feature called Auto Scaling
c) A number of tools are used to support EC2 services
d) None of these

10) Which of the following allows you to create instances of the MySQL database to support your web sites?

a) Amazon Elastic Compute Cloud
b) Amazon Simple Queue Service
c) Amazon Relational Database Service
d) Amazon Simple Storage System

11) What are the different types of instances?

a) General purpose
b) Computer Optimized
c) Storage Optimized
d) All of the above

12) How would you separate two or more cloud instances but manage them with one Keystone instance?

a) Use Domains feature
b) Use Regions feature
c) Use availability zones
d) Each cloud instance should use own Keystone instance feature

13) Which of the following media files can BigQuery API upload in GCP?

a) JPEG
b) PDF
c) All of these
d) MP4

14) BigQuery uses _____ tables to create smaller data sets by date.

a) time-partitioned
b) template
c) external
d) date-bucket

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Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IOT (197044804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt Any Three **12**

a) Briefly explain what are the key IIoT Technology Catalysts and Precursors.
b) What are the important functional characteristics of connectivity in IIoT.
c) With a neat diagram, explain detailed IIC Industrial Internet Reference Architecture.
d) Explain in detail what is 6LoWPAN communication technology in IIoT.

Q.3 Attempt any Two **16**

a) Discuss in detail the Industrial Internet Consortium Three-Tier Topology in IIoT.
b) Explain the types and methods of analytics in IIoT.
c) Discuss in detail the potential security issues at the system level of IIoT.

Section – II

Q.4 Attempt Any Three **12**

a) Draw and explain the AWS architecture for IoT.
b) Explain with suitable example the two main components of Google Cloud IoT core.
c) Write note on the following components:
1) Bare Metal
2) Containers
d) Explain the following core projects of OpenStack ecosystem:
1) Identity
2) Compute
3) Storage

Q.5 Attempt Any Two **16**

a) Explain why Bigtable is ideal for applications that need very high throughput and scalability for key/value data.
b) Explain the four types of VPC architectures available in AWS with suitable diagram.
c) Briefly explain the modern architecture of open stack with appropriate diagram.

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IOT (197044804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if required

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What are the different communication protection techniques used in a secured IIoT?
a) Security gateways b) Network firewalls
c) Network access control d) all of the above

2) Point out the wrong statement with reference to AWS _____.
a) Amazon Machine Instances are sized at various levels and rented on a computing/hour basis
b) The metrics obtained by CloudWatch may be used to enable a feature called Auto Scaling
c) A number of tools are used to support EC2 services
d) None of these

3) Which of the following allows you to create instances of the MySQL database to support your web sites?
a) Amazon Elastic Compute Cloud
b) Amazon Simple Queue Service
c) Amazon Relational Database Service
d) Amazon Simple Storage System

4) What are the different types of instances?
a) General purpose b) Computer Optimized
c) Storage Optimized d) All of the above

5) How would you separate two or more cloud instances but manage them with one Keystone instance?
a) Use Domains feature
b) Use Regions feature
c) Use availability zones
d) Each cloud instance should use own Keystone instance feature

6) Which of the following media files can BigQuery API upload in GCP?
a) JPEG b) PDF
c) All of these d) MP4

7) BigQuery uses _____ tables to create smaller data sets by date.
a) time-partitioned b) template
c) external d) date-bucket

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11) What is the frequency range in which 6LoWPAN works worldwide?
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b) Adversity, integrity, confidentiality
c) Availability, instantaneous, confidentiality
d) Availability, integrity, confidentiality

14) Which of the following is/are considered to be the attack vectors observed in the network layer?
a) Misrouting b) DDoS
c) Both a and b d) None of these

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Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IOT (197044804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt Any Three **12**

a) Briefly explain what are the key IIoT Technology Catalysts and Precursors.
b) What are the important functional characteristics of connectivity in IIoT.
c) With a neat diagram, explain detailed IIC Industrial Internet Reference Architecture.
d) Explain in detail what is 6LoWPAN communication technology in IIoT.

Q.3 Attempt any Two **16**

a) Discuss in detail the Industrial Internet Consortium Three-Tier Topology in IIoT.
b) Explain the types and methods of analytics in IIoT.
c) Discuss in detail the potential security issues at the system level of IIoT.

Section – II

Q.4 Attempt Any Three **12**

a) Draw and explain the AWS architecture for IoT.
b) Explain with suitable example the two main components of Google Cloud IoT core.
c) Write note on the following components:
1) Bare Metal
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d) Explain the following core projects of OpenStack ecosystem:
1) Identity
2) Compute
3) Storage

Q.5 Attempt Any Two **16**

a) Explain why Bigtable is ideal for applications that need very high throughput and scalability for key/value data.
b) Explain the four types of VPC architectures available in AWS with suitable diagram.
c) Briefly explain the modern architecture of open stack with appropriate diagram.

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IOT (197044804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if required

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What are the different types of instances?
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2) How would you separate two or more cloud instances but manage them with one Keystone instance?
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3) Which of the following media files can BigQuery API upload in GCP?
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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IOT (197044804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt Any Three **12**

a) Briefly explain what are the key IIoT Technology Catalysts and Precursors.
b) What are the important functional characteristics of connectivity in IIoT.
c) With a neat diagram, explain detailed IIC Industrial Internet Reference Architecture.
d) Explain in detail what is 6LoWPAN communication technology in IIoT.

Q.3 Attempt any Two **16**

a) Discuss in detail the Industrial Internet Consortium Three-Tier Topology in IIoT.
b) Explain the types and methods of analytics in IIoT.
c) Discuss in detail the potential security issues at the system level of IIoT.

Section – II

Q.4 Attempt Any Three **12**

a) Draw and explain the AWS architecture for IoT.
b) Explain with suitable example the two main components of Google Cloud IoT core.
c) Write note on the following components:
1) Bare Metal
2) Containers
d) Explain the following core projects of OpenStack ecosystem:
1) Identity
2) Compute
3) Storage

Q.5 Attempt Any Two **16**

a) Explain why Bigtable is ideal for applications that need very high throughput and scalability for key/value data.
b) Explain the four types of VPC architectures available in AWS with suitable diagram.
c) Briefly explain the modern architecture of open stack with appropriate diagram.

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IOT (197044804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if required

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What are three basic goals of IIoT security?
a) Adversity, integrity, central security
b) Adversity, integrity, confidentiality
c) Availability, instantaneous, confidentiality
d) Availability, integrity, confidentiality

2) Which of the following is/are considered to be the attack vectors observed in the network layer?
a) Misrouting b) DDoS
c) Both a and b d) None of these

3) What are the different communication protection techniques used in a secured IIoT?
a) Security gateways b) Network firewalls
c) Network access control d) all of the above

4) Point out the wrong statement with reference to AWS _____.
a) Amazon Machine Instances are sized at various levels and rented on a computing/hour basis
b) The metrics obtained by CloudWatch may be used to enable a feature called Auto Scaling
c) A number of tools are used to support EC2 services
d) None of these

5) Which of the following allows you to create instances of the MySQL database to support your web sites?
a) Amazon Elastic Compute Cloud
b) Amazon Simple Queue Service
c) Amazon Relational Database Service
d) Amazon Simple Storage System

6) What are the different types of instances?
a) General purpose b) Computer Optimized
c) Storage Optimized d) All of the above

7) How would you separate two or more cloud instances but manage them with one Keystone instance?
a) Use Domains feature
b) Use Regions feature
c) Use availability zones
d) Each cloud instance should use own Keystone instance feature

8) Which of the following media files can BigQuery API upload in GCP?
a) JPEG b) PDF
c) All of these d) MP4

9) BigQuery uses _____ tables to create smaller data sets by date.
a) time-partitioned b) template
c) external d) date-bucket

10) What are the benefits of IIoT?
a) Improves productivity b) Enables remote diagnosis
c) Reduces operation time d) All of the above

11) How many key elements are there in the industrial internet?
a) 5 b) 3
c) 2 d) None of there

12) Which of the following best describes a smart sensor?
a) Sensor with smart memory, processor and communication interface
b) Sensor with only memory
c) Sensor with LED
d) Sensor with buzzer

13) What is the frequency range in which 6LoWPAN works worldwide?
a) 2400- 2483.5 MHz b) 2300- 2345 MHz
c) 2400- 2843.5 MHz d) 2400-2583.5 MHz

14) Mention some characteristics of IoT devices _____.
a) Low processing power b) Smart in size
c) Energy constrained in nature d) All of the above

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Industrial IOT (197044804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt Any Three **12**

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c) With a neat diagram, explain detailed IIC Industrial Internet Reference Architecture.
d) Explain in detail what is 6LoWPAN communication technology in IIoT.

Q.3 Attempt any Two **16**

a) Discuss in detail the Industrial Internet Consortium Three-Tier Topology in IIoT.
b) Explain the types and methods of analytics in IIoT.
c) Discuss in detail the potential security issues at the system level of IIoT.

Section – II

Q.4 Attempt Any Three **12**

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b) Explain with suitable example the two main components of Google Cloud IoT core.
c) Write note on the following components:
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d) Explain the following core projects of OpenStack ecosystem:
1) Identity
2) Compute
3) Storage

Q.5 Attempt Any Two **16**

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b) Explain the four types of VPC architectures available in AWS with suitable diagram.
c) Briefly explain the modern architecture of open stack with appropriate diagram.

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Artificial Intelligence and Applications (197044805)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following agent is best in Al?
a) Intelligent b) Utility Based
c) Simple Reflex d) Goal Based

2) Al is study of _____ Agents.
a) Omniscience b) Rational
c) Autonomy d) none of these

3) In regards with informed search which statement is not TRUE?
a) It has domain knowledge
b) It will increase the time complexity
c) it uses heuristic function
d) DFS Algorithm is type of informed search

4) DFS, BFS comes under _____ search?
a) Informed search b) Uninformed
c) Both A & B d) A*

5) Heuristic is the property of _____.
a) AO* b) DFS
c) BFS d) None

6) Which of the following search technique has AND/OR graph theory?
a) Greedy Best First Search b) A*
c) AO* d) none of these

7) What are the types of entities covered in Ontology?
a) Physical and abstract objects b) time and locations
c) Actions and events d) All

8) Propositional Logic has _____ output.
a) Either True or False b) Both True or False
c) Quantitative Value d) None

9) Which of the following statement can be represented using the universal quantifier?

a) All bird fly b) some bird fly
c) Rohan is intelligent d) some men drink coffee

10) Choose from the following areas where NATURAL LANGUAGE PROCESSING can be helpful.

a) Automatic Text Summarization
b) Automatic Question Answering Systems
c) Information Retrieval
d) All of these

11) Industrial robots used for manufacturing were basically _____.

a) moving rovers b) humanoid robots
c) human arm model d) none

12) In a robot the gripper is an example of _____.

a) actuator b) controller
c) indicator d) None of these

13) Deep Learning is *a* subset of?

a) ML b) AI
c) Robotics d) None of these

14) Deep Learning involves following dependencies _____.

a) fast computing b) more memory
c) high end processors d) All of these

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Artificial Intelligence and Applications (197044805)

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Section – I

Q.2 Solve any Four. **16**
- **a)** Explain any four applications of AI.
- **b)** Explain any two types AI agents with diagram.
- **c)** Explain Breadth first search algorithm with an example.
- **d)** What are atomic and compound propositions? Explain with example.
- **e)** What is constraint Satisfaction Problems? Explain with example.

Q.3 Solve any Two. **12**
- **a)** Explain the minimax algorithm with example.
- **b)** With an example explain AO* Algorithm.
- **c)** Explain in detail FOL?

Section – II

Q.4 Solve any Four. **16**
- **a)** What is Formal Grammar, explain it with an example?
- **b)** Explain the fundamental parts of Robotic Arm.
- **c)** Explain Ambiguity and Disambiguation with an example?
- **d)** Explain the various applications of robots in AI.
- **e)** What is the use CNN in deep learning?

Q.5 Solve any Two. **12**
- **a)** Explain the evolution of Robots.
- **b)** Differentiate between Deep Learning Vs Machine Learning.
- **c)** Explain the applications of NLP.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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1) Propositional Logic has _____ output.
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a) All bird fly b) some bird fly
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a) fast computing b) more memory
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8) Which of the following agent is best in AI?
a) Intelligent b) Utility Based
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9) AI is study of _____ Agents.
a) Omniscience b) Rational
c) Autonomy d) none of these

10) In regards with informed search which statement is not TRUE?
a) It has domain knowledge
b) It will increase the time complexity
c) it uses heuristic function
d) DFS Algorithm is type of informed search

11) DFS, BFS comes under _____ search?
a) Informed search b) Uninformed
c) Both A & B d) A*

12) Heuristic is the property of _____.
a) AO* b) DFS
c) BFS d) None

13) Which of the following search technique has AND/OR graph theory?
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14) What are the types of entities covered in Ontology?
a) Physical and abstract objects b) time and locations
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Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Section – I

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e) What is constraint Satisfaction Problems? Explain with example.

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Section – II

Q.4 Solve any Four. **16**

a) What is Formal Grammar, explain it with an example?
b) Explain the fundamental parts of Robotic Arm.
c) Explain Ambiguity and Disambiguation with an example?
d) Explain the various applications of robots in AI.
e) What is the use CNN in deep learning?

Q.5 Solve any Two. **12**

a) Explain the evolution of Robots.
b) Differentiate between Deep Learning Vs Machine Learning.
c) Explain the applications of NLP.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Artificial Intelligence and Applications (197044805)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

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Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Artificial Intelligence and Applications (197044805)

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Section – I

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- **a)** Explain the minimax algorithm with example.
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Section – II

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Seat No.	

Set | S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
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Seat No.		Set	S

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Section – I

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Section – II

Q.4 Solve any Four. **16**
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- **e)** What is the use CNN in deep learning?

Q.5 Solve any Two. **12**
- **a)** Explain the evolution of Robots.
- **b)** Differentiate between Deep Learning Vs Machine Learning.
- **c)** Explain the applications of NLP.

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security (197044806)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct options. **14**

1) If both sender and receiver use the same key the system is referred to as _____ encryption.
a) Symmetric b) public-key
c) Asymmetric d) two-key

2) A substitution technique in which every new message requires a new key of the same length as the new message is known as _____.
a) Hill Cipher b) Playfair Cipher
c) One-time Pad d) Caesar Cipher

3) Playfair Cipher is _____ cipher.
a) Monoalphabetic b) Polyalphabetic
c) Multiletter d) Blinding

4) _____ is an open encryption and security specification designed to protect credit card transaction on internet.
a) SSL b) TLS
c) SET d) SMTP

5) In _____ mode a counter equal to the plaintext block size is used.
a) CBC b) ECB
c) CFB d) CTR

6) In PGP services, for providing digital signature _____ algorithm is used.
a) DSS/SHA b) RSA/SHA
c) Both a and b d) IDEA

7) _____ provides security services at IP layer by selecting required security protocols, algorithms and cryptography keys as per the services requested.
a) PGP b) SET
c) S/MIME d) IPSec

8) The use of a trusted third party to assure certain properties of a data exchange is known as _____.
a) Event Detection b) Trusted Functionality
c) Notarization d) Security Audit Trial

9) _____ Provides privacy, integrity, and authentication in E- mail.
a) IPSec b) SSL
c) PGP d) None of these

10) _____ is a collection of protocols designed by the IETF (Internet Engineering Task Force) to provide security for a packet at the network level.
a) IPSec b) SSL
c) PGP d) None of these

11) _____ is a fraud involving another person's identity for an illicit purpose.
a) Software Piracy b) Computer Sabotage
c) Hacking d) Identity Theft

12) _____ refer to sending a large number of E-Mails to the victim to crash victim's E-Mail account or to make victim's mail server crash.
a) Software Privacy b) E-Mail Bombing
c) Web Jacking d) Computer Virus

13) _____ is a program in which malicious or harmful code is contained inside apparently harmless programming or data in such a way that it can get control and cause harm.
a) Spam b) Trojan Horse
c) Virus d) Keyloggers

14) _____ is a process of recovering passwords from data that have been stored in or transmitted by a computer system.
a) Phishing b) Password Cracking
c) Data Diddling d) All of these

Seat No.	

Set | P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security (197044806)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four: **16**
- **a)** Explain the Caesar Cipher in brief.
- **b)** Discuss the strength of DES algorithm.
- **c)** Explain a model for Network Security in detail.
- **d)** Explain the OSI security architecture.
- **e)** Explain the symmetric key cryptography.

Q.3 Solve any two: **12**
- **a)** Explain various transposition techniques in detail.
- **b)** Explain the working of AES with neat diagram.
- **c)** Illustrate the working of single round of DES with diagram.

Section – II

Q.4 Solve any four: **16**
- **a)** Explain the Virus and its types in short.
- **b)** Discuss Cloud Security as a Service.
- **c)** Discuss the difference between Virus and Worm.
- **d)** Explain Security Electronic Transaction (SET) protocol with diagram.
- **e)** Explain the DoS and DDoS Attacks.

Q.5 Solve any two: **12**
- **a)** Explain SQL Injection. Describe steps for SQL Injection Attacks. How to Prevent SQL injection attack?
- **b)** Explain Intrusion Detection Systems along with Firewalls.
- **c)** Draw the format of ESP header of IPSec and explain its format.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security (197044806)

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct options. **14**

1) The use of a trusted third party to assure certain properties of a data exchange is known as _____.
a) Event Detection b) Trusted Functionality
c) Notarization d) Security Audit Trial

2) _____ Provides privacy, integrity, and authentication in E- mail.
a) IPSec b) SSL
c) PGP d) None of these

3) _____ is a collection of protocols designed by the IETF (Internet Engineering Task Force) to provide security for a packet at the network level.
a) IPSec b) SSL
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4) _____ is a fraud involving another person's identity for an illicit purpose.
a) Software Piracy b) Computer Sabotage
c) Hacking d) Identity Theft

5) _____ refer to sending a large number of E-Mails to the victim to crash victim's E-Mail account or to make victim's mail server crash.
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c) Web Jacking d) Computer Virus

6) _____ is a program in which malicious or harmful code is contained inside apparently harmless programming or data in such a way that it can get control and cause harm.
a) Spam b) Trojan Horse
c) Virus d) Keyloggers

7) _____ is a process of recovering passwords from data that have been stored in or transmitted by a computer system.
a) Phishing b) Password Cracking
c) Data Diddling d) All of these

8) If both sender and receiver use the same key the system is referred to as _____ encryption.

a) Symmetric b) public-key
c) Asymmetric d) two-key

9) A substitution technique in which every new message requires a new key of the same length as the new message is known as _____.

a) Hill Cipher b) Playfair Cipher
c) One-time Pad d) Caesar Cipher

10) Playfair Cipher is _____ cipher.

a) Monoalphabetic b) Polyalphabetic
c) Multiletter d) Blinding

11) _____ is an open encryption and security specification designed to protect credit card transaction on internet.

a) SSL b) TLS
c) SET d) SMTP

12) In _____ mode a counter equal to the plaintext block size is used.

a) CBC b) ECB
c) CFB d) CTR

13) In PGP services, for providing digital signature _____ algorithm is used.

a) DSS/SHA b) RSA/SHA
c) Both a and b d) IDEA

14) _____ provides security services at IP layer by selecting required security protocols, algorithms and cryptography keys as per the services requested.

a) PGP b) SET
c) S/MIME d) IPSec

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security (197044806)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four: **16**
- **a)** Explain the Caesar Cipher in brief.
- **b)** Discuss the strength of DES algorithm.
- **c)** Explain a model for Network Security in detail.
- **d)** Explain the OSI security architecture.
- **e)** Explain the symmetric key cryptography.

Q.3 Solve any two: **12**
- **a)** Explain various transposition techniques in detail.
- **b)** Explain the working of AES with neat diagram.
- **c)** Illustrate the working of single round of DES with diagram.

Section – II

Q.4 Solve any four: **16**
- **a)** Explain the Virus and its types in short.
- **b)** Discuss Cloud Security as a Service.
- **c)** Discuss the difference between Virus and Worm.
- **d)** Explain Security Electronic Transaction (SET) protocol with diagram.
- **e)** Explain the DoS and DDoS Attacks.

Q.5 Solve any two: **12**
- **a)** Explain SQL Injection. Describe steps for SQL Injection Attacks. How to Prevent SQL injection attack?
- **b)** Explain Intrusion Detection Systems along with Firewalls.
- **c)** Draw the format of ESP header of IPSec and explain its format.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security (197044806)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security (197044806)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four: **16**

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Section – II

Q.4 Solve any four: **16**

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c) Discuss the difference between Virus and Worm.
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c) Draw the format of ESP header of IPSec and explain its format.

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security (197044806)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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4) _____ Provides privacy, integrity, and authentication in E- mail.
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13) _____ is an open encryption and security specification designed to protect credit card transaction on internet.

a) SSL
b) TLS
c) SET
d) SMTP

14) In _____ mode a counter equal to the plaintext block size is used.

a) CBC
b) ECB
c) CFB
d) CTR

SLR-GF-370

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Network Security (197044806)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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- **a)** Explain the Caesar Cipher in brief.
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Q.3 Solve any two: **12**
- **a)** Explain various transposition techniques in detail.
- **b)** Explain the working of AES with neat diagram.
- **c)** Illustrate the working of single round of DES with diagram.

Section – II

Q.4 Solve any four: **16**
- **a)** Explain the Virus and its types in short.
- **b)** Discuss Cloud Security as a Service.
- **c)** Discuss the difference between Virus and Worm.
- **d)** Explain Security Electronic Transaction (SET) protocol with diagram.
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Q.5 Solve any two: **12**
- **a)** Explain SQL Injection. Describe steps for SQL Injection Attacks. How to Prevent SQL injection attack?
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- **c)** Draw the format of ESP header of IPSec and explain its format.

SLR-GF-371

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Analytics (197044807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Using the performance of the students in the class to anticipate which students will fail in the class is?
a) Descriptive Analytics b) Diagnostic Analytics
c) Predictive Analytics d) Prescriptive Analytics

2) Suppose that min and max marks scored by students of class in the mid-sem exam are 12 and 95 respectively. The mean and standard deviation is 64 and 15 respectively. Which of the following statements is true?
a) By min-max normalization, the value 35 will be transformed to 0.28
b) By min-max normalization, the value 35 will be transformed into 1.93.
c) By min-max normalization, the value 35 will be transformed into -1.93.
d) By min-max normalization, the value 35 will be transformed to -0.28

3) Which of the following statements are true for Spearman rank correlation?
a) Its show degree of linear relationship between two variable
b) It show degree of relationship between two variable either linear or non linear
c) It can be used for numerical variable only
d) It can be used for both numerical as well as ordinal variables

4) The output of the R command
c(13,10,13,11)*c(12,11,10,12)/c(6,5,5,2) is _____.
a) 22 26 66 26
b) 0.1805556 0.1818182 0.2600000 0.4583333
c) 936 550 650 264
d) 26 22 26 66

5) Which one of the following is the correct outcome of the command y[(y>30)] where y=c(45,35,30,25,42,31,41,28,40,30,32,40,38,35,29,36,31,25,28,29) _____.

a) 25 28 29 25 28 29

b) [1] 45 35 42 31 41 40 32 40 38 35 36 31

c) [1] TRUE TRUE FALSE FALSE TRUE TRUE TRUE FALSE TRUE FALSE TRUE TRUE TRUE TRUE FALSE TRUE TRUE FALSE FALSE FALSE

d) [1] FALSE FALSE FALSE TRUE FALSE FALSE FALSE TRUE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE FALSE TRUE TRUE TRUE

6) What will be the correct outcome of following code

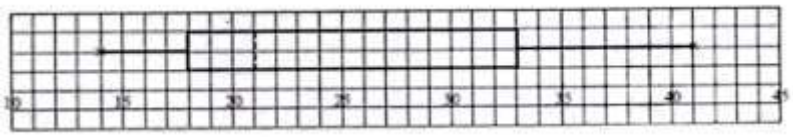
```
u <- c("red", "yellow", "blue")
u[1]
```

a) red b) yellow

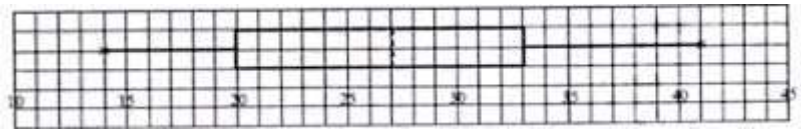
c) blur d) green

7) Choose one of the box and whisker plots for the following sample:
17 22 18 33 14 36 39 41 25 31 18 19 16 21 21

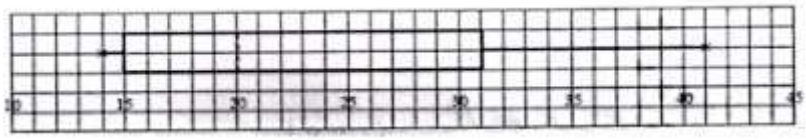
a)



b)



c)



d) None of these

8) _____ is a business intelligence tool that aids people in visualizing and understanding their data.

a) Tableau b) Python

c) Google cloud d) SQL

9) Choose the primary characteristics of big data among the following.

a) Value b) Variety

c) Volume d) All of these

10) Data in _____ bytes size is called Big Data.

a) Tera b) Giga

c) Peta d) Meta

11) What is data visualization?

a) It is the numerical representation of information and data

b) It is the graphical representation of information and data

c) It is the character representation of information and data

d) None of Above

12) Amongst which of the following is / are related to Standard Deviation Function?

a) Standard Deviation is one of the ways to quantify dispersion
b) It is a measure of how widely values are dispersed from the average value
c) STDEV.P function which is used to calculate standard deviation based on the entire population given as arguments
d) All of the mentioned above

13) If the values of two variables move in the same direction, _____.

a) The correlation is said to be non-linear
b) The correlation is said to be linear
c) The correlation is said to be negative
d) The correlation is said to be positive

14) _____ is a tool which is used to reduce the dimension of the data.

a) Principal components analysis
b) Product Components analysis
c) Principle Count analysis
d) Pre Complex analysis

Seat No.	

Set **P**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Analytics (197044807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) What is Histogram? Draw a histogram for the "height" attribute from Contact list Table 1 given below.

Table1: Data set of private list of contacts.

Contact	Maxtemp	Weight	Height	Years	Gender	Company
Andrew	25	77	175	10	M	Good
Bernhard	31	110	195	12	M	Good
Carolina	15	70	172	2	F	Bad
Dennis	20	85	180	16	M	Good
Eve	10	65	168	0	F	Bad
Fred	12	75	173	6	M	Good
Gwyneth	16	75	180	3	F	Bad
Hayden	26	63	165	2	F	Bad
Irene	15	55	158	5	F	Bad
James	21	66	163	14	M	Good
Kevin	30	95	190	1	M	Bad
Lea	13	72	172	11	F	Good
Marcus	8	83	185	3	F	Bad
Nigel	12	115	192	15	M	Good

b) Define Mean, Mode and Median for univariate data.
The runs scored in a cricket match by 11 players is as follows: 6, 15, 120, 50, 100, 80, 10, 15, 8, 10, 15 Find the mean, mode and median of this data. Are the three same?

c) Explain the following dispersion univariate statistics.
1) Amplitude
2) Inter quartile range
3) Mean absolute deviation
4) Standard deviation

d) How to calculate Pearson Correlation coefficient between two attributes? What is the significance of Positive, Negative and No correlation.

e) What are different visualizations used for Multivariate data?

f) Convert the Nominal scale data to Binary values for the data given below.

Food	Age	Distance	Company
Chinese	51	Close	Good
Italian	43	Very close	Good
Italian	82	Close	Good
Burgers	23	Far	Bad
Chinese	46	Very far	Good
Chinese	29	Too far	Bad
Burgers	42	Very far	Good
Chinese	38	Close	Bad
Italian	31	Far	Good

Q.3 Solve any two of the following. **12**

a) Define absolute frequency, relative frequency and cumulative frequency of data. Calculate the absolute and relative frequencies and respective cumulative frequencies for the attribute "Height" in Table 1 shown in above question (Q2. A).

b) What are advantages of dimensionality reduction? What is difference between attribute selection approach and attribute aggregation approach. Discuss in detail any one technique used for dimensionality reduction.

c) With suitable examples describe the following problems associated with data quality. Also discuss what can be a solution for the same in detail.

1) Missing Values
2) Redundant Data
3) Inconsistent data
4) Noisy data
5) Outliers

Section – II

Q.4 Solve any four of the following. **16**

a) What are challenges of big data visualization presented by the "four Vs" of big data?

b) Compare Business intelligence with Data Science.

c) Enlist different sources of Big Data.

d) What is the role of Data devices, Data Collectors, Data Aggregators and Data Users & buyers in Emerging Big Data Ecosystem?

e) What will be returns/results of execution of following statements in R

```
v < - 1:5
v
sum(v)
w < - v * 2
w
w[3]
z < - v + w
z
z[z > 8]
z[z > 8 | z < 5]
```

f) Write a R code for generating covariance matrix of height, weight and Max temp attributes for the data given in Table 1 (Q2. A). (Assume data is available in .csv file)

Q.5 Solve any two of the following. **12**

a) Discuss in Detail NOIR (Nominal, Ordinal, Interval, Ratio) attribute types(Scales). State example of each attribute type. What mathematical operations are possible with each of these attribute types?

b) Draw and explain Typical analytic architecture for Big Data Analytics.

c) With suitable example, explain following data visualization techniques: histogram, scatter plot, line chart, bar chart, pie chart, area chart.

Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Analytics (197044807)

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Duration: 30 Minutes Marks:14

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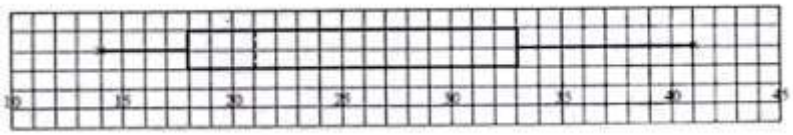

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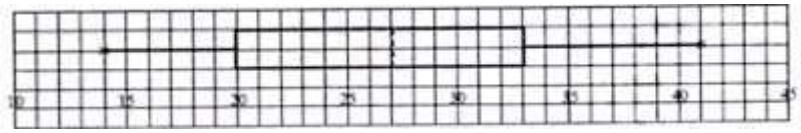
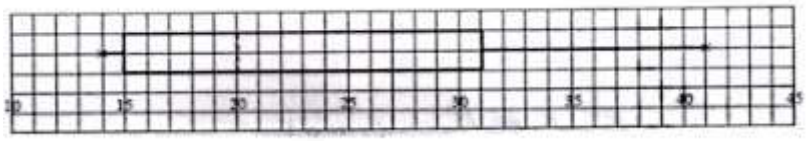


c)



d) None of these

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Analytics (197044807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) What is Histogram? Draw a histogram for the "height" attribute from Contact list Table 1 given below.

Table1: Data set of private list of contacts.

Contact	Maxtemp	Weight	Height	Years	Gender	Company
Andrew	25	77	175	10	M	Good
Bernhard	31	110	195	12	M	Good
Carolina	15	70	172	2	F	Bad
Dennis	20	85	180	16	M	Good
Eve	10	65	168	0	F	Bad
Fred	12	75	173	6	M	Good
Gwyneth	16	75	180	3	F	Bad
Hayden	26	63	165	2	F	Bad
Irene	15	55	158	5	F	Bad
James	21	66	163	14	M	Good
Kevin	30	95	190	1	M	Bad
Lea	13	72	172	11	F	Good
Marcus	8	83	185	3	F	Bad
Nigel	12	115	192	15	M	Good

b) Define Mean, Mode and Median for univariate data.
The runs scored in a cricket match by 11 players is as follows: 6, 15, 120, 50, 100, 80, 10, 15, 8, 10, 15 Find the mean, mode and median of this data. Are the three same?

c) Explain the following dispersion univariate statistics.
1) Amplitude
2) Inter quartile range
3) Mean absolute deviation
4) Standard deviation

d) How to calculate Pearson Correlation coefficient between two attributes? What is the significance of Positive, Negative and No correlation.

e) What are different visualizations used for Multivariate data?

f) Convert the Nominal scale data to Binary values for the data given below.

Food	Age	Distance	Company
Chinese	51	Close	Good
Italian	43	Very close	Good
Italian	82	Close	Good
Burgers	23	Far	Bad
Chinese	46	Very far	Good
Chinese	29	Too far	Bad
Burgers	42	Very far	Good
Chinese	38	Close	Bad
Italian	31	Far	Good

Q.3 Solve any two of the following. **12**

a) Define absolute frequency, relative frequency and cumulative frequency of data. Calculate the absolute and relative frequencies and respective cumulative frequencies for the attribute "Height" in Table 1 shown in above question (Q2. A).

b) What are advantages of dimensionality reduction? What is difference between attribute selection approach and attribute aggregation approach. Discuss in detail any one technique used for dimensionality reduction.

c) With suitable examples describe the following problems associated with data quality. Also discuss what can be a solution for the same in detail.

1) Missing Values
2) Redundant Data
3) Inconsistent data
4) Noisy data
5) Outliers

Section – II

Q.4 Solve any four of the following. **16**

a) What are challenges of big data visualization presented by the "four Vs" of big data?

b) Compare Business intelligence with Data Science.

c) Enlist different sources of Big Data.

d) What is the role of Data devices, Data Collectors, Data Aggregators and Data Users & buyers in Emerging Big Data Ecosystem?

e) What will be returns/results of execution of following statements in R

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v < - 1:5
v
sum(v)
w < - v * 2
w
w[3]
z < - v + w
z
z[z > 8]
z[z > 8 | z < 5]
```

f) Write a R code for generating covariance matrix of height, weight and Max temp attributes for the data given in Table 1 (Q2. A). (Assume data is available in .csv file)

Q.5 Solve any two of the following. **12**

a) Discuss in Detail NOIR (Nominal, Ordinal, Interval, Ratio) attribute types(Scales). State example of each attribute type. What mathematical operations are possible with each of these attribute types?

b) Draw and explain Typical analytic architecture for Big Data Analytics.

c) With suitable example, explain following data visualization techniques: histogram, scatter plot, line chart, bar chart, pie chart, area chart.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Analytics (197044807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What is data visualization?
a) It is the numerical representation of information and data
b) It is the graphical representation of information and data
c) It is the character representation of information and data
d) None of Above

2) Amongst which of the following is / are related to Standard Deviation Function?
a) Standard Deviation is one of the ways to quantify dispersion
b) It is a measure of how widely values are dispersed from the average value
c) STDEV.P function which is used to calculate standard deviation based on the entire population given as arguments
d) All of the mentioned above

3) If the values of two variables move in the same direction, _____.
a) The correlation is said to be non-linear
b) The correlation is said to be linear
c) The correlation is said to be negative
d) The correlation is said to be positive

4) _____ is a tool which is used to reduce the dimension of the data.
a) Principal components analysis
b) Product Components analysis
c) Principle Count analysis
d) Pre Complex analysis

5) Using the performance of the students in the class to anticipate which students will fail in the class is?
a) Descriptive Analytics b) Diagnostic Analytics
c) Predictive Analytics d) Prescriptive Analytics

6) Suppose that min and max marks scored by students of class in the mid-sem exam are 12 and 95 respectively. The mean and standard deviation is 64 and 15 respectively. Which of the following statements is true?

a) By min-max normalization, the value 35 will be transformed to 0.28
b) By min-max normalization, the value 35 will be transformed into 1.93.
c) By min-max normalization, the value 35 will be transformed into -1.93.
d) By min-max normalization, the value 35 will be transformed to -0.28

7) Which of the following statements are true for Spearman rank correlation?

a) Its show degree of linear relationship between two variable
b) It show degree of relationship between two variable either linear or non linear
c) It can be used for numerical variable only
d) It can be used for both numerical as well as ordinal variables

8) The output of the R command
c(13,10,13,11)*c(12,11,10,12)/c(6,5,5,2) is _____.

a) 22 26 66 26
b) 0.1805556 0.1818182 0.2600000 0.4583333
c) 936 550 650 264
d) 26 22 26 66

9) Which one of the following is the correct outcome of the command y[(y>30)] where
y=c(45,35,30,25,42,31,41,28,40,30,32,40,38,35,29,36,31,25,28,29) _____.

a) 25 28 29 25 28 29
b) [1] 45 35 42 31 41 40 32 40 38 35 36 31
c) [1] TRUE TRUE FALSE FALSE TRUE TRUE TRUE FALSE TRUE FALSE TRUE TRUE TRUE TRUE FALSE TRUE TRUE FALSE FALSE FALSE
d) [1] FALSE FALSE FALSE TRUE FALSE FALSE FALSE TRUE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE FALSE TRUE TRUE TRUE

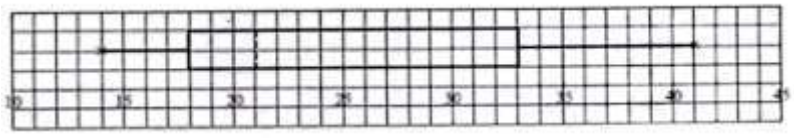
10) What will be the correct outcome of following code

```
u <- c("red", "yellow", "blue")
u[1]
```

a) red
b) yellow
c) blur
d) green

11) Choose one of the box and whisker plots for the following sample:
17 22 18 33 14 36 39 41 25 31 18 19 16 21 21

a)



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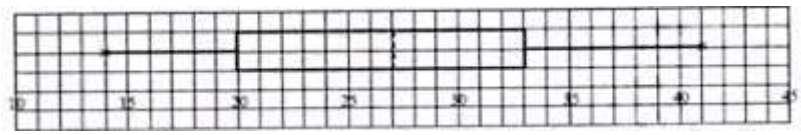

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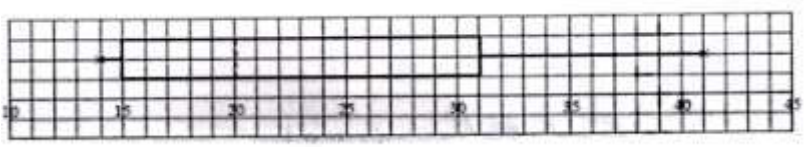

d) None of these

12) _____ is a business intelligence tool that aids people in visualizing and understanding their data.

a) Tableau
b) Python
c) Google cloud
d) SQL

13) Choose the primary characteristics of big data among the following.

a) Value
b) Variety
c) Volume
d) All of these

14) Data in _____ bytes size is called Big Data.

a) Tera
b) Giga
c) Peta
d) Meta

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Analytics (197044807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

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a) What is Histogram? Draw a histogram for the “height” attribute from Contact list Table 1 given below.

Table1: Data set of private list of contacts.

Contact	Maxtemp	Weight	Height	Years	Gender	Company
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Section – II

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Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Analytics (197044807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
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Duration: 30 Minutes Marks:14

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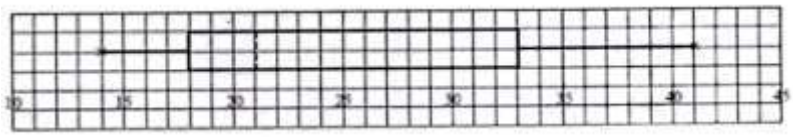

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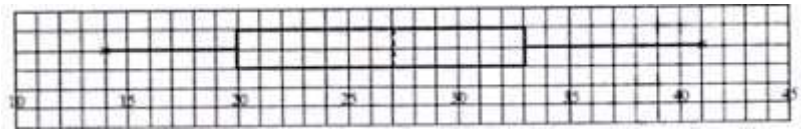

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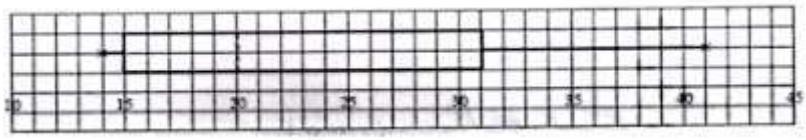

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Seat No.	

Set | S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Analytics (197044807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) What is Histogram? Draw a histogram for the "height" attribute from Contact list Table 1 given below.

Table1: Data set of private list of contacts.

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Q.3 Solve any two of the following. **12**

a) Define absolute frequency, relative frequency and cumulative frequency of data. Calculate the absolute and relative frequencies and respective cumulative frequencies for the attribute "Height" in Table 1 shown in above question (Q2. A).

b) What are advantages of dimensionality reduction? What is difference between attribute selection approach and attribute aggregation approach. Discuss in detail any one technique used for dimensionality reduction.

c) With suitable examples describe the following problems associated with data quality. Also discuss what can be a solution for the same in detail.

1) Missing Values
2) Redundant Data
3) Inconsistent data
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Section – II

Q.4 Solve any four of the following. **16**

a) What are challenges of big data visualization presented by the "four Vs" of big data?

b) Compare Business intelligence with Data Science.

c) Enlist different sources of Big Data.

d) What is the role of Data devices, Data Collectors, Data Aggregators and Data Users & buyers in Emerging Big Data Ecosystem?

e) What will be returns/results of execution of following statements in R

```
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sum(v)
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w
w[3]
z < - v + w
z
z[z > 8]
z[z > 8 | z < 5]
```

f) Write a R code for generating covariance matrix of height, weight and Max temp attributes for the data given in Table 1 (Q2. A). (Assume data is available in .csv file)

Q.5 Solve any two of the following. **12**

a) Discuss in Detail NOIR (Nominal, Ordinal, Interval, Ratio) attribute types(Scales). State example of each attribute type. What mathematical operations are possible with each of these attribute types?

b) Draw and explain Typical analytic architecture for Big Data Analytics.

c) With suitable example, explain following data visualization techniques: histogram, scatter plot, line chart, bar chart, pie chart, area chart.

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
System Software (BTN05501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) An assembly language is a _____.
a) Low level programming language
b) Middle level programming language
c) High level programming language
d) Internet based programming language

2) An analysis, which determines the syntactic structure of the source statement, is called _____.
a) Semantic analysis b) Process analysis
c) Syntax analysis d) Function analysis

3) "less than 3" is _____.
a) literal token b) num token
c) relation token d) None of these

4) A parser which is a variant of top-down parsing without backtracking ____.
a) Recursive Descend b) Operator Precedence.
c) LL(1) parser d) LALR Parser

5) An assembler is _____.
a) programming language dependent
b) syntax dependent
c) machine dependent
d) data dependent

6) The translator which performs macro expansion is called a _____.
a) Macro processor b) Macro pre-processor
c) Micro pre-processor d) Assembler

7) Load address for the first word of the program is called _____.
a) Linker address origin b) Load address origin
c) Phase library d) Absolute library

8) Which of the following statement is true?
a) SLR parser is more powerful than LALR
b) LALR parser is more powerful than canonical LR parser
c) canonical LR parser is more powerful than LALR parser
d) parser SLR, canonical CR and LALR have the same power

9) Which of the following is used for grouping of characteristics into tokens?
a) parser b) code optimization
c) code generator d) lexical analyzer

10) Pee hole optimization is a form of _____.
a) loop optimization b) local optimization
c) constant folding d) None of these

11) Loading come in picture at ____.
a) compile time b) translation time
c) execution d) None of these

12) In rightmost derivation the rightmost _____ is replaced at each step.
a) terminal b) non-terminal
c) both d) None of these

13) In rightmost derivation the rightmost _____ is replaced at each step.
a) terminal b) non-terminal
c) both d) None of these

14) A linker program _____.
a) places the program in the memory for the purpose of execution
b) relocates the program to execute from the specific memory area
c) links the program with other programs needed for its execution
d) interfaces the program with the entities generating its input data

SLR-GF-372

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
System Software (BTN05501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following questions. **12**
- **a)** What are the language processor tools?
- **b)** Discuss different parameter passing methods in MACRO.
- **c)** Explain START, END, ORIGIN, EQU, LTORG with example.

Q.3 Answer any two of the following questions. **16**
- **a)** Explain Different ways of parsing.
- **b)** Explain design of macro processor.
- **c)** Write pass I algorithm of two pass assembler with its data structure and files.

Section – II

Q.4 Answer the following questions. **12**
- **a)** What are sources of optimization?
- **b)** Compare 3 code optimization techniques.
- **c)** Explain code generation from Dags and the dynamic code generation algorithm.

Q.5 Answer any two of the following questions. **16**
- **a)** Explain in detail subroutine linkages in loader.
- **b)** Explain self-relocating program.
- **c)** With example explain linking for overlays.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
System Software (BTN05501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following statement is true?
a) SLR parser is more powerful than LALR
b) LALR parser is more powerful than canonical LR parser
c) canonical LR parser is more powerful than LALR parser
d) parser SLR, canonical CR and LALR have the same power

2) Which of the following is used for grouping of characteristics into tokens?
a) parser b) code optimization
c) code generator d) lexical analyzer

3) Pee hole optimization is a form of _____.
a) loop optimization b) local optimization
c) constant folding d) None of these

4) Loading come in picture at ____.
a) compile time b) translation time
c) execution d) None of these

5) In rightmost derivation the rightmost _____ is replaced at each step.
a) terminal b) non-terminal
c) both d) None of these

6) In rightmost derivation the rightmost _____ is replaced at each step.
a) terminal b) non-terminal
c) both d) None of these

7) A linker program _____.
a) places the program in the memory for the purpose of execution
b) relocates the program to execute from the specific memory area
c) links the program with other programs needed for its execution
d) interfaces the program with the entities generating its input data

8) An assembly language is a _____.
a) Low level programming language
b) Middle level programming language
c) High level programming language
d) Internet based programming language

9) An analysis, which determines the syntactic structure of the source statement, is called _____.

a) Semantic analysis b) Process analysis
c) Syntax analysis d) Function analysis

10) "less than 3" is _____.

a) literal token b) num token
c) relation token d) None of these

11) A parser which is a variant of top-down parsing without backtracking ____.

a) Recursive Descend b) Operator Precedence.
c) LL(1) parser d) LALR Parser

12) An assembler is _____.

a) programming language dependent
b) syntax dependent
c) machine dependent
d) data dependent

13) The translator which performs macro expansion is called a _____.

a) Macro processor b) Macro pre-processor
c) Micro pre-processor d) Assembler

14) Load address for the first word of the program is called _____.

a) Linker address origin b) Load address origin
c) Phase library d) Absolute library

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
System Software (BTN05501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following questions. **12**
- **a)** What are the language processor tools?
- **b)** Discuss different parameter passing methods in MACRO.
- **c)** Explain START, END, ORIGIN, EQU, LTORG with example.

Q.3 Answer any two of the following questions. **16**
- **a)** Explain Different ways of parsing.
- **b)** Explain design of macro processor.
- **c)** Write pass I algorithm of two pass assembler with its data structure and files.

Section – II

Q.4 Answer the following questions. **12**
- **a)** What are sources of optimization?
- **b)** Compare 3 code optimization techniques.
- **c)** Explain code generation from Dags and the dynamic code generation algorithm.

Q.5 Answer any two of the following questions. **16**
- **a)** Explain in detail subroutine linkages in loader.
- **b)** Explain self-relocating program.
- **c)** With example explain linking for overlays.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
System Software (BTN05501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Loading come in picture at ____.
a) compile time b) translation time
c) execution d) None of these

2) In rightmost derivation the rightmost _____ is replaced at each step.
a) terminal b) non-terminal
c) both d) None of these

3) In rightmost derivation the rightmost _____ is replaced at each step.
a) terminal b) non-terminal
c) both d) None of these

4) A linker program _____.
a) places the program in the memory for the purpose of execution
b) relocates the program to execute from the specific memory area
c) links the program with other programs needed for its execution
d) interfaces the program with the entities generating its input data

5) An assembly language is a _____.
a) Low level programming language
b) Middle level programming language
c) High level programming language
d) Internet based programming language

6) An analysis, which determines the syntactic structure of the source statement, is called _____.
a) Semantic analysis b) Process analysis
c) Syntax analysis d) Function analysis

7) "less than 3" is _____.
a) literal token b) num token
c) relation token d) None of these

8) A parser which is a variant of top-down parsing without backtracking ____.
a) Recursive Descend b) Operator Precedence.
c) LL(1) parser d) LALR Parser

9) An assembler is _____.
a) programming language dependent
b) syntax dependent
c) machine dependent
d) data dependent

10) The translator which performs macro expansion is called a _____.
a) Macro processor
b) Macro pre-processor
c) Micro pre-processor
d) Assembler

11) Load address for the first word of the program is called _____.
a) Linker address origin
b) Load address origin
c) Phase library
d) Absolute library

12) Which of the following statement is true?
a) SLR parser is more powerful than LALR
b) LALR parser is more powerful than canonical LR parser
c) canonical LR parser is more powerful than LALR parser
d) parser SLR, canonical CR and LALR have the same power

13) Which of the following is used for grouping of characteristics into tokens?
a) parser
b) code optimization
c) code generator
d) lexical analyzer

14) Pee hole optimization is a form of _____.
a) loop optimization
b) local optimization
c) constant folding
d) None of these

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Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
System Software (BTN05501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following questions. **12**
- **a)** What are the language processor tools?
- **b)** Discuss different parameter passing methods in MACRO.
- **c)** Explain START, END, ORIGIN, EQU, LTORG with example.

Q.3 Answer any two of the following questions. **16**
- **a)** Explain Different ways of parsing.
- **b)** Explain design of macro processor.
- **c)** Write pass I algorithm of two pass assembler with its data structure and files.

Section – II

Q.4 Answer the following questions. **12**
- **a)** What are sources of optimization?
- **b)** Compare 3 code optimization techniques.
- **c)** Explain code generation from Dags and the dynamic code generation algorithm.

Q.5 Answer any two of the following questions. **16**
- **a)** Explain in detail subroutine linkages in loader.
- **b)** Explain self-relocating program.
- **c)** With example explain linking for overlays.

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
System Software (BTN05501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The translator which performs macro expansion is called a _____.
a) Macro processor b) Macro pre-processor
c) Micro pre-processor d) Assembler

2) Load address for the first word of the program is called _____.
a) Linker address origin b) Load address origin
c) Phase library d) Absolute library

3) Which of the following statement is true?
a) SLR parser is more powerful than LALR
b) LALR parser is more powerful than canonical LR parser
c) canonical LR parser is more powerful than LALR parser
d) parser SLR, canonical CR and LALR have the same power

4) Which of the following is used for grouping of characteristics into tokens?
a) parser b) code optimization
c) code generator d) lexical analyzer

5) Pee hole optimization is a form of _____.
a) loop optimization b) local optimization
c) constant folding d) None of these

6) Loading come in picture at ____.
a) compile time b) translation time
c) execution d) None of these

7) In rightmost derivation the rightmost _____ is replaced at each step.
a) terminal b) non-terminal
c) both d) None of these

8) In rightmost derivation the rightmost _____ is replaced at each step.
a) terminal b) non-terminal
c) both d) None of these

9) A linker program _____.
   a) places the program in the memory for the purpose of execution
   b) relocates the program to execute from the specific memory area
   c) links the program with other programs needed for its execution
   d) interfaces the program with the entities generating its input data

10) An assembly language is a _____.
   a) Low level programming language
   b) Middle level programming language
   c) High level programming language
   d) Internet based programming language

11) An analysis, which determines the syntactic structure of the source statement, is called _____.
   a) Semantic analysis
   b) Process analysis
   c) Syntax analysis
   d) Function analysis

12) “less than 3” is _____.
   a) literal token
   b) num token
   c) relation token
   d) None of these

13) A parser which is a variant of top-down parsing without backtracking ____.
   a) Recursive Descend
   b) Operator Precedence.
   c) LL(1) parser
   d) LALR Parser

14) An assembler is _____.
   a) programming language dependent
   b) syntax dependent
   c) machine dependent
   d) data dependent

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
System Software (BTN05501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following questions. **12**
- **a)** What are the language processor tools?
- **b)** Discuss different parameter passing methods in MACRO.
- **c)** Explain START, END, ORIGIN, EQU, LTORG with example.

Q.3 Answer any two of the following questions. **16**
- **a)** Explain Different ways of parsing.
- **b)** Explain design of macro processor.
- **c)** Write pass I algorithm of two pass assembler with its data structure and files.

Section – II

Q.4 Answer the following questions. **12**
- **a)** What are sources of optimization?
- **b)** Compare 3 code optimization techniques.
- **c)** Explain code generation from Dags and the dynamic code generation algorithm.

Q.5 Answer any two of the following questions. **16**
- **a)** Explain in detail subroutine linkages in loader.
- **b)** Explain self-relocating program.
- **c)** With example explain linking for overlays.

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Operating Systems (BTN05502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve Multiple Choice Questions. **14**

1) What is the main function of the command interpreter?
a) to provide the interface between the API and application program
b) to handle the files in the operating system
c) to get and execute the next user-specified command
d) none of these

2) In operating system, each process has its own _____.
a) address space and global variables
b) open files
c) pending alarms, signals and signal handlers
d) all of these

3) The address of the next instruction to be executed by the current process is provided by the _____.
a) Process stack b) CPU registers
c) Program counter d) Pipe

4) The entry of all the PCBs of the current processes is in _____.
a) Process Register b) Program Counter
c) Process Unit d) Process Table

5) What is the objective of multiprogramming?
a) To minimize CPU utilization
b) Have multiple programs waiting in a queue ready to run
c) Have some process running at all times
d) None of these

6) With _____ only one process can execute at a time; meanwhile all other process are waiting for the processor. With _____ more than one process can be running simultaneously each on a different processor.
a) Multiprocessing, Multiprogramming
b) Uniprogramming, Multiprocessing
c) Multiprogramming, Multiprocessing
d) Multiprogramming, Uniprocessing

7) The child process completes execution, but the parent keeps executing, then the child process is known as _____.

a) Zombie b) Orphan
c) Body d) Dead

8) What is Dispatch latency?

a) the time to stop one process and start running another one
b) the time of dispatching a process from running to ready state and keeping the CPU idle
c) the speed of dispatching a process from running to the ready state
d) none of these

9) To obtain better memory utilization, dynamic loading is used. With dynamic loading, a routine is not loaded until it is called. For implementing dynamic loading _____.

a) special support from operating system is essential
b) special support from hardware is required
c) user programs can implement dynamic loading without any special support from hardware or operating system
d) special support from both hardware and operating system is essential

10) For a Hold and wait condition to prevail _____.

a) A process must be holding at least one resource and waiting to acquire additional resources that are being held by other processes
b) A process must be not be holding a resource, but waiting for one to be freed, and then request to acquire it
c) A process must hold at least one resource and not be waiting to acquire additional resources
d) None of these

11) A computer system has 6 tape drives, with 'n' processes competing for them. Each process may need 3 tape drives. The maximum value of 'n' for which the system is guaranteed to be deadlock free is?

a) 3 b) 2
c) 4 d) 1

12) The _____ table contains the base address of each page in physical memory.

a) Process b) Memory
c) Page d) Frame

13) The segment base contains the _____.

a) starting logical address of the process
b) starting physical address of the segment in memory
c) segment length
d) none of these

14) Which one of the following is the address generated by CPU?

a) physical address b) absolute address
c) logical address d) none of these

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Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Operating Systems (BTN05502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Illustrate in detail the parallel and real time system.
- **b)** Extend in detail the inter process communication w.r.t. message passing.
- **c)** Explain with example FCFS and SJF scheduling algorithm.
- **d)** What is critical section problem? Justify with Peterson's solution.

Q.3 Attempt any one. **08**
- **a)** Explain with example any two classic problem of synchronization.

OR

- **b)** Explain with figure process concepts, process state, and PCB.

Q.4 Write short note on. (Any Two) **08**
- **a)** System Calls
- **b)** Monitors
- **c)** Synchronization Hardware

Section – II

Q.5 Attempt any three. **12**
- **a)** Interpret the deadlock detection and recovery from deadlock with example.
- **b)** Illustrate with example optimal and LRU page replacement.
- **c)** Extend the background and demand paging w.r.t. virtual memory.
- **d)** What is paging? Explain the basic method of paging with example.

Q.6 Attempt any one. **08**
- **a)** Justify the transfer of paged memory to contiguous disk space with basic concepts and steps in handling a page faults.

OR

- **b)** Explain the most common techniques for structuring page table.

Q.7 Attempt the following. (Any Two) **08**
- **a)** Contiguous allocation and demand paging
- **b)** Thrashing
- **c)** Segmentation with paging

SLR-GF-373

Seat No.		Set	Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Operating Systems (BTN05502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve Multiple Choice Questions. **14**

1) What is Dispatch latency?
a) the time to stop one process and start running another one
b) the time of dispatching a process from running to ready state and keeping the CPU idle
c) the speed of dispatching a process from running to the ready state
d) none of these

2) To obtain better memory utilization, dynamic loading is used. With dynamic loading, a routine is not loaded until it is called. For implementing dynamic loading _____.
a) special support from operating system is essential
b) special support from hardware is required
c) user programs can implement dynamic loading without any special support from hardware or operating system
d) special support from both hardware and operating system is essential

3) For a Hold and wait condition to prevail _____.
a) A process must be holding at least one resource and waiting to acquire additional resources that are being held by other processes
b) A process must be not be holding a resource, but waiting for one to be freed, and then request to acquire it
c) A process must hold at least one resource and not be waiting to acquire additional resources
d) None of these

4) A computer system has 6 tape drives, with 'n' processes competing for them. Each process may need 3 tape drives. The maximum value of 'n' for which the system is guaranteed to be deadlock free is?
a) 3 b) 2
c) 4 d) 1

5) The _____ table contains the base address of each page in physical memory.
a) Process b) Memory
c) Page d) Frame

6) The segment base contains the _____.
a) starting logical address of the process
b) starting physical address of the segment in memory
c) segment length
d) none of these

7) Which one of the following is the address generated by CPU?
a) physical address b) absolute address
c) logical address d) none of these

8) What is the main function of the command interpreter?
a) to provide the interface between the API and application program
b) to handle the files in the operating system
c) to get and execute the next user-specified command
d) none of these

9) In operating system, each process has its own _____.
a) address space and global variables
b) open files
c) pending alarms, signals and signal handlers
d) all of these

10) The address of the next instruction to be executed by the current process is provided by the _____.
a) Process stack b) CPU registers
c) Program counter d) Pipe

11) The entry of all the PCBs of the current processes is in _____.
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c) Process Unit d) Process Table

12) What is the objective of multiprogramming?
a) To minimize CPU utilization
b) Have multiple programs waiting in a queue ready to run
c) Have some process running at all times
d) None of these

13) With _____ only one process can execute at a time; meanwhile all other process are waiting for the processor. With _____ more than one process can be running simultaneously each on a different processor.
a) Multiprocessing, Multiprogramming
b) Uniprogramming, Multiprocessing
c) Multiprogramming, Multiprocessing
d) Multiprogramming, Uniprocessing

14) The child process completes execution, but the parent keeps executing, then the child process is known as _____.
a) Zombie b) Orphan
c) Body d) Dead

SLR-GF-373

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Operating Systems (BTN05502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Illustrate in detail the parallel and real time system.
- **b)** Extend in detail the inter process communication w.r.t. message passing.
- **c)** Explain with example FCFS and SJF scheduling algorithm.
- **d)** What is critical section problem? Justify with Peterson's solution.

Q.3 Attempt any one. **08**
- **a)** Explain with example any two classic problem of synchronization.

OR

- **b)** Explain with figure process concepts, process state, and PCB.

Q.4 Write short note on. (Any Two) **08**
- **a)** System Calls
- **b)** Monitors
- **c)** Synchronization Hardware

Section – II

Q.5 Attempt any three. **12**
- **a)** Interpret the deadlock detection and recovery from deadlock with example.
- **b)** Illustrate with example optimal and LRU page replacement.
- **c)** Extend the background and demand paging w.r.t. virtual memory.
- **d)** What is paging? Explain the basic method of paging with example.

Q.6 Attempt any one. **08**
- **a)** Justify the transfer of paged memory to contiguous disk space with basic concepts and steps in handling a page faults.

OR

- **b)** Explain the most common techniques for structuring page table.

Q.7 Attempt the following. (Any Two) **08**
- **a)** Contiguous allocation and demand paging
- **b)** Thrashing
- **c)** Segmentation with paging

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Operating Systems (BTN05502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve Multiple Choice Questions. **14**

1) A computer system has 6 tape drives, with 'n' processes competing for them. Each process may need 3 tape drives. The maximum value of 'n' for which the system is guaranteed to be deadlock free is?
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2) The _____ table contains the base address of each page in physical memory.
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3) The segment base contains the _____.
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b) starting physical address of the segment in memory
c) segment length
d) none of these

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5) What is the main function of the command interpreter?
a) to provide the interface between the API and application program
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6) In operating system, each process has its own _____.
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b) open files
c) pending alarms, signals and signal handlers
d) all of these

7) The address of the next instruction to be executed by the current process is provided by the _____.
a) Process stack b) CPU registers
c) Program counter d) Pipe

8) The entry of all the PCBs of the current processes is in _____.
a) Process Register b) Program Counter
c) Process Unit d) Process Table

9) What is the objective of multiprogramming?
a) To minimize CPU utilization
b) Have multiple programs waiting in a queue ready to run
c) Have some process running at all times
d) None of these

10) With _____ only one process can execute at a time; meanwhile all other process are waiting for the processor. With _____ more than one process can be running simultaneously each on a different processor.
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b) Uniprogramming, Multiprocessing
c) Multiprogramming, Multiprocessing
d) Multiprogramming, Uniprocessing

11) The child process completes execution, but the parent keeps executing, then the child process is known as _____.
a) Zombie b) Orphan
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12) What is Dispatch latency?
a) the time to stop one process and start running another one
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13) To obtain better memory utilization, dynamic loading is used. With dynamic loading, a routine is not loaded until it is called. For implementing dynamic loading _____.
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c) user programs can implement dynamic loading without any special support from hardware or operating system
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14) For a Hold and wait condition to prevail _____.
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c) A process must hold at least one resource and not be waiting to acquire additional resources
d) None of these

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Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Operating Systems (BTN05502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Illustrate in detail the parallel and real time system.
- **b)** Extend in detail the inter process communication w.r.t. message passing.
- **c)** Explain with example FCFS and SJF scheduling algorithm.
- **d)** What is critical section problem? Justify with Peterson's solution.

Q.3 Attempt any one. **08**
- **a)** Explain with example any two classic problem of synchronization.

OR

- **b)** Explain with figure process concepts, process state, and PCB.

Q.4 Write short note on. (Any Two) **08**
- **a)** System Calls
- **b)** Monitors
- **c)** Synchronization Hardware

Section – II

Q.5 Attempt any three. **12**
- **a)** Interpret the deadlock detection and recovery from deadlock with example.
- **b)** Illustrate with example optimal and LRU page replacement.
- **c)** Extend the background and demand paging w.r.t. virtual memory.
- **d)** What is paging? Explain the basic method of paging with example.

Q.6 Attempt any one. **08**
- **a)** Justify the transfer of paged memory to contiguous disk space with basic concepts and steps in handling a page faults.

OR

- **b)** Explain the most common techniques for structuring page table.

Q.7 Attempt the following. (Any Two) **08**
- **a)** Contiguous allocation and demand paging
- **b)** Thrashing
- **c)** Segmentation with paging

Seat No.	

Set **S**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Operating Systems (BTN05502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve Multiple Choice Questions. **14**

1) With _____ only one process can execute at a time; meanwhile all other process are waiting for the processor. With _____ more than one process can be running simultaneously each on a different processor.
a) Multiprocessing, Multiprogramming
b) Uniprogramming, Multiprocessing
c) Multiprogramming, Multiprocessing
d) Multiprogramming, Uniprocessing

2) The child process completes execution, but the parent keeps executing, then the child process is known as _____.
a) Zombie b) Orphan
c) Body d) Dead

3) What is Dispatch latency?
a) the time to stop one process and start running another one
b) the time of dispatching a process from running to ready state and keeping the CPU idle
c) the speed of dispatching a process from running to the ready state
d) none of these

4) To obtain better memory utilization, dynamic loading is used. With dynamic loading, a routine is not loaded until it is called. For implementing dynamic loading _____.
a) special support from operating system is essential
b) special support from hardware is required
c) user programs can implement dynamic loading without any special support from hardware or operating system
d) special support from both hardware and operating system is essential

5) For a Hold and wait condition to prevail _____.
a) A process must be holding at least one resource and waiting to acquire additional resources that are being held by other processes
b) A process must be not be holding a resource, but waiting for one to be freed, and then request to acquire it
c) A process must hold at least one resource and not be waiting to acquire additional resources
d) None of these

6) A computer system has 6 tape drives, with 'n' processes competing for them. Each process may need 3 tape drives. The maximum value of 'n' for which the system is guaranteed to be deadlock free is?
a) 3 b) 2
c) 4 d) 1

7) The _____ table contains the base address of each page in physical memory.
a) Process b) Memory
c) Page d) Frame

8) The segment base contains the _____.
a) starting logical address of the process
b) starting physical address of the segment in memory
c) segment length
d) none of these

9) Which one of the following is the address generated by CPU?
a) physical address b) absolute address
c) logical address d) none of these

10) What is the main function of the command interpreter?
a) to provide the interface between the API and application program
b) to handle the files in the operating system
c) to get and execute the next user-specified command
d) none of these

11) In operating system, each process has its own _____.
a) address space and global variables
b) open files
c) pending alarms, signals and signal handlers
d) all of these

12) The address of the next instruction to be executed by the current process is provided by the _____.
a) Process stack b) CPU registers
c) Program counter d) Pipe

13) The entry of all the PCBs of the current processes is in _____.
a) Process Register b) Program Counter
c) Process Unit d) Process Table

14) What is the objective of multiprogramming?
a) To minimize CPU utilization
b) Have multiple programs waiting in a queue ready to run
c) Have some process running at all times
d) None of these

SLR-GF-373

Seat No.		Set	S

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INFORMATION TECHNOLOGY ENGINEERING
Operating Systems (BTN05502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Questions are compulsory.
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Section – I

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- **a)** Illustrate in detail the parallel and real time system.
- **b)** Extend in detail the inter process communication w.r.t. message passing.
- **c)** Explain with example FCFS and SJF scheduling algorithm.
- **d)** What is critical section problem? Justify with Peterson's solution.

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- **a)** Explain with example any two classic problem of synchronization.

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Q.4 Write short note on. (Any Two) **08**
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Section – II

Q.5 Attempt any three. **12**
- **a)** Interpret the deadlock detection and recovery from deadlock with example.
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- **c)** Extend the background and demand paging w.r.t. virtual memory.
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- **a)** Justify the transfer of paged memory to contiguous disk space with basic concepts and steps in handling a page faults.

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Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov–2023
INFORMATION TECHNOLOGY ENGINEERING
Database Engineering (BTN05503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) B- tree eliminates redundant storage of _____.
a) Search keys b) Indices
c) Buckets d) Bucket skew

2) Number of types of ordered indices are _____.
a) 2 b) 3
c) 4 d) 5

3) Nonleaf nodes of B+- tree structure form a _____.
a) Multilevel clustered indices b) Sparse indices
c) Multilevel dense indices d) Multilevel sparse indices

4) What is the purpose of index in sql server?
a) To enhance the query performance
b) To provide an index to a record
c) To perform fast searches
d) All of the mentioned

5) Consider money is transferred from
1) account-A to account-B
2) account-B to account-A
Which of the following form a transaction?
a) Only 1 b) Only 2
c) Both 1 and 2 individually d) Either 1 or 2

6) The prime attribute of relation schema R is an attribute that appears _____.
a) In all candidate keys of R b) In some candidate keys of R
c) In Primary key d) In foreign key

7) The maximum number of superkey for relation $R(A, B, C, D, E, F, G, H, I, J)$ WITH A as a candidate key _____.
a) 4 b) 5
c) 7 d) 8

8) Let $R(A, B, C, D, E)$ be a relation schema with following functional dependency $\{C \rightarrow F, E \rightarrow A, EC \rightarrow D, A \rightarrow B\}$ Which of the following is the key for R
a) $[CD]$ b) $[EC]$
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9) Which of the following statement about normal form is false
a) BCNF is stricter than 3NF
b) Lossless and dependency preserving decomposition possible into 3NF
c) Lossless and dependency preserving decomposition possible into BCNF
d) Any relation between two attribute in BCNF

10) Identify the correct statement.
a) Physical level Abstraction: describes how a record is stored
b) Physical level Abstraction: describes how schema is stored in a data base
c) Physical level Abstraction: hides details of data types
d) Physical level Abstraction: describes the data relationships in a data base

11) Consider the two relations below.
The primary keys are underlined. Identify all possible foreign key(s) from the options.
loan (loan_number, branch_name, amount)
borrower (customer_name + loan_number)
a) customer_name
b) Loan_number
c) loan_number, customer_name
d) loan_number, customer_name, branch_name

12) Identify the correct statement.
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d) (2245, John) is specifies a relation and the schema of the relation

13) An entity in A is associated with at most one entity in B. An entity in B, however, can be associated with any number (zero or more) of entities in A.
a) One-to-many
b) One-to-one
c) Many-to-many
d) Many-to-one

14) Which of the following makes the transaction permanent in the database?
a) View
b) Commit
c) Rollback
d) Flashback

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov–2023
INFORMATION TECHNOLOGY ENGINEERING
Database Engineering (BTN05503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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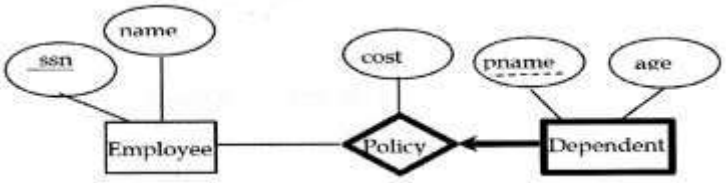
Section – I

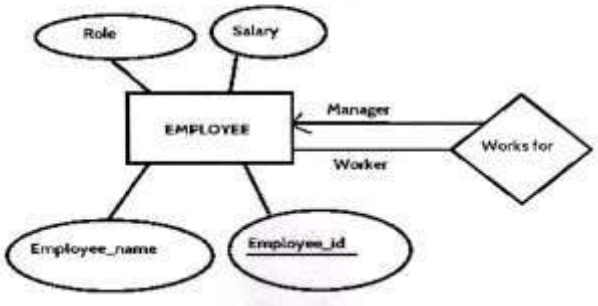
Q.2 Attempt any three. **12**

a) Explain the difference between two-tier architecture and three tier architecture?
b) What are different types of database users?
c) What are different types of attributes?
d) Draw and explain basic E-R diagram notations.

Q.3 Attempt any two. **16**

a) Convert following E-R model to Relational Model.





b) Find the highest normal form of a relation.
1) R(A,B,C,D,E) with FD Set $\{A \to D, B \to A, BC \to D, AC \to BE\}$
2) R(A,B,C,D,E) with FD Set $\{BC \to D, AC \to BE, B \to E\}$

c) Find Prime & Non Prime attribute from the given set of FDs.
1) $\{AB \to C, \quad C \to D, \quad C \to E, \quad E \to F, \quad F \to A\}$
2) $\{A \to B, \quad BC \to D, \quad E \to C, \quad D \to A\}$

Section – II

Q.4 Attempt any three **12**

a) Explain Transaction model.
b) Differentiate ordered indices and hashing.
c) List and explain ACID properties with example.
d) Write various types of failures.

Q.5 Attempt any two. **16**

a) Explain 2PC protocol.
b) What is conflict serializibility?
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Seat No.		Set	Q

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Database Engineering (BTN05503)

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1) Let $R(A,B,C,D,E)$ be a relation schema with following functional dependency $\{C \to F, E \to A, EC \to D, A \to B\}$ Which of the following is the key for R
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2) Which of the following statement about normal form is false
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4) Consider the two relations below.
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Seat No.		Set	Q

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Section – I

Q.2 Attempt any three. **12**

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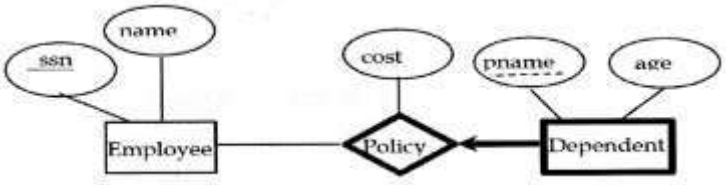

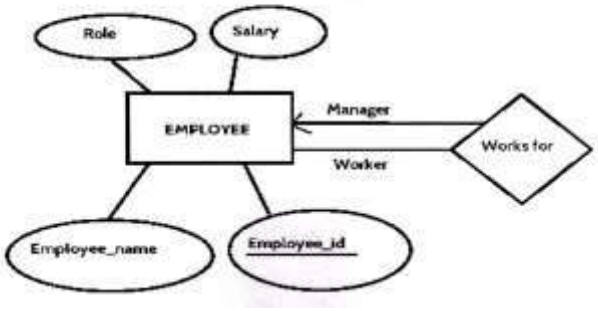

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Section – II

Q.4 Attempt any three **12**

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Seat No.	

Set **R**

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INFORMATION TECHNOLOGY ENGINEERING
Database Engineering (BTN05503)

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Seat No.		Set	R

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INFORMATION TECHNOLOGY ENGINEERING
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Day & Date: Saturday, 30-12-2023 Max. Marks: 56
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Section – I

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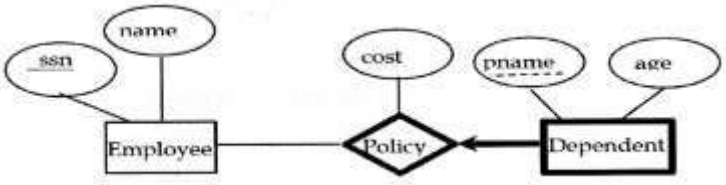

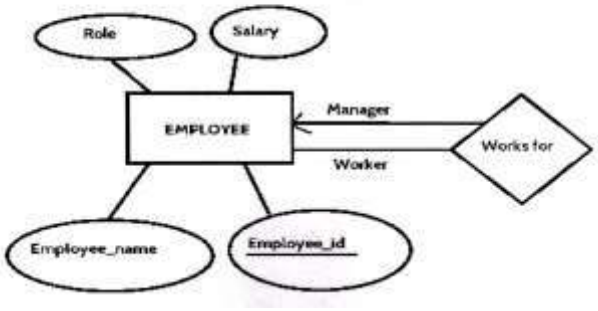

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Section – II

Q.4 Attempt any three **12**

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Seat No.		Set	S

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a) student (ss#, name) is a relation
b) (2245, John) is an instance of a relation schema
c) (2245, John) specifies a relation schema
d) (2245, John) is specifies a relation and the schema of the relation

8) An entity in A is associated with at most one entity in B. An entity in B, however, can be associated with any number (zero or more) of entities in A.
a) One-to-many b) One-to-one
c) Many-to-many d) Many-to-one

9) Which of the following makes the transaction permanent in the database?
a) View b) Commit
c) Rollback d) Flashback

10) B- tree eliminates redundant storage of _____.
a) Search keys b) Indices
c) Buckets d) Bucket skew

11) Number of types of ordered indices are _____.
a) 2 b) 3
c) 4 d) 5

12) Nonleaf nodes of B+- tree structure form a _____.
a) Multilevel clustered indices b) Sparse indices
c) Multilevel dense indices d) Multilevel sparse indices

13) What is the purpose of index in sql server?
a) To enhance the query performance
b) To provide an index to a record
c) To perform fast searches
d) All of the mentioned

14) Consider money is transferred from
1) account-A to account-B
2) account-B to account-A
Which of the following form a transaction?
a) Only 1 b) Only 2
c) Both 1 and 2 individually d) Either 1 or 2

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov–2023
INFORMATION TECHNOLOGY ENGINEERING
Database Engineering (BTN05503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

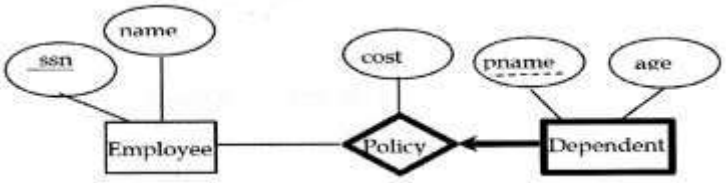
Section – I

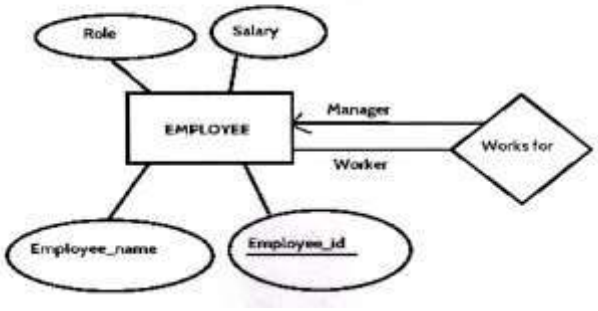
Q.2 Attempt any three. **12**

a) Explain the difference between two-tier architecture and three tier architecture?
b) What are different types of database users?
c) What are different types of attributes?
d) Draw and explain basic E-R diagram notations.

Q.3 Attempt any two. **16**

a) Convert following E-R model to Relational Model.





b) Find the highest normal form of a relation.
1) R(A,B,C,D,E) with FD Set $\{A \to D, B \to A, BC \to D, AC \to BE\}$
2) R(A,B,C,D,E) with FD Set $\{BC \to D, AC \to BE, B \to E\}$

c) Find Prime & Non Prime attribute from the given set of FDs.
1) $\{AB \to C, \quad C \to D, \quad C \to E, \quad E \to F, \quad F \to A\}$
2) $\{A \to B, \quad BC \to D, \quad E \to C, \quad D \to A\}$

Section – II

Q.4 Attempt any three **12**

a) Explain Transaction model.
b) Differentiate ordered indices and hashing.
c) List and explain ACID properties with example.
d) Write various types of failures.

Q.5 Attempt any two. **16**

a) Explain 2PC protocol.
b) What is conflict serializibility?
c) Explain B-tree index file with insertion and deletion.

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY
Design and Analysis of Algorithms (BTN05504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

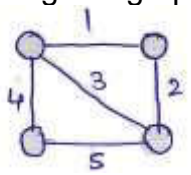
Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Asymptotic behaviour of the given function $f(n) = 4n^2 + 97n + 1000$ is _____.
a) $O(2^n)$ b) $O(n\log n)$
c) $O(n)$ d) $O(n^2)$

2) Two main measures for the efficiency of an algorithm are _____.
a) Processor and memory b) Complexity and capacity
c) Time and space d) Data and space

3) For a given graph, minimum cost of Spanning tree is _____.



a) 7 b) 6
c) 12 d) 10

4)
```
Algorithm sum(A[],n)
{
  sum = 0;
  for i = 1 to n
    sum = sum + A[i];
  return sum;
}
```
Step count of the algorithm is _____
a) n b) n+3
c) 2n+3 d) 2n+2

5) For messages with given frequencies (2,3,5,7,9,13), what will be total decode time _____.
a) 39 b) 93
c) 89 d) 132

6) If Deadlines of 5 jobs are (2, 2, 3, 3, 3). How many maximum jobs can be completed?

a) 2 b) 3
c) 4 d) 5

7) Kruskal's algorithm is for finding _____.

a) All pairs shortest path b) Single source shortest path
c) Minimum cost spanning tree d) Minimum cost tour

8) Knapsack Problem can be solved by _____.

a) Greedy method b) Dynamic Programming
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9) For the reliability design problem, maximum number of units for device 2 will be _____. Cost of devices are c1 = 30, c2 = 15, c3 = 20 and total cost of system is = 105.

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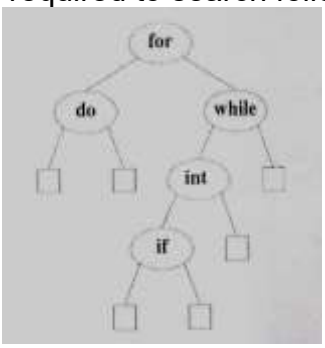
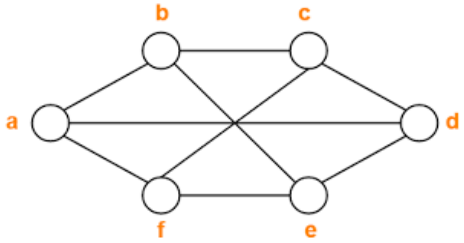
10) Average no. of comparisons required to search following identifiers is _____.



a) 5/5 b) 6/5
c) 11/5 d) 12/5

11) Chromatic number for the following graph is _____.



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12) A node whose children are currently being generated is called _____.

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13) Which of the following is true about NP-Complete and NP-Hard problems?

a) If we want to prove that a problem X is NP-Hard, we take a known NP-Hard problem Y and reduce Y to X
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14) Which of the following statements are TRUE?

1) The problem of determining whether there exists a cycle in an undirected graph is in P
2) The problem of determining whether there exists a cycle in an undirected graph is in NP
3) If a problem A is NP-Complete, there exists a non-deterministic polynomial time algorithm to solve A

a) 1, 2 and 3
b) 1 and 2 only
c) 2 and 3 only
d) 1 and 3 only

Seat No.	

Set | P

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY
Design and Analysis of Algorithms (BTN05504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Three: **12**

a) Find optimal solution and maximum profit for job sequencing generated n = 7, (p1,……,07) = (3,5,20,18,1,6,30) and (d1,.....d7) = (1,3,4,3,2,1,2)

b) Find an optimal binary tree merge pattern for 10 files whose lengths are
28,32,12,5,84,53,91,35,3,11

c) Find space and time complexity of the following algorithm

```
Algorithm Mult (a, b, c, n)
{
        for i:= 1 to n do
            for j= 1 to n do
              {
                    c[i,j] := 0;
                    for k= 1 to n do
                            c[i,j] := c[i,j] + a[i,j] * b[i,j]
              }
}
```

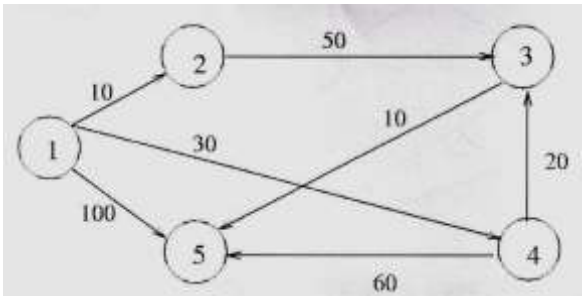
d) Find maximum and minimum number from given array using divide and conquer.
12, 5, 6, 7, 13, 8, 23, 19, 20, 23

Q.3 Attempt any One: **08**

a) Write control abstraction for divide and conquer and give its recurrence relation. Using substitution method, find the time complexity if a= 28 b= 3 and f(n) = cn^3

b) For a given set of numbers, show how binary search algorithm works for searching number 48 and 85.
45, 50, 55, 60, 65, 70, 80, 85, 90

Q.4 Find the shortest paths to all remaining nodes from source vertex 1. **08**

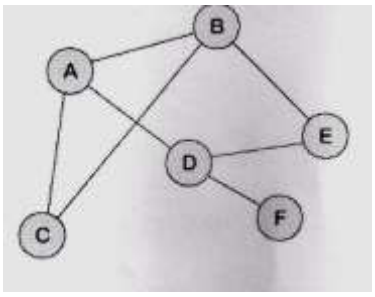


Section – II

Q.5 Attempt any Three: **12**

a) Explain following terms w.r.t. space organization Tree.
Live node, e-node, dead node, dynamic trees.

b) Explain graph coloring problem and write an algorithm for graph coloring. Find how many colors are required to color the following graph.

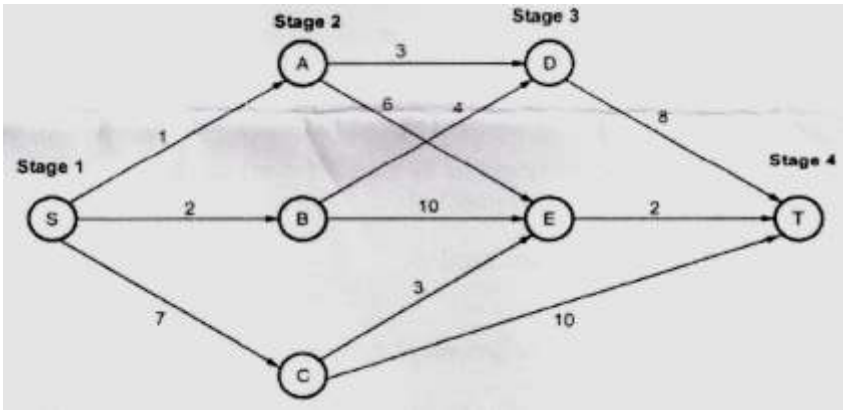


c) Explain nondeterministic algorithms.

d) Consider knapsack with n=3, capacity m=6, weights (w1,w2,w3) = (2,3,4) and profits are (1,2,5), Find optimal solution using dynamic programming approach.

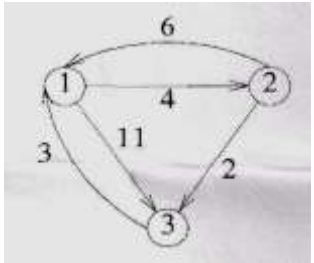
Q.6 Attempt any One: **08**

a) Find shortest path from S to T using forward / backward dynamic programming approach.



b) State N-Queens problem. Write down algorithm to find solution to N-queens problem. Show stepwise result of algorithm for n=4.

Q.7 Find all pairs shortest path for the following graph. **08**



Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY
Design and Analysis of Algorithms (BTN05504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Knapsack Problem can be solved by _____.
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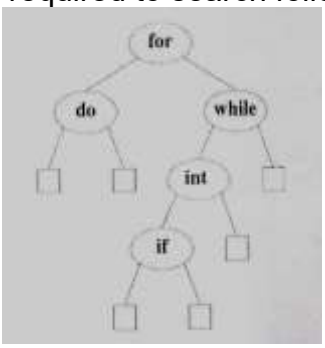

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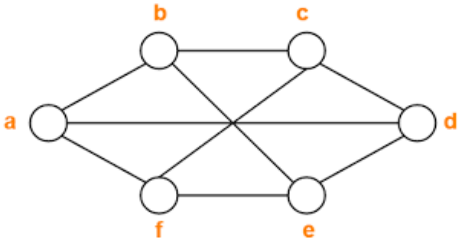
4) Chromatic number for the following graph is _____.



a) 2 b) 3
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8) Asymptotic behaviour of the given function $f(n) = 4n^2 + 97n + 1000$ is _____.

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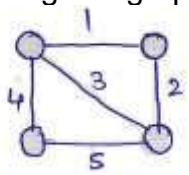
10) For a given graph, minimum cost of Spanning tree is _____.



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11)
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{
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Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY
Design and Analysis of Algorithms (BTN05504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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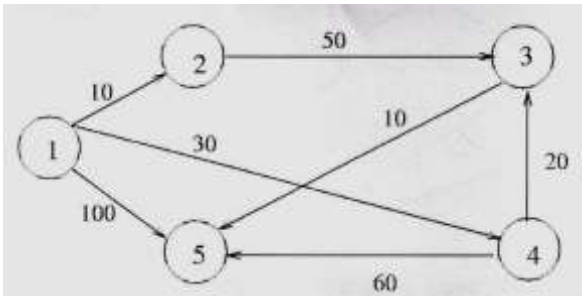

Section – II

Q.5 Attempt any Three: **12**

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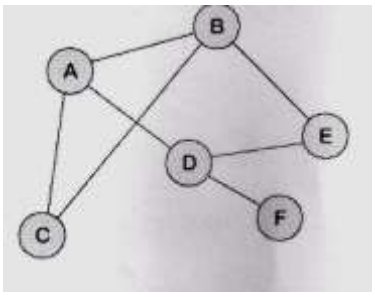

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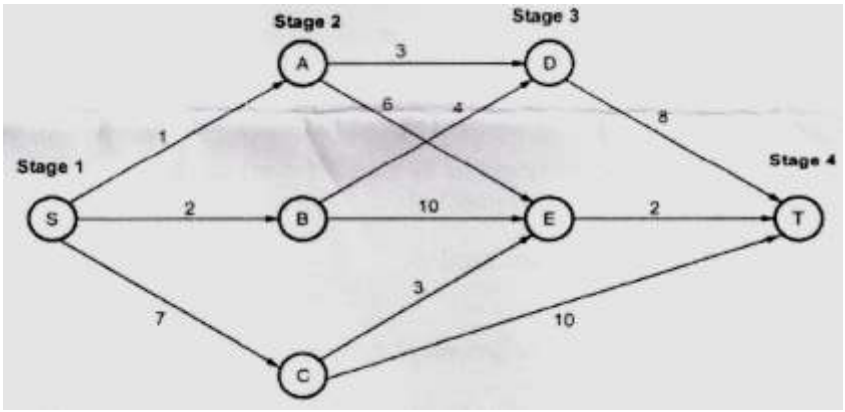

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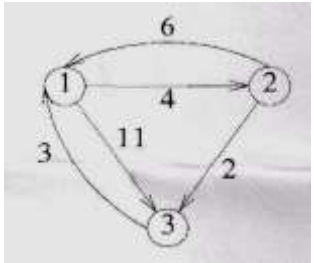

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY
Design and Analysis of Algorithms (BTN05504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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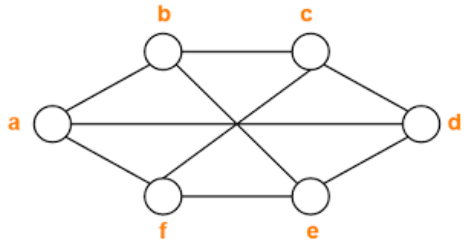

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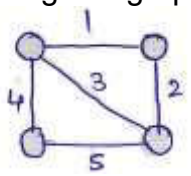

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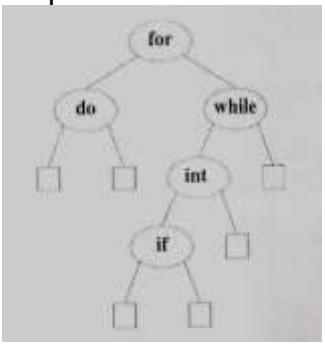


a) 5/5
b) 6/5
c) 11/5
d) 12/5

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY
Design and Analysis of Algorithms (BTN05504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Three: **12**

a) Find optimal solution and maximum profit for job sequencing generated n = 7, (p1,……,07) = (3,5,20,18,1,6,30) and (d1,.....d7) = (1,3,4,3,2,1,2)

b) Find an optimal binary tree merge pattern for 10 files whose lengths are
28,32,12,5,84,53,91,35,3,11

c) Find space and time complexity of the following algorithm

```
Algorithm Mult (a, b, c, n)
{
        for i:= 1 to n do
            for j= 1 to n do
              {
                    c[i,j] := 0;
                    for k= 1 to n do
                            c[i,j] := c[i,j] + a[i,j] * b[i,j]
              }
}
```

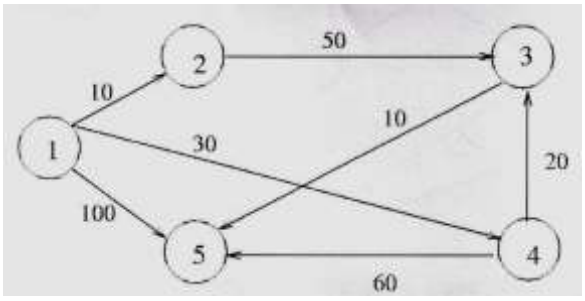
d) Find maximum and minimum number from given array using divide and conquer.
12, 5, 6, 7, 13, 8, 23, 19, 20, 23

Q.3 Attempt any One: **08**

a) Write control abstraction for divide and conquer and give its recurrence relation. Using substitution method, find the time complexity if a= 28 b= 3 and f(n) = cn^3

b) For a given set of numbers, show how binary search algorithm works for searching number 48 and 85.
45, 50, 55, 60, 65, 70, 80, 85, 90

Q.4 Find the shortest paths to all remaining nodes from source vertex 1. **08**

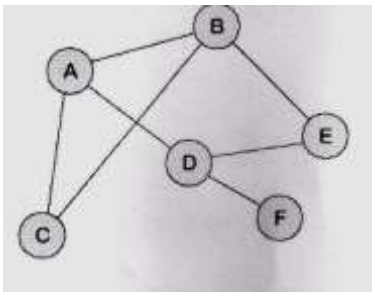


Section – II

Q.5 Attempt any Three: **12**

a) Explain following terms w.r.t. space organization Tree.
Live node, e-node, dead node, dynamic trees.

b) Explain graph coloring problem and write an algorithm for graph coloring. Find how many colors are required to color the following graph.

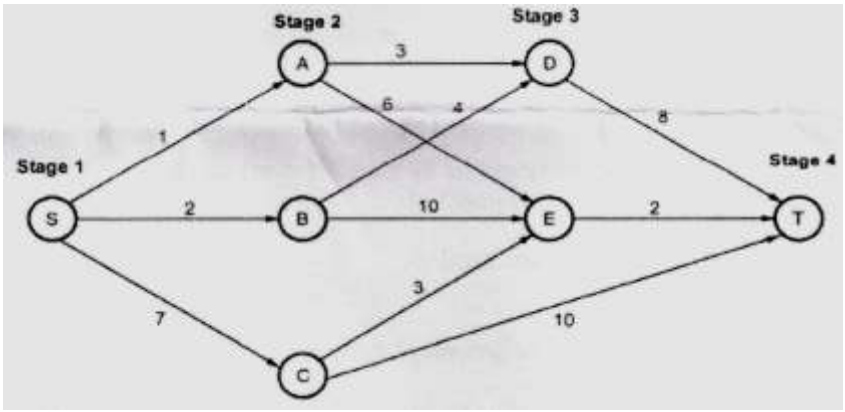


c) Explain nondeterministic algorithms.

d) Consider knapsack with n=3, capacity m=6, weights (w1,w2,w3) = (2,3,4) and profits are (1,2,5), Find optimal solution using dynamic programming approach.

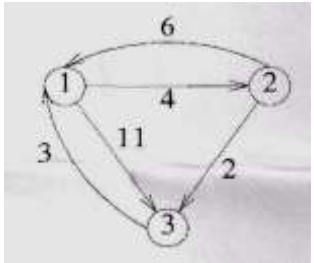
Q.6 Attempt any One: **08**

a) Find shortest path from S to T using forward / backward dynamic programming approach.



b) State N-Queens problem. Write down algorithm to find solution to N-queens problem. Show stepwise result of algorithm for n=4.

Q.7 Find all pairs shortest path for the following graph. **08**



Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY
Design and Analysis of Algorithms (BTN05504)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

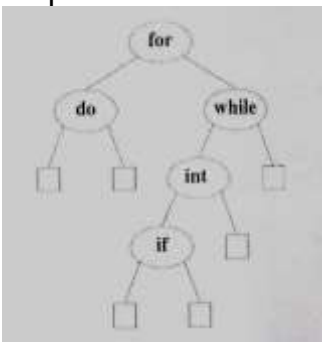
1) If Deadlines of 5 jobs are (2, 2, 3, 3, 3). How many maximum jobs can be completed?
a) 2 b) 3
c) 4 d) 5

2) Kruskal's algorithm is for finding _____.
a) All pairs shortest path b) Single source shortest path
c) Minimum cost spanning tree d) Minimum cost tour

3) Knapsack Problem can be solved by _____.
a) Greedy method b) Dynamic Programming
c) Backtracking d) All of the above

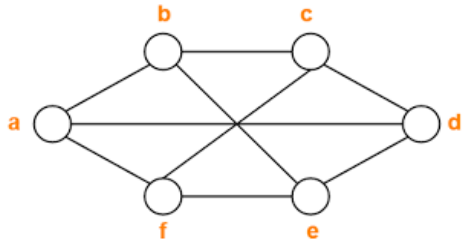
4) For the reliability design problem, maximum number of units for device 2 will be _____. Cost of devices are c1 = 30, c2 = 15, c3 = 20 and total cost of system is = 105.
a) 1 b) 2
c) 3 d) 4

5) Average no. of comparisons required to search following identifiers is _____.



a) 5/5 b) 6/5
c) 11/5 d) 12/5

6) Chromatic number for the following graph is _____.



a) 2 b) 3
c) 4 d) 6

7) A node whose children are currently being generated is called _____.

a) E-node b) live node
c) Dead node d) none of these

8) Which of the following is true about NP-Complete and NP-Hard problems?

a) If we want to prove that a problem X is NP-Hard, we take a known NP-Hard problem Y and reduce Y to X
b) The first problem that was proved as NP-complete was the circuit satisfiability problem
c) NP-complete is a subset of NP Hard
d) All of the above

9) Which of the following statements are TRUE?

1) The problem of determining whether there exists a cycle in an undirected graph is in P
2) The problem of determining whether there exists a cycle in an undirected graph is in NP
3) If a problem A is NP-Complete, there exists a non-deterministic polynomial time algorithm to solve A

a) 1, 2 and 3 b) 1 and 2 only
c) 2 and 3 only d) 1 and 3 only

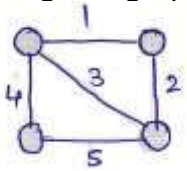
10) Asymptotic behaviour of the given function $f(n) = 4n^2 + 97n + 1000$ is _____.

a) $O(2^n)$ b) O(nlogn)
c) O(n) d) $O(n^2)$

11) Two main measures for the efficiency of an algorithm are _____.

a) Processor and memory b) Complexity and capacity
c) Time and space d) Data and space

12) For a given graph, minimum cost of Spanning tree is _____.



a) 7 b) 6
c) 12 d) 10

13) Algorithm sum(A[],n)
{
sum = 0;
for i = 1 to n
sum = sum + A[i];
return sum;
}
Step count of the algorithm is _____

a) n b) n+3
c) 2n+3 d) 2n+2

14) For messages with given frequencies (2,3,5,7,9,13), what will be total decode time _____.

a) 39 b) 93
c) 89 d) 132

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY
Design and Analysis of Algorithms (BTN05504)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
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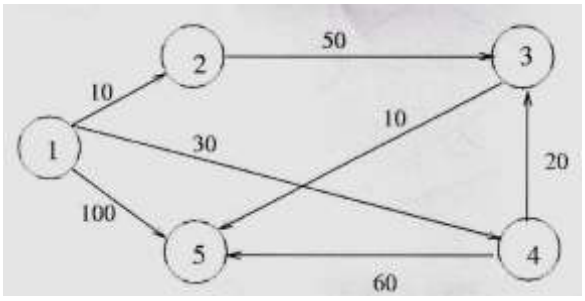

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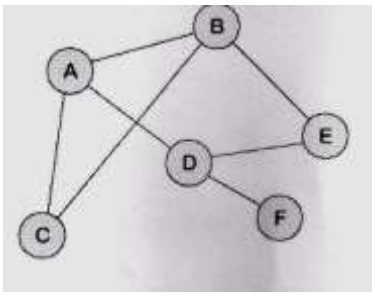

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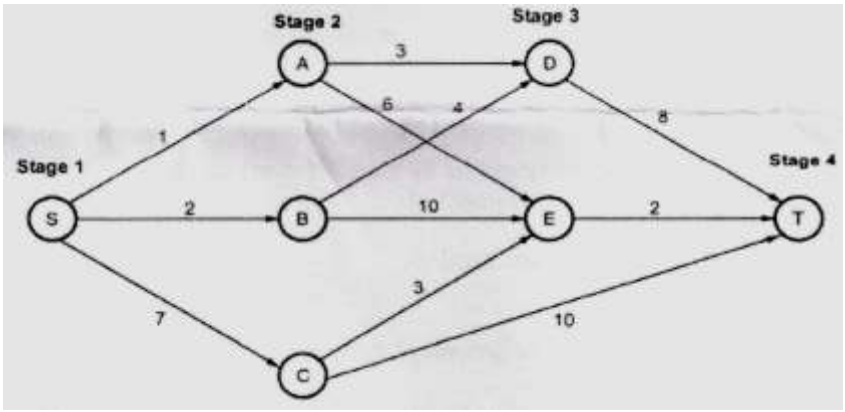

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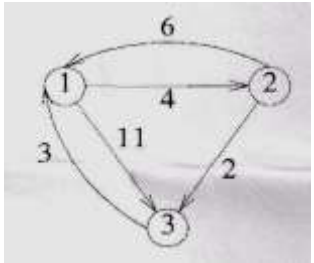

SLR-GF-376

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Reinforcement Learning (BTN05512)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option. **14**

1) Episodes: _____ of interaction between agent environment.
a) sequences b) subsequences
c) paths d) states

2) Markov Property - Environment's response at (t+1) depends only on State(s) & Action _____.
a) True b) False
c) Both d) Not decidable

3) Model-free learning Sample Reward and transition function by interacting with __
a) start b) The world
c) End d) Not applicable

4) Popular method for Dynamic programming-policy evaluation and improvement _____.
a) MDP b) DP
c) TD d) Not applicable

5) Reinforcement learning is _____.
a) unsupervised learning b) supervised learning
c) award based learning d) none

6) Which of the following is an application of reinforcement learning?
a) Topic modeling b) Recommendation system
c) Pattern recognition d) Image classification

7) Upper confidence bound is a _____.
a) reinforcement algorithm b) supervised algorithm
c) unsupervised algorithms d) none

8) Which of the following is true about reinforcement learning?
a) The agent gets rewards or penalty according to the action
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c) The target of an agent is to maximize the rewards
d) All of the above

9) You have a task which is to show relative ads to target users. Which algorithm you should use for this task?

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10) Hidden Markov Model is used in _____.

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11) Reinforcement learning is a _____ directed computational approach where a computer learns to perform a task by interacting with an uncertain dynamic environment.

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12) In Bandit problem we Pull arms sequentially so as to _____ the total expected reward.

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c) average out d) select

13) MAB deal with '_____' of the core ideas.

a) exploitation b) exploration
c) exploration and exploitation d) none

14) Armed Testbed has 10 _____ distributions.

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SLR-GF-376

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Reinforcement Learning (BTN05512)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
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Section – I

Q.2 Answer any Three: **12**
- **a)** What is Reinforcement Learning? List its elements.
- **b)** What is Dynamic Programming?
- **c)** What is model based learning? Develop an equation for it's optimal policy?
- **d)** Illustrate the working of Tic Tac Toe and the involvement of Reinforcement learning in it.

Q.3 Answer any one. **08**
- **a)** How does the k-Armed bandit problem illustrate Reinforcement learning?
- **b)** What is the Markov property? Illustrate the steps used in Markov Decision Process.

Q.4 Explain the Multi armed bandit problem with illustrations. **08**

Section – II

Q.5 Attempt any three: **12**
- **a)** How is policy formation and iteration performed in Dynamic Programming?
- **b)** What are the features of Dyna Q+ system? Under what conditions it is used?
- **c)** Develop a solution to Maze problem using Dyna-Q.
- **d)** How is RL used in Samuel's Checker player?

Q.6 Attempt any one: **08**
- **a)** Illustrate how human level control is handled with Reinforcement learning.
- **b)** With examples Illustrate the efficiency of Dynamic Programming.

Q.7 With illustrations explain under what conditions you would prefer Dynamic Programming, Markov Decision Process or Temporal Difference methods of Reinforcement learning. **08**

Seat No.		Set	Q

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Duration: 30 Minutes Marks: 14

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a) K means clustering b) Naive Bayes
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3) Hidden Markov Model is used in _____.
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SLR-GF-376

Seat No.		Set	Q

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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1) Reinforcement learning is a _____ directed computational approach where a computer learns to perform a task by interacting with an uncertain dynamic environment.
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2) In Bandit problem we Pull arms sequentially so as to _____ the total expected reward.
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SLR-GF-376

Seat No.	

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a) minimize b) maximize
c) average out d) select

8) MAB deal with '_____' of the core ideas.
a) exploitation b) exploration
c) exploration and exploitation d) none

9) Armed Testbed has 10 _____ distributions.
a) actions b) rewards
c) actions and rewards d) none

10) Episodes: _____ of interaction between agent environment.
a) sequences b) subsequences
c) paths d) states

11) Markov Property - Environment's response at (t+1) depends only on State(s) & Action _____.
a) True b) False
c) Both d) Not decidable

12) Model-free learning Sample Reward and transition function by interacting with __
a) start b) The world
c) End d) Not applicable

13) Popular method for Dynamic programming-policy evaluation and improvement _____.
a) MDP b) DP
c) TD d) Not applicable

14) Reinforcement learning is _____.
a) unsupervised learning b) supervised learning
c) award based learning d) none

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Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Reinforcement Learning (BTN05512)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any Three: **12**
- **a)** What is Reinforcement Learning? List its elements.
- **b)** What is Dynamic Programming?
- **c)** What is model based learning? Develop an equation for it's optimal policy?
- **d)** Illustrate the working of Tic Tac Toe and the involvement of Reinforcement learning in it.

Q.3 Answer any one. **08**
- **a)** How does the k-Armed bandit problem illustrate Reinforcement learning?
- **b)** What is the Markov property? Illustrate the steps used in Markov Decision Process.

Q.4 Explain the Multi armed bandit problem with illustrations. **08**

Section – II

Q.5 Attempt any three: **12**
- **a)** How is policy formation and iteration performed in Dynamic Programming?
- **b)** What are the features of Dyna Q+ system? Under what conditions it is used?
- **c)** Develop a solution to Maze problem using Dyna-Q.
- **d)** How is RL used in Samuel's Checker player?

Q.6 Attempt any one: **08**
- **a)** Illustrate how human level control is handled with Reinforcement learning.
- **b)** With examples Illustrate the efficiency of Dynamic Programming.

Q.7 With illustrations explain under what conditions you would prefer Dynamic Programming, Markov Decision Process or Temporal Difference methods of Reinforcement learning. **08**

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Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Economics (BTN05506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

2) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

3) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

4) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

5) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

6) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

7) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

8) Which of the following is international trade?

a) Trade between countries
b) Trade between regions
c) Trade between provinces
d) Both (b) and (c)

9) Who is the 'lender of the last resort' in the banking structure of India?

a) State Bank of India
b) Reserve Bank of India
c) EXIM Bank of India
d) Union Bank of India

10) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

SLR-GF-379

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Economics (BTN05506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Economics (BTN05506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

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a) State Bank of India b) Reserve Bank of India
c) EXIM Bank of India d) Union Bank of India

5) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

6) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

7) All things remain equal, if input prices increase _____.
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Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Economics (BTN05506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
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Q.2 **Write short notes.** **10**
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b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Economics (BTN05506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Who is the 'lender of the last resort' in the banking structure of India?
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Seat No.	

Set R

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Economics (BTN05506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
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Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Economics (BTN05506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
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a) Consumption
b) Money

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Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

SLR-GF-380

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN05507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) The term 'Intellectual Property Rights' covers _____.
a) Copyrights b) Know-how
c) Trade dress d) All of these

2) The following cannot be exploited by assigning or by licensing the rights to others _____.
a) Patents b) Designs
c) Trademark d) All of these

3) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

4) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

5) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

6) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

7) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

8) What is the term of Patent?

a) 35 years b) 25 years

c) 20 years d) 15 years

9) Statutory requirement of “Abstract” is provided in _____ of Indian patents act,1970 and rules 2003.

a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)

c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

10) The following can be patented _____.

a) Machine b) Process

c) Composition of matter d) All of these

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN05507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

SLR-GF-380

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN05507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

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   b) 25 years after the death of author
   c) 40 years after the death of author
   d) 60 years after the death of author

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN05507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN05507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
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7) In India, the literary work is protected until _____.
a) Lifetime of author
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c) 40 years after the death of author
d) 60 years after the death of author

8) Who fills the invention disclosure form (IDF)?

a) Inventor
b) Patent Attorney
c) Assignee
d) Patent Searcher

9) What is copyright meant for?

a) Film work
b) Books
c) Essay
d) All of these

10) What is the term of Patent?

a) 35 years
b) 25 years
c) 20 years
d) 15 years

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN05507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
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Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
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Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN05507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

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SLR-GF-380

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN05507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

SLR-GF-381

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Introduction to Sociology (BTN05508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The term sociology was coined by _____
a) Herbert Spencer b) August Comte
c) Karl Marx d) Max Weber

2) _____ and role are interrelated and inter-depended.
a) Position b) Status
c) Role d) Person

3) Rural society is _____.
a) Heterogeneous b) Homogeneous
c) Cultural d) Normative

4) Urban family is _____ unit.
a) Monogamous b) Polygamous
c) Mono-lateral d) Unilateral

5) Castes hierarchy is supposed to be _____.
a) Manual b) Formal
c) Divine d) Legal

6) The term Modernization was given by _____.
a) Ghurye b) Dr. Ambedkar
c) Shakespeare d) Srinivas

7) The two directions of social change are _____
a) uncertain - uncertain b) linear - cyclical
c) formal - informal d) negative - positive

8) _____ legalizes the sexual relation between man and woman
a) leaders b) Industry
c) Marriage d) Ideology

9) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

10) Environmental science is the study of _____.

a) nature
b) society
c) diversity
d) surroundings

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Introduction to Sociology (BTN05508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 **Write answer on any four of the following.** **16**

a) Explain the meaning and elements of social structure.
b) Discuss on the conventional feature of marriage in India.
c) Elucidate nature and types of social institutions.
d) Explain the nature and process of social change.
e) Give and account of nature and types of social movements.
f) What is social mobility?

Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Introduction to Sociology (BTN05508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

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c) Mono-lateral d) Unilateral

10) Castes hierarchy is supposed to be _____.

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c) Divine d) Legal

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Introduction to Sociology (BTN05508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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OR

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Q.4 Explain the changes in caste system in India. **12**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Introduction to Sociology (BTN05508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

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3) The term sociology was coined by _____
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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Introduction to Sociology (BTN05508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
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OR

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Introduction to Sociology (BTN05508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Rural society is _____.
a) Heterogeneous b) Homogeneous
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2) Urban family is _____ unit.
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c) diversity d) surroundings

9) The term sociology was coined by _____
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10) _____ and role are interrelated and inter-depended.

a) Position
b) Status
c) Role
d) Person

SLR-GF-381

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Introduction to Sociology (BTN05508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
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e) Give and account of nature and types of social movements.
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Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

SLR-GF-382

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Stress and Coping (BTN05509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Which factors improve coping?
a) Social support b) Optimism
c) Perceived control d) All of the above

2) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

3) Which of the following statements is true?
a) The stress response is nonspecific
b) Different kinds of stressors produce exactly the same response
c) Different people respond to the same stressor differently
d) All of the above

4) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
b) When he expects a positive outcome
c) When he thinks he does not have control over the situation
d) When he has a good social support network

5) Aches, shallow breathing and sweating, frequent colds are _____.
a) Physical symptoms of stress
b) Behavioral symptoms of stress
c) Emotional symptoms of stress
d) Cognitive symptoms of stress

6) What thoughts come to the mind when you're under negative stress?
a) You think that you can cope with the situation
b) You think that you cannot cope with the situation
c) You think that everything will get fine eventually
d) You think that you will get help immediately

7) Which of the following are the physical symptoms of anxiety?

a) Racing heart
b) Sweaty palms
c) Flushed cheeks
d) All of the above

8) Which of the following is true about 'deep breathing relaxation technique'?

a) It can be self-taught
b) It releases tension from the body and clears your mind
c) You have to do this under-water
d) Only 'a' & 'b' are true

9) Which of the following are stress busters?

a) Trying to find something funny in a difficult situation
b) Developing a support network
c) Taking a mindful walk
d) All of the above

10) When danger or stress is perceived/experienced, this response occurs in the body _____.

a) Exhaustion
b) Adaption
c) Fight-or-flight
d) Resistance

SLR-GF-382

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Stress and Coping (BTN05509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Stress and Coping (BTN05509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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6) Which factors improve coping?
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7) Which of the following statements is true?
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8) Which of the following statements is true?
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9) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
b) When he expects a positive outcome
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c) Emotional symptoms of stress
d) Cognitive symptoms of stress

SLR-GF-382

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Stress and Coping (BTN05509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
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Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

SLR-GF-382

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Stress and Coping (BTN05509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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SLR-GF-382

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Stress and Coping (BTN05509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
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Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
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Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

SLR-GF-382

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Stress and Coping (BTN05509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
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MCQ/Objective Type Questions

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9) Which factors improve coping?
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SLR-GF-382

Seat No.	

Set S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Stress and Coping (BTN05509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
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Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

SLR-GF-383

Seat No.		Set	P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Professional Ethics & Human Value (BTN05510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

2) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

3) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

4) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

5) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

6) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

7) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

8) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

9) Human values are essential for _____.

a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

10) _____ is defined as the duty, obligation or even authority.

a) Work
b) Responsibility
c) Democracy
d) authority

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Professional Ethics & Human Value (BTN05510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Professional Ethics & Human Value (BTN05510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

2) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

3) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

4) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

5) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

6) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

7) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

8) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

9) What is Integrity?

a) Unity of thought
b) Word and deed
c) Open mindedness
d) All of these

10) Ethical issues that can affect an engineer's professional and personal life are termed as _____.

a) Macro ethics
b) Micro ethics
c) Morals
d) Rights

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Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Professional Ethics & Human Value (BTN05510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Professional Ethics & Human Value (BTN05510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

2) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

3) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

4) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

5) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

6) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

7) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

8) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

9) Value and skills should go hand in hand _____.

a) True b) False
c) Cannot tell d) Wrong question

10) _____ are the basic Human aspirations.

a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Professional Ethics & Human Value (BTN05510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Professional Ethics & Human Value (BTN05510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

2) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

3) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

4) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

5) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

6) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

7) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

8) _____ is defined as the duty, obligation or even authority.

a) Work b) Responsibility
c) Democracy d) authority

9) Many complex social problems exist in the _____.

a) Industry/ Business b) Society
c) Home d) None of the above

10) Ethics is the word that refers to _____.

a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

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Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Professional Ethics & Human Value (BTN05510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

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Seat No.		Set	P

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Artificial Intelligence (BTN05601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is the main job of a problem-solving agent?
a) Solve the given problem and reach the goal
b) To discover which sequence of the job will get it to the goal state
c) All of these
d) None of these

2) Which of the following is a touring problem in which each city must be visited exactly once? The purpose is to search for the shortest tour among all the tours.
a) Searching the shortest path between a source and a destination
b) Depth-first search traversal on a given map represented as a graph
c) Map coloring problem
d) Travelling Salesman problem

3) Which of the following searching technique takes less memory?
a) Optimal search b) Breadth-First Search
c) Linear Search d) Depth-First Search

4) Who is known as the - Father of Al"?
a) Fisher Ada b) Alan Turing
c) John McCarthy d) Allen Newell

5) Select the most appropriate situation for that a blind search can be used.
a) Real-life situation b) Small Search Space
c) Complex game d) All of the above

6) Which algorithm is used in the Game tree to make decisions of Win/Lose?
a) Heuristic Search Algorithm b) DFS/BFS algorithm
c) Greedy Search Algorithm d) Min/Max algorithm

7) Among the given options, which is not the required property of Knowledge representation?
a) Inferential Efficiency
b) Inferential Adequacy
c) Representational Verification
d) Representational Adequacy

8) An AI agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

9) Which rule is applied for the Simple reflex agent?
a) Simple-action rule
b) Simple & Condition-action rule
c) Condition-action rule
d) None of the above

10) Which agent deals with the happy and unhappy state?
a) Utility-based agent b) Model-based agent
c) Goal-based Agent d) Learning Agent

11) Which term describes the common-sense of the judgmental part of problem-solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

12) Which of the following option is used to build complex sentences in Knowledge representation?
a) Symbols b) Connectives
c) Quantifier d) None of these

13) In artificial Intelligence, knowledge can be represented as _____.
i) Predicate Logic
ii) Propositional Logic
iii) Compound Logic
iv) Machine Logic
a) Only ii b) Only i
c) Both i & ii d) Only iv

14) First order logic Statements contains _____.
a) Predicate and Preposition b) Subject and an Object
c) Predicate and Subject d) None of the above

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Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Artificial Intelligence (BTN05601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Answer any FOUR from the following questions. 12

a) Give any 3 components of problem-solving artificial intelligence.
b) What are the steps to evaluate an algorithm's performance?
c) What is uninformed Search technique? Give the various types of uninformed search Algorithms.
d) Briefly describe the meaning of knowledge representation and reasoning.
e) Explain in detail A* algorithm.

Q.3 Answer any ONE from the following questions 08

a) Explain the Best-First-Search Procedure with example.
b) Explain Goal Based Agent and Utility based Agent architecture with example.

Q.4 Answer the following question 08

How is AI related to knowledge? Differentiate between declarative and procedural Knowledge.

Section – II

Q.5 Answer any FOUR from the following questions 12

a) Explain in detail the Bayesian Networks.
b) What is game theory? How is it important in AI?
c) Define sequential theory, decision theory and Utility theory.
d) Write a note on knowledge acquisition.
e) Describe in detail Bayes rule.

Q.6 Answer any ONE from the following questions 08

a) What are the types of learning in knowledge acquisition in artificial intelligence? Explain any two in detail.
b) Describe in detail probabilistic inference.

Q.7 Answer the following question 08

Write a note on Reinforcement Learning. State advantages and disadvantages of Reinforcement Learning.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Artificial Intelligence (BTN05601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) An AI agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

2) Which rule is applied for the Simple reflex agent?
a) Simple-action rule
b) Simple & Condition-action rule
c) Condition-action rule
d) None of the above

3) Which agent deals with the happy and unhappy state?
a) Utility-based agent b) Model-based agent
c) Goal-based Agent d) Learning Agent

4) Which term describes the common-sense of the judgmental part of problem-solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

5) Which of the following option is used to build complex sentences in Knowledge representation?
a) Symbols b) Connectives
c) Quantifier d) None of these

6) In artificial Intelligence, knowledge can be represented as _____.
i) Predicate Logic
ii) Propositional Logic
iii) Compound Logic
iv) Machine Logic
a) Only ii b) Only i
c) Both i & ii d) Only iv

7) First order logic Statements contains _____.
a) Predicate and Preposition b) Subject and an Object
c) Predicate and Subject d) None of the above

8) Which of the following is the main job of a problem-solving agent?
a) Solve the given problem and reach the goal
b) To discover which sequence of the job will get it to the goal state
c) All of these
d) None of these

9) Which of the following is a touring problem in which each city must be visited exactly once? The purpose is to search for the shortest tour among all the tours.
a) Searching the shortest path between a source and a destination
b) Depth-first search traversal on a given map represented as a graph
c) Map coloring problem
d) Travelling Salesman problem

10) Which of the following searching technique takes less memory?
a) Optimal search
b) Breadth-First Search
c) Linear Search
d) Depth-First Search

11) Who is known as the - Father of Al"?
a) Fisher Ada
b) Alan Turing
c) John McCarthy
d) Allen Newell

12) Select the most appropriate situation for that a blind search can be used.
a) Real-life situation
b) Small Search Space
c) Complex game
d) All of the above

13) Which algorithm is used in the Game tree to make decisions of Win/Lose?
a) Heuristic Search Algorithm
b) DFS/BFS algorithm
c) Greedy Search Algorithm
d) Min/Max algorithm

14) Among the given options, which is not the required property of Knowledge representation?
a) Inferential Efficiency
b) Inferential Adequacy
c) Representational Verification
d) Representational Adequacy

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Artificial Intelligence (BTN05601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Answer any FOUR from the following questions. **12**

a) Give any 3 components of problem-solving artificial intelligence.
b) What are the steps to evaluate an algorithm's performance?
c) What is uninformed Search technique? Give the various types of uninformed search Algorithms.
d) Briefly describe the meaning of knowledge representation and reasoning.
e) Explain in detail A* algorithm.

Q.3 Answer any ONE from the following questions **08**

a) Explain the Best-First-Search Procedure with example.
b) Explain Goal Based Agent and Utility based Agent architecture with example.

Q.4 Answer the following question **08**

How is AI related to knowledge? Differentiate between declarative and procedural Knowledge.

Section – II

Q.5 Answer any FOUR from the following questions **12**

a) Explain in detail the Bayesian Networks.
b) What is game theory? How is it important in AI?
c) Define sequential theory, decision theory and Utility theory.
d) Write a note on knowledge acquisition.
e) Describe in detail Bayes rule.

Q.6 Answer any ONE from the following questions **08**

a) What are the types of learning in knowledge acquisition in artificial intelligence? Explain any two in detail.
b) Describe in detail probabilistic inference.

Q.7 Answer the following question **08**

Write a note on Reinforcement Learning. State advantages and disadvantages of Reinforcement Learning.

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Artificial Intelligence (BTN05601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which term describes the common-sense of the judgmental part of problem-solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

2) Which of the following option is used to build complex sentences in Knowledge representation?
a) Symbols b) Connectives
c) Quantifier d) None of these

3) In artificial Intelligence, knowledge can be represented as _____.
i) Predicate Logic
ii) Propositional Logic
iii) Compound Logic
iv) Machine Logic
a) Only ii b) Only i
c) Both i & ii d) Only iv

4) First order logic Statements contains _____.
a) Predicate and Preposition b) Subject and an Object
c) Predicate and Subject d) None of the above

5) Which of the following is the main job of a problem-solving agent?
a) Solve the given problem and reach the goal
b) To discover which sequence of the job will get it to the goal state
c) All of these
d) None of these

6) Which of the following is a touring problem in which each city must be visited exactly once? The purpose is to search for the shortest tour among all the tours.
a) Searching the shortest path between a source and a destination
b) Depth-first search traversal on a given map represented as a graph
c) Map coloring problem
d) Travelling Salesman problem

7) Which of the following searching technique takes less memory?

a) Optimal search
b) Breadth-First Search
c) Linear Search
d) Depth-First Search

8) Who is known as the - Father of Al"?

a) Fisher Ada
b) Alan Turing
c) John McCarthy
d) Allen Newell

9) Select the most appropriate situation for that a blind search can be used.

a) Real-life situation
b) Small Search Space
c) Complex game
d) All of the above

10) Which algorithm is used in the Game tree to make decisions of Win/Lose?

a) Heuristic Search Algorithm
b) DFS/BFS algorithm
c) Greedy Search Algorithm
d) Min/Max algorithm

11) Among the given options, which is not the required property of Knowledge representation?

a) Inferential Efficiency
b) Inferential Adequacy
c) Representational Verification
d) Representational Adequacy

12) An Al agent perceives and acts upon the environment using _____.

a) Sensors
b) Perceiver
c) Actuators
d) Both a and c

13) Which rule is applied for the Simple reflex agent?

a) Simple-action rule
b) Simple & Condition-action rule
c) Condition-action rule
d) None of the above

14) Which agent deals with the happy and unhappy state?

a) Utility-based agent
b) Model-based agent
c) Goal-based Agent
d) Learning Agent

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Seat No.	

Set R

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Artificial Intelligence (BTN05601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Answer any FOUR from the following questions. 12

a) Give any 3 components of problem-solving artificial intelligence.
b) What are the steps to evaluate an algorithm's performance?
c) What is uninformed Search technique? Give the various types of uninformed search Algorithms.
d) Briefly describe the meaning of knowledge representation and reasoning.
e) Explain in detail A* algorithm.

Q.3 Answer any ONE from the following questions 08

a) Explain the Best-First-Search Procedure with example.
b) Explain Goal Based Agent and Utility based Agent architecture with example.

Q.4 Answer the following question 08

How is AI related to knowledge? Differentiate between declarative and procedural Knowledge.

Section – II

Q.5 Answer any FOUR from the following questions 12

a) Explain in detail the Bayesian Networks.
b) What is game theory? How is it important in AI?
c) Define sequential theory, decision theory and Utility theory.
d) Write a note on knowledge acquisition.
e) Describe in detail Bayes rule.

Q.6 Answer any ONE from the following questions 08

a) What are the types of learning in knowledge acquisition in artificial intelligence? Explain any two in detail.
b) Describe in detail probabilistic inference.

Q.7 Answer the following question 08

Write a note on Reinforcement Learning. State advantages and disadvantages of Reinforcement Learning.

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Artificial Intelligence (BTN05601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which algorithm is used in the Game tree to make decisions of Win/Lose?
a) Heuristic Search Algorithm b) DFS/BFS algorithm
c) Greedy Search Algorithm d) Min/Max algorithm

2) Among the given options, which is not the required property of Knowledge representation?
a) Inferential Efficiency
b) Inferential Adequacy
c) Representational Verification
d) Representational Adequacy

3) An AI agent perceives and acts upon the environment using _____.
a) Sensors b) Perceiver
c) Actuators d) Both a and c

4) Which rule is applied for the Simple reflex agent?
a) Simple-action rule
b) Simple & Condition-action rule
c) Condition-action rule
d) None of the above

5) Which agent deals with the happy and unhappy state?
a) Utility-based agent b) Model-based agent
c) Goal-based Agent d) Learning Agent

6) Which term describes the common-sense of the judgmental part of problem-solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

7) Which of the following option is used to build complex sentences in Knowledge representation?
a) Symbols b) Connectives
c) Quantifier d) None of these

8) In artificial Intelligence, knowledge can be represented as _____.

i) Predicate Logic
ii) Propositional Logic
iii) Compound Logic
iv) Machine Logic

a) Only ii
b) Only i
c) Both i & ii
d) Only iv

9) First order logic Statements contains _____.

a) Predicate and Preposition
b) Subject and an Object
c) Predicate and Subject
d) None of the above

10) Which of the following is the main job of a problem-solving agent?

a) Solve the given problem and reach the goal
b) To discover which sequence of the job will get it to the goal state
c) All of these
d) None of these

11) Which of the following is a touring problem in which each city must be visited exactly once? The purpose is to search for the shortest tour among all the tours.

a) Searching the shortest path between a source and a destination
b) Depth-first search traversal on a given map represented as a graph
c) Map coloring problem
d) Travelling Salesman problem

12) Which of the following searching technique takes less memory?

a) Optimal search
b) Breadth-First Search
c) Linear Search
d) Depth-First Search

13) Who is known as the - Father of Al"?

a) Fisher Ada
b) Alan Turing
c) John McCarthy
d) Allen Newell

14) Select the most appropriate situation for that a blind search can be used.

a) Real-life situation
b) Small Search Space
c) Complex game
d) All of the above

SLR-GF-384

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Artificial Intelligence (BTN05601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Answer any FOUR from the following questions. 12

a) Give any 3 components of problem-solving artificial intelligence.
b) What are the steps to evaluate an algorithm's performance?
c) What is uninformed Search technique? Give the various types of uninformed search Algorithms.
d) Briefly describe the meaning of knowledge representation and reasoning.
e) Explain in detail A* algorithm.

Q.3 Answer any ONE from the following questions 08

a) Explain the Best-First-Search Procedure with example.
b) Explain Goal Based Agent and Utility based Agent architecture with example.

Q.4 Answer the following question 08

How is AI related to knowledge? Differentiate between declarative and procedural Knowledge.

Section – II

Q.5 Answer any FOUR from the following questions 12

a) Explain in detail the Bayesian Networks.
b) What is game theory? How is it important in AI?
c) Define sequential theory, decision theory and Utility theory.
d) Write a note on knowledge acquisition.
e) Describe in detail Bayes rule.

Q.6 Answer any ONE from the following questions 08

a) What are the types of learning in knowledge acquisition in artificial intelligence? Explain any two in detail.
b) Describe in detail probabilistic inference.

Q.7 Answer the following question 08

Write a note on Reinforcement Learning. State advantages and disadvantages of Reinforcement Learning.

SLR-GF-385

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Object Oriented Modeling & Design (BTN05602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
5) Do not use pen to draw and label the diagrams.

MCQ/Objective Type Questions

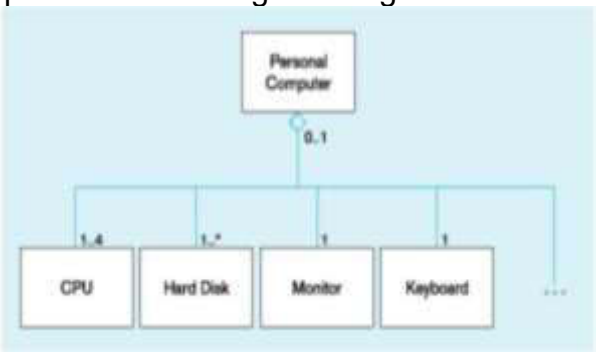
Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A data store is a _____ object within a data flow diagram that stores data for later access.
a) Active b) Dynamic
c) Passive d) All of the above

2) Which of the following stages are not parts of OMT methodology?
a) Analysis b) System and Object Design
c) Implementation d) None of the above

3) What relationship is shown in the given diagram?



a) Overlaps b) Disjoints
c) Rejoinders d) Aggregation

4) _____ divides activities according to objects by arranging objects in column format and placing activities by that object within that column.
a) Fork b) Join
c) Swim lanes d) Lifeline

5) Composition is a stronger form of which of the following?
a) Aggregation b) Encapsulation
c) Inheritance d) All of the above

6) A data store is a _____ object within a data flow diagram that stores data for later access.
a) Active b) Dynamic
c) Passive d) All of the above

7) The Unified Modeling Language: _____.
a) is a notation useful for graphically depicting an object-oriented analysis or design model.
b) allows one to capture design decisions of a system.
c) promotes communication among key personnel involved in development.
d) all of the above

8) Which of the following pair is matched incorrectly?
a) Object Model → Static Structure
b) UML → Low level capture of system requirements
c) Dynamic Model → Behavioral Aspects
d) Functional model → Data value transformation

9) Activity diagram, use case diagram, collaboration diagram, and sequence diagram are considered as _____ diagrams.
a) Non-behavioral b) Non-structural
c) Structural d) Behavioral

10) Which term is combined Interaction Diagram?
a) Sequence Diagram + Collaboration Diagram
b) Activity Diagram + State Chart Diagram
c) Deployment Diagram + Collaboration Diagram
d) None of the mentioned

11) _____ diagrams show the physical configurations of software and hardware.
a) Component b) Deployment
c) Collaboration d) None

12) Which of the following is a kind of message that defines a particular communication between Lifelines of an Interaction?
a) Call message b) Return Message
c) Self Message d) Recursive Message

13) Deployment diagram consists _____?
a) Computational resource
b) Communication path in the mid of resource
c) Artifacts that run resource
d) All of the above

14) Select which are the common notations for deployment diagrams?
a) Components b) Stereotypes
c) Nodes and Artifacts d) Both a and c

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Object Oriented Modeling & Design (BTN05602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Figures drawn by pencil; ruler only indicate full marks.
4) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) Draw an “Event trace" diagram for a online food delivery system considering successful order dispatch scenario.

b) Describe four stages of OMT by Rumbaugh.

c) With an example, explain
i) single inheritance
ii) multiple inheritance
iii) aggregation

d) Differentiate between association and aggregation.

Q.3 Attempt Any One **08**

a) Define and draw the graphical notations for state diagram. Draw a state diagram online railway reservation system.

OR

b) Describe functional modeling with graphical notations. Draw a functional model for Flight Simulator.

Q.4 Answer the following **08**

Draw functional model notation for
i) Process
ii) Dataflow between process
iii) Data store
iv) Control flow
v) Data flow that result in data store
vi) Access of data store value
vii) Decomposition of data value
viii) Actor objects (as source or sink of data)

Section – II

Q.5 Attempt Any Three **12**

a) Draw a component diagram for an online shopping, the system contains three components related to online shopping - Search Engine, Shopping Cart, and Authentication. Search Engine component allows to search or browse items by exposing provided interface Product Search and uses required interface Search Inventory provided by Inventory component. Shopping Cart component uses Manage Orders interface provided by Orders component during checkout. Authentication component allows customers to create account, login, or logout and binds customer to some account.

b) Class Diagram for Online Shopping of DVD system described. A customer decides to upgrade her PC and purchase a DVD player. She begins by calling the sales department of PC vendor and they tell her to contact customer support. She than calls customer support and they put her on hold while talking to engineering. Finally, customer support tells the customer about several supported DVD options. The customer chooses a DVD and it is shipped by the mail department. The customer receives the DVD, installs it satisfactorily and then mails her payment to accounts department.

c) Draw sequence diagram which shows how Facebook (FB) user could be authenticated in a web application to allow access to his/her FB resources.

d) Describe Branching and Forking in Activity diagram. Draw Activity diagram for withdrawing money from ATM.

Q.6 Attempt Any One **08**

a) State and explain notations used to draw sequence diagram. Draw UML sequence diagram for library management system: Issuing book with all possible test cases.

OR

b) Explain and draw UML class diagram with graphical notations for Hospital Management System for a hospital to show and explain hospital structure, staff, relationships with patients, and patient treatment terminology.

Q.7 Answer the following. **08**

Draw an UML behavioral state machine diagram showing Bank Automated Teller Machine (ATM) where ATM is initially turned off. After the power is turned on, ATM performs startup action and enters Self Test state. If the test fails, ATM goes into Out of Service state, otherwise there is trigger less transition to the Idle state. In this state ATM waits for customer interaction. The ATM state changes from Idle to Serving Customer when the customer inserts banking or credit card in the ATM's card reader. On entering the Serving Customer state, the entry action readCard is performed. Note, that transition from Serving Customer state back to the Idle state could be triggered by cancel event as the customer could cancel transaction at any time.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Object Oriented Modeling & Design (BTN05602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
5) Do not use pen to draw and label the diagrams.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following pair is matched incorrectly?
a) Object Model → Static Structure
b) UML → Low level capture of system requirements
c) Dynamic Model → Behavioral Aspects
d) Functional model → Data value transformation

2) Activity diagram, use case diagram, collaboration diagram, and sequence diagram are considered as _____ diagrams.
a) Non-behavioral b) Non-structural
c) Structural d) Behavioral

3) Which term is combined Interaction Diagram?
a) Sequence Diagram + Collaboration Diagram
b) Activity Diagram + State Chart Diagram
c) Deployment Diagram + Collaboration Diagram
d) None of the mentioned

4) _____ diagrams show the physical configurations of software and hardware.
a) Component b) Deployment
c) Collaboration d) None

5) Which of the following is a kind of message that defines a particular communication between Lifelines of an Interaction?
a) Call message b) Return Message
c) Self Message d) Recursive Message

6) Deployment diagram consists _____?
a) Computational resource
b) Communication path in the mid of resource
c) Artifacts that run resource
d) All of the above

7) Select which are the common notations for deployment diagrams?
a) Components b) Stereotypes
c) Nodes and Artifacts d) Both a and c

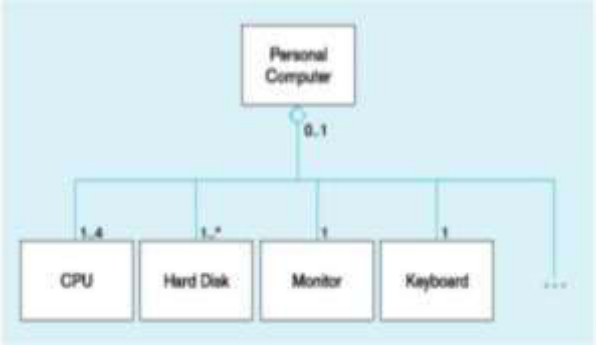
8) A data store is a _____ object within a data flow diagram that stores data for later access.

a) Active
b) Dynamic
c) Passive
d) All of the above

9) Which of the following stages are not parts of OMT methodology?

a) Analysis
b) System and Object Design
c) Implementation
d) None of the above

10) What relationship is shown in the given diagram?



a) Overlaps
b) Disjoints
c) Rejoinders
d) Aggregation

11) _____ divides activities according to objects by arranging objects in column format and placing activities by that object within that column.

a) Fork
b) Join
c) Swim lanes
d) Lifeline

12) Composition is a stronger form of which of the following?

a) Aggregation
b) Encapsulation
c) Inheritance
d) All of the above

13) A data store is a _____ object within a data flow diagram that stores data for later access.

a) Active
b) Dynamic
c) Passive
d) All of the above

14) The Unified Modeling Language: _____.

a) is a notation useful for graphically depicting an object-oriented analysis or design model.
b) allows one to capture design decisions of a system.
c) promotes communication among key personnel involved in development.
d) all of the above

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Object Oriented Modeling & Design (BTN05602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Figures drawn by pencil; ruler only indicate full marks.
4) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) Draw an “Event trace" diagram for a online food delivery system considering successful order dispatch scenario.

b) Describe four stages of OMT by Rumbaugh.

c) With an example, explain
i) single inheritance
ii) multiple inheritance
iii) aggregation

d) Differentiate between association and aggregation.

Q.3 Attempt Any One **08**

a) Define and draw the graphical notations for state diagram. Draw a state diagram online railway reservation system.

OR

b) Describe functional modeling with graphical notations. Draw a functional model for Flight Simulator.

Q.4 Answer the following **08**

Draw functional model notation for
i) Process
ii) Dataflow between process
iii) Data store
iv) Control flow
v) Data flow that result in data store
vi) Access of data store value
vii) Decomposition of data value
viii) Actor objects (as source or sink of data)

Section – II

Q.5 Attempt Any Three **12**

a) Draw a component diagram for an online shopping, the system contains three components related to online shopping - Search Engine, Shopping Cart, and Authentication. Search Engine component allows to search or browse items by exposing provided interface Product Search and uses required interface Search Inventory provided by Inventory component. Shopping Cart component uses Manage Orders interface provided by Orders component during checkout. Authentication component allows customers to create account, login, or logout and binds customer to some account.

b) Class Diagram for Online Shopping of DVD system described. A customer decides to upgrade her PC and purchase a DVD player. She begins by calling the sales department of PC vendor and they tell her to contact customer support. She than calls customer support and they put her on hold while talking to engineering. Finally, customer support tells the customer about several supported DVD options. The customer chooses a DVD and it is shipped by the mail department. The customer receives the DVD, installs it satisfactorily and then mails her payment to accounts department.

c) Draw sequence diagram which shows how Facebook (FB) user could be authenticated in a web application to allow access to his/her FB resources.

d) Describe Branching and Forking in Activity diagram. Draw Activity diagram for withdrawing money from ATM.

Q.6 Attempt Any One **08**

a) State and explain notations used to draw sequence diagram. Draw UML sequence diagram for library management system: Issuing book with all possible test cases.

OR

b) Explain and draw UML class diagram with graphical notations for Hospital Management System for a hospital to show and explain hospital structure, staff, relationships with patients, and patient treatment terminology.

Q.7 Answer the following. **08**

Draw an UML behavioral state machine diagram showing Bank Automated Teller Machine (ATM) where ATM is initially turned off. After the power is turned on, ATM performs startup action and enters Self Test state. If the test fails, ATM goes into Out of Service state, otherwise there is trigger less transition to the Idle state. In this state ATM waits for customer interaction. The ATM state changes from Idle to Serving Customer when the customer inserts banking or credit card in the ATM's card reader. On entering the Serving Customer state, the entry action readCard is performed. Note, that transition from Serving Customer state back to the Idle state could be triggered by cancel event as the customer could cancel transaction at any time.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Object Oriented Modeling & Design (BTN05602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
5) Do not use pen to draw and label the diagrams.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ diagrams show the physical configurations of software and hardware.
a) Component b) Deployment
c) Collaboration d) None

2) Which of the following is a kind of message that defines a particular communication between Lifelines of an Interaction?
a) Call message b) Return Message
c) Self Message d) Recursive Message

3) Deployment diagram consists _____?
a) Computational resource
b) Communication path in the mid of resource
c) Artifacts that run resource
d) All of the above

4) Select which are the common notations for deployment diagrams?
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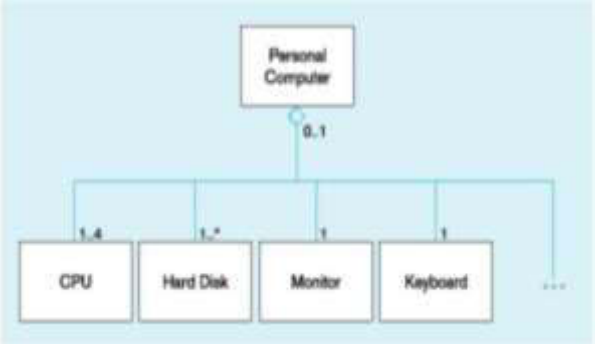
c) Nodes and Artifacts d) Both a and c

5) A data store is a _____ object within a data flow diagram that stores data for later access.
a) Active b) Dynamic
c) Passive d) All of the above

6) Which of the following stages are not parts of OMT methodology?
a) Analysis b) System and Object Design
c) Implementation d) None of the above

7) What relationship is shown in the given diagram?



a) Overlaps
b) Disjoints
c) Rejoinders
d) Aggregation

8) _____ divides activities according to objects by arranging objects in column format and placing activities by that object within that column.
a) Fork
b) Join
c) Swim lanes
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9) Composition is a stronger form of which of the following?
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c) Inheritance
d) All of the above

10) A data store is a _____ object within a data flow diagram that stores data for later access.
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11) The Unified Modeling Language: _____.
a) is a notation useful for graphically depicting an object-oriented analysis or design model.
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12) Which of the following pair is matched incorrectly?
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13) Activity diagram, use case diagram, collaboration diagram, and sequence diagram are considered as _____ diagrams.
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14) Which term is combined Interaction Diagram?
a) Sequence Diagram + Collaboration Diagram
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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Object Oriented Modeling & Design (BTN05602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Figures drawn by pencil; ruler only indicate full marks.
4) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) Draw an “Event trace" diagram for a online food delivery system considering successful order dispatch scenario.

b) Describe four stages of OMT by Rumbaugh.

c) With an example, explain
i) single inheritance
ii) multiple inheritance
iii) aggregation

d) Differentiate between association and aggregation.

Q.3 Attempt Any One **08**

a) Define and draw the graphical notations for state diagram. Draw a state diagram online railway reservation system.

OR

b) Describe functional modeling with graphical notations. Draw a functional model for Flight Simulator.

Q.4 Answer the following **08**

Draw functional model notation for
i) Process
ii) Dataflow between process
iii) Data store
iv) Control flow
v) Data flow that result in data store
vi) Access of data store value
vii) Decomposition of data value
viii) Actor objects (as source or sink of data)

Section – II

Q.5 Attempt Any Three **12**

a) Draw a component diagram for an online shopping, the system contains three components related to online shopping - Search Engine, Shopping Cart, and Authentication. Search Engine component allows to search or browse items by exposing provided interface Product Search and uses required interface Search Inventory provided by Inventory component. Shopping Cart component uses Manage Orders interface provided by Orders component during checkout. Authentication component allows customers to create account, login, or logout and binds customer to some account.

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c) Draw sequence diagram which shows how Facebook (FB) user could be authenticated in a web application to allow access to his/her FB resources.

d) Describe Branching and Forking in Activity diagram. Draw Activity diagram for withdrawing money from ATM.

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Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Object Oriented Modeling & Design (BTN05602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) A data store is a _____ object within a data flow diagram that stores data for later access.
a) Active b) Dynamic
c) Passive d) All of the above

2) The Unified Modeling Language: _____.
a) is a notation useful for graphically depicting an object-oriented analysis or design model.
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3) Which of the following pair is matched incorrectly?
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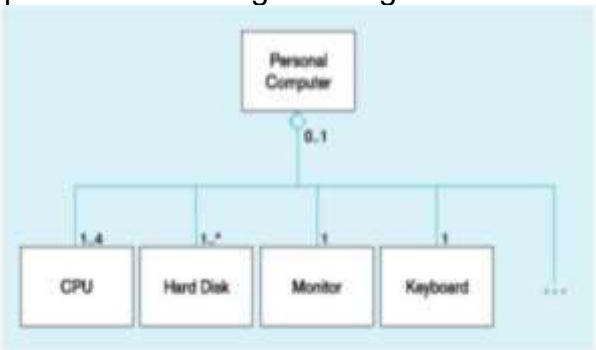

a) Overlaps
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a) Aggregation
b) Encapsulation
c) Inheritance
d) All of the above

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Object Oriented Modeling & Design (BTN05602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Figures drawn by pencil; ruler only indicate full marks.
4) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Attempt the following (Any Three) **12**

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i) single inheritance
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Section – II

Q.5 Attempt Any Three **12**

a) Draw a component diagram for an online shopping, the system contains three components related to online shopping - Search Engine, Shopping Cart, and Authentication. Search Engine component allows to search or browse items by exposing provided interface Product Search and uses required interface Search Inventory provided by Inventory component. Shopping Cart component uses Manage Orders interface provided by Orders component during checkout. Authentication component allows customers to create account, login, or logout and binds customer to some account.

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d) Describe Branching and Forking in Activity diagram. Draw Activity diagram for withdrawing money from ATM.

Q.6 Attempt Any One **08**

a) State and explain notations used to draw sequence diagram. Draw UML sequence diagram for library management system: Issuing book with all possible test cases.

OR

b) Explain and draw UML class diagram with graphical notations for Hospital Management System for a hospital to show and explain hospital structure, staff, relationships with patients, and patient treatment terminology.

Q.7 Answer the following. **08**

Draw an UML behavioral state machine diagram showing Bank Automated Teller Machine (ATM) where ATM is initially turned off. After the power is turned on, ATM performs startup action and enters Self Test state. If the test fails, ATM goes into Out of Service state, otherwise there is trigger less transition to the Idle state. In this state ATM waits for customer interaction. The ATM state changes from Idle to Serving Customer when the customer inserts banking or credit card in the ATM's card reader. On entering the Serving Customer state, the entry action readCard is performed. Note, that transition from Serving Customer state back to the Idle state could be triggered by cancel event as the customer could cancel transaction at any time.

SLR-GF-386

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Software Engineering (BTN05603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option. **14**

1) In the spiral model 'risk analysis' is performed _____.
a) in the first loop b) in the first and second loop
c) in every loop d) before using spiral model

2) Each time a defect gets detected and fixed, the reliability of a software product _____.
a) increases b) decreases
c) remains constant d) None of these

3) Which parameters are essentially used while computing the software development cost?
a) Hardware and Software Costs b) Effort Costs
c) Travel and Training Costs d) All of the above

4) Which of the following is/are level/s of Testing?
a) Integration testing b) Unit testing
c) System testing d) All of the above

5) Alpha and Beta Testing are forms of _____.
a) Acceptance testing b) Integration testing
c) System testing c) Unit testing

6) Testing beyond normal operational capacity is _____.
a) Load testing b) Performance testing
c) Stress testing d) All of these

7) Which technique is applied for usability testing?
a) White box b) Black box
c) Grey box d) Combination of all

8) Full Form of the COCOMO model is _____.
a) Common Cost Estimation Model
b) Constructive Cost Estimation Model
c) Complete Cost Estimation Model
d) Comprehensive Cost Estimation Model

9) Agile Software Development is based on _____.
a) incremental development
b) iterative development
c) linear development
d) both incremental and iterative development

10) The working culture of an Agile team is _____?
a) Collective b) Connective
c) Contemplative d) Collaborative

11) Errors, Defects, Failures are synonymous.
a) True b) False

12) Software quality is measured by functional as well as non functional attributes.
a) True b) False

13) The desired level of coupling is _____.
a) No coupling b) Control coupling
c) Common coupling d) Data coupling

14) In Scrum, when is a Sprint Over?
a) When all the Sprint Backlog Items are completed
b) When the Product Owner suggests
c) When all the Sprint Backlog tasks are completed
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Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Software Engineering (BTN05603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. (each carries 4 marks) **12**

a) Describe Timeboxing Model.
b) Write a short note on Component and Connector (C&C) architecture view.
c) Differentiate between Functional and Non Functional Requirements.
d) Describe the desired characteristics of the software process.

Q.3 Attempt any two. (each carries 8 marks) **16**

a) Describe the Software Development process in detail.
b) Construct a DFD for workers payment system. Prepare the data dictionary of the system.
c) Prepare Software Requirement Specification of Hotel Management Systems Web Application.

Section – II

Q.4 Attempt any three. (each carries 4 marks) **12**

a) Describe Defect Injection and Removal Cycle.
b) Write a short note on Configuration Management.
c) What do you mean by effort estimation? What are the methods of effort estimation?
d) Write a short note on Risk Assessment.

Q.5 Attempt any two. (each carries 8 marks) **16**

a) Write a short note on Unit testing, Integration testing, System testing and Acceptance testing.
b) What is Agile Project Management? Explain its principles.
c) Describe the Project Monitoring Plan.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Software Engineering (BTN05603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option. **14**

1) Full Form of the COCOMO model is _____.
a) Common Cost Estimation Model
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c) Complete Cost Estimation Model
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a) Integration testing b) Unit testing
c) System testing d) All of the above

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c) System testing c) Unit testing

13) Testing beyond normal operational capacity is _____.

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Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Software Engineering (BTN05603)

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Section – II

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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Software Engineering (BTN05603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Software Engineering (BTN05603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Software Engineering (BTN05603)

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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Software Engineering (BTN05603)

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Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (BTN05606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) What business outcomes might be expected from moving to the cloud?
a) Improved agility b) Operational resilience
c) Sustainable IT d) All of the mentioned

2) If a user is using a Google Classroom, which type of service it is being categorized as?
a) Is it a SaaS b) Is it a PaaS
c) Is it a laaS d) None of them

3) What is the functionality of Fabric Service in Aneka?
a) Scheduling and execution of an Application
b) Management services of the Aneka container
c) Resource Provisioning Service
d) Thread Management Service

4) Which models are handled by the Aneka Foundation Service?
a) Task Model b) Thread Model
c) MapReduce Model d) All

5) Which layer is not a part of CometCoud architecture for autonomic cloudbursts?
a) Programming Layer b) Service Layer
c) Abstraction Layer d) Infrastructure Layer

6) _____ is the ability to monitor the events to understand performance.
a) Auditing b) Logging
c) Regulatory compliance d) Monitoring compliance

7) _____ is the recording of events into a repository.
a) Auditing b) Logging
c) Regulatory compliance d) Monitoring compliance

8) Which delivery model is an example of a cloud computing environment that provides users with a web-based email service?
a) Software as a Service b) Platform as a Service
c) Computing as a Service d) Infrastructure as a Service

9) Which statement is true about a cloud computing environment?
a) It cannot be used to host location based applications.
b) It enables users to access systems regardless of their location.
c) It introduces latency as the servers are geographically dispersed.
d) It is not economical.

10) Which one of the following is not a Routing Policy of the Route53 in AWS.
a) Simple routing policy
b) Failover routing policy
c) Latency based routing policy
d) Continent based routing policy

11) IAM (Identity and Access Management) service comes under _____ service.
a) LaaS
b) PaaS
c) SaaS
d) IDaaS

12) S3 in AWS stands for _____.
a) Simple Storage Service
b) Single Storage Service
c) System Storage Service
d) Secure Storage Service

13) A group of users within a particular instance is called a _____.
a) Pod
b) Aggregation
c) Silos
d) None of the mentioned

14) _____ refers to the ability of a cloud provider to deliver software as-a-service solutions to multiple client organizations (or tenants) from a single, shared instance of the software.
a) Multi-tenancy
b) Multi-service
c) Multi-client
d) Multi-cloud

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (BTN05606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any three. **12**

a) Give comparison between traditional IT Vs IT with Cloud computing.
b) Explain the essential characteristics and benefits of cloud computing.
c) What is Eucalyptus? Explain the working of it with its high end components.
d) What is an identity? Explain Identity as a Service (IDaaS) in cloud with example.

Q.3 Attempt any two. **16**

a) Explain in detail the cloud deployment as well as the service models.
b) Elaborate challenges and risks in cloud computing.
c) Explain Virtual Machine Migration Services in detail.

Section – II

Q.4 Attempt any three. **12**

a) Describe in detail Technologies and tools used for implementing cloud computing.
b) Explain design and Implementation guidelines for Hybrid Cloud.
c) The CometCloud architecture for autonomic cloudbursts.
d) Explain cloud contracting models in brief.

Q.5 Attempt any two. **16**

a) Briefly discuss about Aneka resource provisioning service over private and public clouds.
b) Explain Autonomic Cloudbursting and Autonomic Cloud bridging w.r.t. CometCloud.
c) Explain the Brokered cloud storage access in detail.

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Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (BTN05606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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7) _____ refers to the ability of a cloud provider to deliver software as-a-service solutions to multiple client organizations (or tenants) from a single, shared instance of the software.
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SLR-GF-387

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (BTN05606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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Section – II

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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (BTN05606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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6) If a user is using a Google Classroom, which type of service it is being categorized as?
a) Is it a SaaS b) Is it a PaaS
c) Is it a IaaS d) None of them

7) What is the functionality of Fabric Service in Aneka?
a) Scheduling and execution of an Application
b) Management services of the Aneka container
c) Resource Provisioning Service
d) Thread Management Service

8) Which models are handled by the Aneka Foundation Service?
a) Task Model b) Thread Model
c) MapReduce Model d) All

9) Which layer is not a part of CometCoud architecture for autonomic cloudbursts?
a) Programming Layer b) Service Layer
c) Abstraction Layer d) Infrastructure Layer

10) _____ is the ability to monitor the events to understand performance.
a) Auditing b) Logging
c) Regulatory compliance d) Monitoring compliance

11) _____ is the recording of events into a repository.
a) Auditing b) Logging
c) Regulatory compliance d) Monitoring compliance

12) Which delivery model is an example of a cloud computing environment that provides users with a web-based email service?
a) Software as a Service b) Platform as a Service
c) Computing as a Service d) Infrastructure as a Service

13) Which statement is true about a cloud computing environment?
a) It cannot be used to host location based applications.
b) It enables users to access systems regardless of their location.
c) It introduces latency as the servers are geographically dispersed.
d) It is not economical.

14) Which one of the following is not a Routing Policy of the Route53 in AWS.
a) Simple routing policy b) Failover routing policy
c) Latency based routing policy d) Continent based routing policy

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (BTN05606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any three. **12**

a) Give comparison between traditional IT Vs IT with Cloud computing.
b) Explain the essential characteristics and benefits of cloud computing.
c) What is Eucalyptus? Explain the working of it with its high end components.
d) What is an identity? Explain Identity as a Service (IDaaS) in cloud with example.

Q.3 Attempt any two. **16**

a) Explain in detail the cloud deployment as well as the service models.
b) Elaborate challenges and risks in cloud computing.
c) Explain Virtual Machine Migration Services in detail.

Section – II

Q.4 Attempt any three. **12**

a) Describe in detail Technologies and tools used for implementing cloud computing.
b) Explain design and Implementation guidelines for Hybrid Cloud.
c) The CometCloud architecture for autonomic cloudbursts.
d) Explain cloud contracting models in brief.

Q.5 Attempt any two. **16**

a) Briefly discuss about Aneka resource provisioning service over private and public clouds.
b) Explain Autonomic Cloudbursting and Autonomic Cloud bridging w.r.t. CometCloud.
c) Explain the Brokered cloud storage access in detail.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (BTN05606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is the ability to monitor the events to understand performance.
a) Auditing b) Logging
c) Regulatory compliance d) Monitoring compliance

2) _____ is the recording of events into a repository.
a) Auditing b) Logging
c) Regulatory compliance d) Monitoring compliance

3) Which delivery model is an example of a cloud computing environment that provides users with a web-based email service?
a) Software as a Service b) Platform as a Service
c) Computing as a Service d) Infrastructure as a Service

4) Which statement is true about a cloud computing environment?
a) It cannot be used to host location based applications.
b) It enables users to access systems regardless of their location.
c) It introduces latency as the servers are geographically dispersed.
d) It is not economical.

5) Which one of the following is not a Routing Policy of the Route53 in AWS.
a) Simple routing policy b) Failover routing policy
c) Latency based routing policy d) Continent based routing policy

6) IAM (Identity and Access Management) service comes under _____ service.
a) LaaS b) PaaS
c) SaaS d) IDaaS

7) S3 in AWS stands for _____.
a) Simple Storage Service b) Single Storage Service
c) System Storage Service d) Secure Storage Service

8) A group of users within a particular instance is called a _____.
a) Pod b) Aggregation
c) Silos d) None of the mentioned

9) _____ refers to the ability of a cloud provider to deliver software as-a-service solutions to multiple client organizations (or tenants) from a single, shared instance of the software.

a) Multi-tenancy
b) Multi-service
c) Multi-client
d) Multi-cloud

10) What business outcomes might be expected from moving to the cloud?

a) Improved agility
b) Operational resilience
c) Sustainable IT
d) All of the mentioned

11) If a user is using a Google Classroom, which type of service it is being categorized as?

a) Is it a SaaS
b) Is it a PaaS
c) Is it a laaS
d) None of them

12) What is the functionality of Fabric Service in Aneka?

a) Scheduling and execution of an Application
b) Management services of the Aneka container
c) Resource Provisioning Service
d) Thread Management Service

13) Which models are handled by the Aneka Foundation Service?

a) Task Model
b) Thread Model
c) MapReduce Model
d) All

14) Which layer is not a part of CometCoud architecture for autonomic cloudbursts?

a) Programming Layer
b) Service Layer
c) Abstraction Layer
d) Infrastructure Layer

SLR-GF-387

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (BTN05606)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any three. **12**

a) Give comparison between traditional IT Vs IT with Cloud computing.
b) Explain the essential characteristics and benefits of cloud computing.
c) What is Eucalyptus? Explain the working of it with its high end components.
d) What is an identity? Explain Identity as a Service (IDaaS) in cloud with example.

Q.3 Attempt any two. **16**

a) Explain in detail the cloud deployment as well as the service models.
b) Elaborate challenges and risks in cloud computing.
c) Explain Virtual Machine Migration Services in detail.

Section – II

Q.4 Attempt any three. **12**

a) Describe in detail Technologies and tools used for implementing cloud computing.
b) Explain design and Implementation guidelines for Hybrid Cloud.
c) The CometCloud architecture for autonomic cloudbursts.
d) Explain cloud contracting models in brief.

Q.5 Attempt any two. **16**

a) Briefly discuss about Aneka resource provisioning service over private and public clouds.
b) Explain Autonomic Cloudbursting and Autonomic Cloud bridging w.r.t. CometCloud.
c) Explain the Brokered cloud storage access in detail.

SLR-GF-388

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Augmented Reality / Virtual Reality (BTN05607)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) What is common use of Virtual Reality?
a) Education b) Gaming and Entertainment
c) Healthcare d) All of the above

2) _____ is the process of turning information into sounds.
a) Localization b) Sonification
c) Sensory Substitution d) Auralization

3) _____ cues arise from a comparison of the sound waves received by each ear.
a) Binaural b) Spectral
c) Dynamic d) Reverberation

4) _____ mappings and techniques can allow users to manipulate objects quite differently than in the physical world, while maintaining usability and performance.
a) Isomorphic b) non-isomorphic
c) Monomorphic d) Epimorphic

5) Go-Go technique is an example of _____ metaphor.
a) Exocentric b) Virtual Hand
c) Virtual Pointer d) None of these

6) In _____ travel task, The user has no explicit goal for her movement.
a) Exploration b) Search
c) Maneuvering d) Retrieval

7) The _____ technique does not apply to desktop VEs.
a) gaze directed b) pointing
c) torso-directed d) VMC

8) _____ technique allows the user to move in the direction toward which he is looking.

a) pointing
b) camera-in-hand technique
c) physical props
d) Semiautomated

9) _____ is/are indexing techniques for spatial data.

a) R-tree
b) Quadtree
c) Grid
d) all of them

10) _____ technique, it retains information about the previous position of the user and allows users to return to that position after inspecting the target object.

a) Map-Based Target Specification
b) WIM-Based Target Specification
c) Zoomback Technique
d) None of these

11) Ring menu is another name assigned to _____ technique.

a) adapted 2D menus
b) 1-DOF menus
c) TULIP menus
d) 3D widgets

12) _____ method attaches a menu to the user's hand in a 3D UI is to assign menu items to different fingers.

a) adapted 2D menus
b) 1-DOF menus
c) TULIP menus
d) 3D widgets

13) _____ feedback is feedback that the user receives from the system as the results of his or her actions.

a) Reactive
b) Instrumental
c) Operational
d) all of these

14) _____ is an evaluation and statistical comparison of two or more configurations of UI designs, UI components, and/or UI techniques.

a) Heuristic
b) Cognitive
c) Formative
d) Summative

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Augmented Reality/Virtual Reality (BTN05607)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Explain Cullers and Occluders.
- **b)** Explain any three Visual Display Device Types.
- **c)** What are the benefits of virtual reality.
- **d)** Explain two types of Data Gloves.

Q.3 Attempt any two. **16**
- **a)** Explain any three Desktop Input Devices with advantages and disadvantages.
- **b)** Explain Design Guidelines to choose particular travel technique.
- **c)** Explain Visual Display Characteristics.

Section – II

Q.4 Attempt any three. **12**
- **a)** Explain different types of gestures.
- **b)** Explain exocentric and egocentric metaphor.
- **c)** Explain World-in-Miniature technique.
- **d)** Explain Gaze-Directed Steering and torso directed steering.
- **e)** Explain three different kinds of spatial knowledge in the cognitive map.

Q.5 Attempt any two. **16**
- **a)** Explain the key user characteristics and their influence on interface design.
- **b)** Explain Evaluation Methods Used for 3D Interfaces.
- **c)** Explain different Viewpoint Orientation Techniques.

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Seat No.		Set	Q

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Augmented Reality / Virtual Reality (BTN05607)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) _____ technique allows the user to move in the direction toward which he is looking.
a) pointing b) camera-in-hand technique
c) physical props d) Semiautomated

2) _____ is/are indexing techniques for spatial data.
a) R-tree b) Quadtree
c) Grid d) all of them

3) _____ technique, it retains information about the previous position of the user and allows users to return to that position after inspecting the target object.
a) Map-Based Target Specification
b) WIM-Based Target Specification
c) Zoomback Technique
d) None of these

4) Ring menu is another name assigned to _____ technique.
a) adapted 2D menus b) 1-DOF menus
c) TULIP menus d) 3D widgets

5) _____ method attaches a menu to the user's hand in a 3D UI is to assign menu items to different fingers.
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6) _____ feedback is feedback that the user receives from the system as the results of his or her actions.
a) Reactive b) Instrumental
c) Operational d) all of these

7) _____ is an evaluation and statistical comparison of two or more configurations of UI designs, UI components, and/or UI techniques.
a) Heuristic b) Cognitive
c) Formative d) Summative

8) What is common use of Virtual Reality?
a) Education
b) Gaming and Entertainment
c) Healthcare
d) All of the above

9) _____ is the process of turning information into sounds.
a) Localization
b) Sonification
c) Sensory Substitution
d) Auralization

10) _____ cues arise from a comparison of the sound waves received by each ear.
a) Binaural
b) Spectral
c) Dynamic
d) Reverberation

11) _____ mappings and techniques can allow users to manipulate objects quite differently than in the physical world, while maintaining usability and performance.
a) Isomorphic
b) non-isomorphic
c) Monomorphic
d) Epimorphic

12) Go-Go technique is an example of _____ metaphor.
a) Exocentric
b) Virtual Hand
c) Virtual Pointer
d) None of these

13) In _____ travel task, The user has no explicit goal for her movement.
a) Exploration
b) Search
c) Maneuvering
d) Retrieval

14) The _____ technique does not apply to desktop VEs.
a) gaze directed
b) pointing
c) torso-directed
d) VMC

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Augmented Reality/Virtual Reality (BTN05607)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Explain Cullers and Occluders.
- **b)** Explain any three Visual Display Device Types.
- **c)** What are the benefits of virtual reality.
- **d)** Explain two types of Data Gloves.

Q.3 Attempt any two. **16**
- **a)** Explain any three Desktop Input Devices with advantages and disadvantages.
- **b)** Explain Design Guidelines to choose particular travel technique.
- **c)** Explain Visual Display Characteristics.

Section – II

Q.4 Attempt any three. **12**
- **a)** Explain different types of gestures.
- **b)** Explain exocentric and egocentric metaphor.
- **c)** Explain World-in-Miniature technique.
- **d)** Explain Gaze-Directed Steering and torso directed steering.
- **e)** Explain three different kinds of spatial knowledge in the cognitive map.

Q.5 Attempt any two. **16**
- **a)** Explain the key user characteristics and their influence on interface design.
- **b)** Explain Evaluation Methods Used for 3D Interfaces.
- **c)** Explain different Viewpoint Orientation Techniques.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Augmented Reality / Virtual Reality (BTN05607)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) Ring menu is another name assigned to _____ technique.
a) adapted 2D menus b) 1-DOF menus
c) TULIP menus d) 3D widgets

2) _____ method attaches a menu to the user's hand in a 3D UI is to assign menu items to different fingers.
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a) Heuristic b) Cognitive
c) Formative d) Summative

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13) _____ is/are indexing techniques for spatial data.

a) R-tree
b) Quadtree
c) Grid
d) all of them

14) _____ technique, it retains information about the previous position of the user and allows users to return to that position after inspecting the target object.

a) Map-Based Target Specification
b) WIM-Based Target Specification
c) Zoomback Technique
d) None of these

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Seat No.	

Set R

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Augmented Reality/Virtual Reality (BTN05607)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Explain Cullers and Occluders.
- **b)** Explain any three Visual Display Device Types.
- **c)** What are the benefits of virtual reality.
- **d)** Explain two types of Data Gloves.

Q.3 Attempt any two. **16**
- **a)** Explain any three Desktop Input Devices with advantages and disadvantages.
- **b)** Explain Design Guidelines to choose particular travel technique.
- **c)** Explain Visual Display Characteristics.

Section – II

Q.4 Attempt any three. **12**
- **a)** Explain different types of gestures.
- **b)** Explain exocentric and egocentric metaphor.
- **c)** Explain World-in-Miniature technique.
- **d)** Explain Gaze-Directed Steering and torso directed steering.
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- **a)** Explain the key user characteristics and their influence on interface design.
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- **c)** Explain different Viewpoint Orientation Techniques.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Augmented Reality / Virtual Reality (BTN05607)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct options. **14**

1) In _____ travel task, The user has no explicit goal for her movement.
a) Exploration b) Search
c) Maneuvering d) Retrieval

2) The _____ technique does not apply to desktop VEs.
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10) What is common use of Virtual Reality?

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b) Gaming and Entertainment
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11) _____ is the process of turning information into sounds.

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a) Isomorphic
b) non-isomorphic
c) Monomorphic
d) Epimorphic

14) Go-Go technique is an example of _____ metaphor.

a) Exocentric
b) Virtual Hand
c) Virtual Pointer
d) None of these

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Seat No.	

Set S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Augmented Reality/Virtual Reality (BTN05607)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Explain Cullers and Occluders.
- **b)** Explain any three Visual Display Device Types.
- **c)** What are the benefits of virtual reality.
- **d)** Explain two types of Data Gloves.

Q.3 Attempt any two. **16**
- **a)** Explain any three Desktop Input Devices with advantages and disadvantages.
- **b)** Explain Design Guidelines to choose particular travel technique.
- **c)** Explain Visual Display Characteristics.

Section – II

Q.4 Attempt any three. **12**
- **a)** Explain different types of gestures.
- **b)** Explain exocentric and egocentric metaphor.
- **c)** Explain World-in-Miniature technique.
- **d)** Explain Gaze-Directed Steering and torso directed steering.
- **e)** Explain three different kinds of spatial knowledge in the cognitive map.

Q.5 Attempt any two. **16**
- **a)** Explain the key user characteristics and their influence on interface design.
- **b)** Explain Evaluation Methods Used for 3D Interfaces.
- **c)** Explain different Viewpoint Orientation Techniques.

SLR-GF-390

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Sustainability (BTN05609)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) The prime responsibility of any professional is _____.
a) Confidentiality b) Conflict of interest
c) Environmental ethics d) Computer ethics

2) Which responsibilities fall under professional responsibilities?
a) Confidentiality b) Computer ethics
c) Environmental ethics d) Above All

3) One of the most important issues faced by the world is that _____.
a) Computer ethics
b) Confidentiality
c) Environmental deterioration
d) Conflict of interest

4) Which one does fall under computer ethics?
a) Computers can be used for robbery, crime and blackmailing others.
b) Hacking is used to access private information
c) Leak of such information of individual leads to harassments in terms of repeated phone calls
d) Above All

5) How many techniques can be used to resolving ethical dilemma?
a) 2 b) 3
c) 4 d) 5

6) _____ refers to the principles of right and wrong behaviour.
a) Moral b) Oral
c) Coral d) None

7) In the _____ approach, the action provides the most good over least harm.
a) Utilitarian b) Right
c) Fairness d) Virtue

8) The list of moral rights includes _____.

a) To make one's own choices about what kind of life to lead
b) To be told the truth
c) Not to be injured
d) Above all

9) The _____ approach is based on the belief that all equal should be treated equally.

a) Virtue
b) Fairness
c) Right
d) None

10) Which approach is a very ancient approach?

a) Virtue
b) Right
c) Fairness
d) Utilitarian

SLR-GF-390

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Sustainability (BTN05609)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any two. **10**
- **a)** List the models of professional roles
- **b)** What is Moral autonomy? Give its characteristics?
- **c)** Give the advantage of an Engineer being ethical.

Q.3 Attempt any One. **10**
- **a)** Illustrate the various types of virtues with examples.
- **b)** How moral autonomy is supported by theories?

Section – II

Q.4 Attempt any two. **10**
- **a)** What is resource innovation related to?
- **b)** How is economics of exhaustive resource dealt with?
- **c)** What is sustainability? Illustrate.

Q.5 Attempt any One. **10**
- **a)** Give the basics of economic sustainability. Illustrate each.
- **b)** How is resource conservation carried out?

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Sustainability (BTN05609)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) _____ refers to the principles of right and wrong behaviour.
a) Moral b) Oral
c) Coral d) None

2) In the _____ approach, the action provides the most good over least harm.
a) Utilitarian b) Right
c) Fairness d) Virtue

3) The list of moral rights includes _____.
a) To make one's own choices about what kind of life to lead
b) To be told the truth
c) Not to be injured
d) Above all

4) The _____ approach is based on the belief that all equal should be treated equally.
a) Virtue b) Fairness
c) Right d) None

5) Which approach is a very ancient approach?
a) Virtue b) Right
c) Fairness d) Utilitarian

6) The prime responsibility of any professional is _____.
a) Confidentiality b) Conflict of interest
c) Environmental ethics d) Computer ethics

7) Which responsibilities fall under professional responsibilities?
a) Confidentiality b) Computer ethics
c) Environmental ethics d) Above All

8) One of the most important issues faced by the world is that _____.
- a) Computer ethics
- b) Confidentiality
- c) Environmental deterioration
- d) Conflict of interest

9) Which one does fall under computer ethics?
- a) Computers can be used for robbery, crime and blackmailing others.
- b) Hacking is used to access private information
- c) Leak of such information of individual leads to harassments in terms of repeated phone calls
- d) Above All

10) How many techniques can be used to resolving ethical dilemma?
- a) 2
- b) 3
- c) 4
- d) 5

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Sustainability (BTN05609)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any two. **10**
- **a)** List the models of professional roles
- **b)** What is Moral autonomy? Give its characteristics?
- **c)** Give the advantage of an Engineer being ethical.

Q.3 Attempt any One. **10**
- **a)** Illustrate the various types of virtues with examples.
- **b)** How moral autonomy is supported by theories?

Section – II

Q.4 Attempt any two. **10**
- **a)** What is resource innovation related to?
- **b)** How is economics of exhaustive resource dealt with?
- **c)** What is sustainability? Illustrate.

Q.5 Attempt any One. **10**
- **a)** Give the basics of economic sustainability. Illustrate each.
- **b)** How is resource conservation carried out?

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Sustainability (BTN05609)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) The _____ approach is based on the belief that all equal should be treated equally.
a) Virtue b) Fairness
c) Right d) None

2) Which approach is a very ancient approach?
a) Virtue b) Right
c) Fairness d) Utilitarian

3) The prime responsibility of any professional is _____.
a) Confidentiality b) Conflict of interest
c) Environmental ethics d) Computer ethics

4) Which responsibilities fall under professional responsibilities?
a) Confidentiality b) Computer ethics
c) Environmental ethics d) Above All

5) One of the most important issues faced by the world is that _____.
a) Computer ethics
b) Confidentiality
c) Environmental deterioration
d) Conflict of interest

6) Which one does fall under computer ethics?
a) Computers can be used for robbery, crime and blackmailing others.
b) Hacking is used to access private information
c) Leak of such information of individual leads to harassments in terms of repeated phone calls
d) Above All

7) How many techniques can be used to resolving ethical dilemma?
a) 2 b) 3
c) 4 d) 5

8) _____ refers to the principles of right and wrong behaviour.

a) Moral b) Oral
c) Coral d) None

9) In the _____ approach, the action provides the most good over least harm.

a) Utilitarian b) Right
c) Fairness d) Virtue

10) The list of moral rights includes _____.

a) To make one's own choices about what kind of life to lead
b) To be told the truth
c) Not to be injured
d) Above all

SLR-GF-390

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Sustainability (BTN05609)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any two. **10**
- **a)** List the models of professional roles
- **b)** What is Moral autonomy? Give its characteristics?
- **c)** Give the advantage of an Engineer being ethical.

Q.3 Attempt any One. **10**
- **a)** Illustrate the various types of virtues with examples.
- **b)** How moral autonomy is supported by theories?

Section – II

Q.4 Attempt any two. **10**
- **a)** What is resource innovation related to?
- **b)** How is economics of exhaustive resource dealt with?
- **c)** What is sustainability? Illustrate.

Q.5 Attempt any One. **10**
- **a)** Give the basics of economic sustainability. Illustrate each.
- **b)** How is resource conservation carried out?

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Sustainability (BTN05609)

Day & Date: Friday, 22-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) One of the most important issues faced by the world is that _____.
a) Computer ethics
b) Confidentiality
c) Environmental deterioration
d) Conflict of interest

2) Which one does fall under computer ethics?
a) Computers can be used for robbery, crime and blackmailing others.
b) Hacking is used to access private information
c) Leak of such information of individual leads to harassments in terms of repeated phone calls
d) Above All

3) How many techniques can be used to resolving ethical dilemma?
a) 2 b) 3
c) 4 d) 5

4) _____ refers to the principles of right and wrong behaviour.
a) Moral b) Oral
c) Coral d) None

5) In the _____ approach, the action provides the most good over least harm.
a) Utilitarian b) Right
c) Fairness d) Virtue

6) The list of moral rights includes _____.
a) To make one's own choices about what kind of life to lead
b) To be told the truth
c) Not to be injured
d) Above all

7) The _____ approach is based on the belief that all equal should be treated equally.

a) Virtue b) Fairness
c) Right d) None

8) Which approach is a very ancient approach?

a) Virtue b) Right
c) Fairness d) Utilitarian

9) The prime responsibility of any professional is _____.

a) Confidentiality b) Conflict of interest
c) Environmental ethics d) Computer ethics

10) Which responsibilities fall under professional responsibilities?

a) Confidentiality b) Computer ethics
c) Environmental ethics d) Above All

SLR-GF-390

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Principles of Management: Practicing Ethics, Responsibility, Sustainability (BTN05609)

Day & Date: Friday, 22-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any two. **10**
- **a)** List the models of professional roles
- **b)** What is Moral autonomy? Give its characteristics?
- **c)** Give the advantage of an Engineer being ethical.

Q.3 Attempt any One. **10**
- **a)** Illustrate the various types of virtues with examples.
- **b)** How moral autonomy is supported by theories?

Section – II

Q.4 Attempt any two. **10**
- **a)** What is resource innovation related to?
- **b)** How is economics of exhaustive resource dealt with?
- **c)** What is sustainability? Illustrate.

Q.5 Attempt any One. **10**
- **a)** Give the basics of economic sustainability. Illustrate each.
- **b)** How is resource conservation carried out?

SLR-GF-393

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (BTN05612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q. 1 Choose the correct option from the following. **14**

1) What is the main challenge/s of NLP?
a) Handling Ambiguity of Sentences
b) Handling Tokenization
c) Handling POS-Tagging
d) All of the mentioned

2) What is Morphological Segmentation?
a) identify the class of the morphemes
b) Does Discourse Analysis
c) Is an extension of propositional logic
d) None of the mentioned Algorithms are often used in NLP

3) "Rohan Was With Her, They Both Go Together", In The Given Sentence Who Is Her Is Unclear, Specify The Type Of Ambiguity?
a) Anaphoric Ambiguity b) Semantic Ambiguity
c) Pragmatic Ambiguity d) Lexical Ambiguity

4) Which of the following technique is used to remove semantic ambiguity?
a) Word Sense Disambiguation b) Fuzzy Logic
c) Shallow Semantic Analysis d) Syntactic analysis

5) Which of these terms refer to the study of speech process?
a) Phonetics b) Phonetic substances
c) Phonology d) Semantics

6) Which of these terms refer to the study of hearing and perception of speech sounds?
a) Auditory phonetics b) Acoustic phonetics
c) Articulatory phonetics d) Laboratory phonetics

7) Which algorithm is used for solving temporal probabilistic reasoning?
a) Hill-climbing search b) Hidden Markov model
c) Depth-first search d) Breadth-first search

8) Which algorithm works by first running the standard forward pass to compute?

a) Smoothing
b) Modified smoothing
c) HMM
d) Depth-first search algorithm

9) ____ is the process of identifying and extracting opinions and emotions expressed in text data.

a) Text Classification
b) Sentiment Analysis
c) Speech Recognition
d) Text Summarization

10) Chatbots and virtual assistants use NLP to understand natural language and provide human-like responses to _____.

a) social media posts, and customer review
b) queries and requests
c) automatically identify and classify named entities
d) recognize and transcribe spoken language

11) Algorithms are often used in NLP applications to _____.

a) Predict solutions readily available
b) automatically learn patterns and relationships in language data
c) Fix language constructs
d) Decide language sequences

12) Speech processing is a complex and highly coordinated process that involves multiple areas of the _____ working together.

a) Heart
b) Brain
c) Soul
d) Mind

13) Sounds produced by the lower lip and upper teeth.

a) Bilabial
b) Labiodental
c) Alveolar
d) Palatal

14) Word boundary detection is the process of identifying the _____ between words in a stream of spoken or written language.

a) mean
b) boundary
c) median
d) variance

SLR-GF-393

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (BTN05612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**
- **a)** Illustrate the Biology behind speech processing.
- **b)** How are word boundaries detected? Illustrate.
- **c)** List the different theories w.r.t word analysis.
- **d)** Illustrate Top-down parsing algorithm with an appropriate example.
- **e)** Compare between Arguments and Adjuncts.

Q.3 Attempt any two. **08**
- **a)** Illustrate the various Parsing Algorithms.
- **b)** How is ambiguity resolved in parsing? Illustrate.
- **c)** List various training issues in Parsing. Illustrate any one.

Q.4 Attempt any One. **08**
- **a)** Illustrate the morphology paradigms. How finite state machines help?
- **b)** Give the basic characteristics of Morphological diversity in Indian languages.

Section – II

Q.5 Attempt any three. **12**
- **a)** Give the graphical model for sequences.
- **b)** What is Machine Translation? State the tools used.
- **c)** Where are semantic relations used? Illustrate.
- **d)** What is GISA ++? Where is it used?
- **e)** What are the applications of NLP?

Q.6 Attempt any two. **08**
- **a)** What is Phonology? What are the methods to deal with it?
- **b)** How are semantic relations dealt with in NLP? State various methods.
- **c)** Illustrate the working of Sentiment with an example.

Q.7 Attempt any One. **08**
- **a)** State Baum Welch Algorithm. How is it related to semantics?
- **b)** Compare between Machine analysis and Machine Translation.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (BTN05612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q. 1 Choose the correct option from the following. **14**

1) Which algorithm works by first running the standard forward pass to compute?
a) Smoothing b) Modified smoothing
c) HMM d) Depth-first search algorithm

2) ____ is the process of identifying and extracting opinions and emotions expressed in text data.
a) Text Classification b) Sentiment Analysis
c) Speech Recognition d) Text Summarization

3) Chatbots and virtual assistants use NLP to understand natural language and provide human-like responses to _____.
a) social media posts, and customer review
b) queries and requests
c) automatically identify and classify named entities
d) recognize and transcribe spoken language

4) Algorithms are often used in NLP applications to _____.
a) Predict solutions readily available
b) automatically learn patterns and relationships in language data
c) Fix language constructs
d) Decide language sequences

5) Speech processing is a complex and highly coordinated process that involves multiple areas of the _____ working together.
a) Heart b) Brain
c) Soul d) Mind

6) Sounds produced by the lower lip and upper teeth.
a) Bilabial b) Labiodental
c) Alveolar d) Palatal

7) Word boundary detection is the process of identifying the _____ between words in a stream of spoken or written language.
a) mean b) boundary
c) median d) variance

8) What is the main challenge/s of NLP?
a) Handling Ambiguity of Sentences
b) Handling Tokenization
c) Handling POS-Tagging
d) All of the mentioned

9) What is Morphological Segmentation?
a) identify the class of the morphemes
b) Does Discourse Analysis
c) Is an extension of propositional logic
d) None of the mentioned Algorithms are often used in NLP

10) "Rohan Was With Her, They Both Go Together", In The Given Sentence Who Is Her Is Unclear, Specify The Type Of Ambiguity?
a) Anaphoric Ambiguity b) Semantic Ambiguity
c) Pragmatic Ambiguity d) Lexical Ambiguity

11) Which of the following technique is used to remove semantic ambiguity?
a) Word Sense Disambiguation b) Fuzzy Logic
c) Shallow Semantic Analysis d) Syntactic analysis

12) Which of these terms refer to the study of speech process?
a) Phonetics b) Phonetic substances
c) Phonology d) Semantics

13) Which of these terms refer to the study of hearing and perception of speech sounds?
a) Auditory phonetics b) Acoustic phonetics
c) Articulatory phonetics d) Laboratory phonetics

14) Which algorithm is used for solving temporal probabilistic reasoning?
a) Hill-climbing search b) Hidden Markov model
c) Depth-first search d) Breadth-first search

SLR-GF-393

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (BTN05612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**
- **a)** Illustrate the Biology behind speech processing.
- **b)** How are word boundaries detected? Illustrate.
- **c)** List the different theories w.r.t word analysis.
- **d)** Illustrate Top-down parsing algorithm with an appropriate example.
- **e)** Compare between Arguments and Adjuncts.

Q.3 Attempt any two. **08**
- **a)** Illustrate the various Parsing Algorithms.
- **b)** How is ambiguity resolved in parsing? Illustrate.
- **c)** List various training issues in Parsing. Illustrate any one.

Q.4 Attempt any One. **08**
- **a)** Illustrate the morphology paradigms. How finite state machines help?
- **b)** Give the basic characteristics of Morphological diversity in Indian languages.

Section – II

Q.5 Attempt any three. **12**
- **a)** Give the graphical model for sequences.
- **b)** What is Machine Translation? State the tools used.
- **c)** Where are semantic relations used? Illustrate.
- **d)** What is GISA ++? Where is it used?
- **e)** What are the applications of NLP?

Q.6 Attempt any two. **08**
- **a)** What is Phonology? What are the methods to deal with it?
- **b)** How are semantic relations dealt with in NLP? State various methods.
- **c)** Illustrate the working of Sentiment with an example.

Q.7 Attempt any One. **08**
- **a)** State Baum Welch Algorithm. How is it related to semantics?
- **b)** Compare between Machine analysis and Machine Translation.

Seat No.	

Set | R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (BTN05612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q. 1 Choose the correct option from the following. **14**

1) Algorithms are often used in NLP applications to _____.
a) Predict solutions readily available
b) automatically learn patterns and relationships in language data
c) Fix language constructs
d) Decide language sequences

2) Speech processing is a complex and highly coordinated process that involves multiple areas of the _____ working together.
a) Heart b) Brain
c) Soul d) Mind

3) Sounds produced by the lower lip and upper teeth.
a) Bilabial b) Labiodental
c) Alveolar d) Palatal

4) Word boundary detection is the process of identifying the _____ between words in a stream of spoken or written language.
a) mean b) boundary
c) median d) variance

5) What is the main challenge/s of NLP?
a) Handling Ambiguity of Sentences
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c) Handling POS-Tagging
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6) What is Morphological Segmentation?
a) identify the class of the morphemes
b) Does Discourse Analysis
c) Is an extension of propositional logic
d) None of the mentioned Algorithms are often used in NLP

7) "Rohan Was With Her, They Both Go Together", In The Given Sentence Who Is Her Is Unclear, Specify The Type Of Ambiguity?
a) Anaphoric Ambiguity b) Semantic Ambiguity
c) Pragmatic Ambiguity d) Lexical Ambiguity

8) Which of the following technique is used to remove semantic ambiguity?
a) Word Sense Disambiguation b) Fuzzy Logic
c) Shallow Semantic Analysis d) Syntactic analysis

9) Which of these terms refer to the study of speech process?
a) Phonetics b) Phonetic substances
c) Phonology d) Semantics

10) Which of these terms refer to the study of hearing and perception of speech sounds?
a) Auditory phonetics b) Acoustic phonetics
c) Articulatory phonetics d) Laboratory phonetics

11) Which algorithm is used for solving temporal probabilistic reasoning?
a) Hill-climbing search b) Hidden Markov model
c) Depth-first search d) Breadth-first search

12) Which algorithm works by first running the standard forward pass to compute?
a) Smoothing b) Modified smoothing
c) HMM d) Depth-first search algorithm

13) ____ is the process of identifying and extracting opinions and emotions expressed in text data.
a) Text Classification b) Sentiment Analysis
c) Speech Recognition d) Text Summarization

14) Chatbots and virtual assistants use NLP to understand natural language and provide human-like responses to _____.
a) social media posts, and customer review
b) queries and requests
c) automatically identify and classify named entities
d) recognize and transcribe spoken language

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (BTN05612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**
- **a)** Illustrate the Biology behind speech processing.
- **b)** How are word boundaries detected? Illustrate.
- **c)** List the different theories w.r.t word analysis.
- **d)** Illustrate Top-down parsing algorithm with an appropriate example.
- **e)** Compare between Arguments and Adjuncts.

Q.3 Attempt any two. **08**
- **a)** Illustrate the various Parsing Algorithms.
- **b)** How is ambiguity resolved in parsing? Illustrate.
- **c)** List various training issues in Parsing. Illustrate any one.

Q.4 Attempt any One. **08**
- **a)** Illustrate the morphology paradigms. How finite state machines help?
- **b)** Give the basic characteristics of Morphological diversity in Indian languages.

Section – II

Q.5 Attempt any three. **12**
- **a)** Give the graphical model for sequences.
- **b)** What is Machine Translation? State the tools used.
- **c)** Where are semantic relations used? Illustrate.
- **d)** What is GISA ++? Where is it used?
- **e)** What are the applications of NLP?

Q.6 Attempt any two. **08**
- **a)** What is Phonology? What are the methods to deal with it?
- **b)** How are semantic relations dealt with in NLP? State various methods.
- **c)** Illustrate the working of Sentiment with an example.

Q.7 Attempt any One. **08**
- **a)** State Baum Welch Algorithm. How is it related to semantics?
- **b)** Compare between Machine analysis and Machine Translation.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (BTN05612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q. 1 Choose the correct option from the following. **14**

1) Which of these terms refer to the study of hearing and perception of speech sounds?
a) Auditory phonetics b) Acoustic phonetics
c) Articulatory phonetics d) Laboratory phonetics

2) Which algorithm is used for solving temporal probabilistic reasoning?
a) Hill-climbing search b) Hidden Markov model
c) Depth-first search d) Breadth-first search

3) Which algorithm works by first running the standard forward pass to compute?
a) Smoothing b) Modified smoothing
c) HMM d) Depth-first search algorithm

4) ____ is the process of identifying and extracting opinions and emotions expressed in text data.
a) Text Classification b) Sentiment Analysis
c) Speech Recognition d) Text Summarization

5) Chatbots and virtual assistants use NLP to understand natural language and provide human-like responses to _____.
a) social media posts, and customer review
b) queries and requests
c) automatically identify and classify named entities
d) recognize and transcribe spoken language

6) Algorithms are often used in NLP applications to _____.
a) Predict solutions readily available
b) automatically learn patterns and relationships in language data
c) Fix language constructs
d) Decide language sequences

7) Speech processing is a complex and highly coordinated process that involves multiple areas of the _____ working together.
a) Heart b) Brain
c) Soul d) Mind

8) Sounds produced by the lower lip and upper teeth.
a) Bilabial b) Labiodental
c) Alveolar d) Palatal

9) Word boundary detection is the process of identifying the _____ between words in a stream of spoken or written language.
a) mean b) boundary
c) median d) variance

10) What is the main challenge/s of NLP?
a) Handling Ambiguity of Sentences
b) Handling Tokenization
c) Handling POS-Tagging
d) All of the mentioned

11) What is Morphological Segmentation?
a) identify the class of the morphemes
b) Does Discourse Analysis
c) Is an extension of propositional logic
d) None of the mentioned Algorithms are often used in NLP

12) "Rohan Was With Her, They Both Go Together", In The Given Sentence Who Is Her Is Unclear, Specify The Type Of Ambiguity?
a) Anaphoric Ambiguity b) Semantic Ambiguity
c) Pragmatic Ambiguity d) Lexical Ambiguity

13) Which of the following technique is used to remove semantic ambiguity?
a) Word Sense Disambiguation b) Fuzzy Logic
c) Shallow Semantic Analysis d) Syntactic analysis

14) Which of these terms refer to the study of speech process?
a) Phonetics b) Phonetic substances
c) Phonology d) Semantics

SLR-GF-393

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (BTN05612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**
- **a)** Illustrate the Biology behind speech processing.
- **b)** How are word boundaries detected? Illustrate.
- **c)** List the different theories w.r.t word analysis.
- **d)** Illustrate Top-down parsing algorithm with an appropriate example.
- **e)** Compare between Arguments and Adjuncts.

Q.3 Attempt any two. **08**
- **a)** Illustrate the various Parsing Algorithms.
- **b)** How is ambiguity resolved in parsing? Illustrate.
- **c)** List various training issues in Parsing. Illustrate any one.

Q.4 Attempt any One. **08**
- **a)** Illustrate the morphology paradigms. How finite state machines help?
- **b)** Give the basic characteristics of Morphological diversity in Indian languages.

Section – II

Q.5 Attempt any three. **12**
- **a)** Give the graphical model for sequences.
- **b)** What is Machine Translation? State the tools used.
- **c)** Where are semantic relations used? Illustrate.
- **d)** What is GISA ++? Where is it used?
- **e)** What are the applications of NLP?

Q.6 Attempt any two. **08**
- **a)** What is Phonology? What are the methods to deal with it?
- **b)** How are semantic relations dealt with in NLP? State various methods.
- **c)** Illustrate the working of Sentiment with an example.

Q.7 Attempt any One. **08**
- **a)** State Baum Welch Algorithm. How is it related to semantics?
- **b)** Compare between Machine analysis and Machine Translation.

SLR-GF-394

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (BTN05613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What is true about Machine Learning?
a) Machine Learning (ML) is that field of computer science.
b) ML is a type of artificial intelligence that extract patterns out of raw data by using an algorithm or method.
c) The main focus of ML is to allow computer systems learn from experience without being explicitly programmed or human intervention.
d) All of the above

2) ML is a field of AI consisting of learning algorithms that?
a) Improve their performance b) At executing some task
c) Over time with experience d) All of the above

3) Which of the following are ML methods?
a) based on human supervision b) supervised Learning
c) semi-reinforcement Learning d) All of the above

4) Which of the following is a widely used and effective machine learning algorithm based on the idea of bagging?
a) Decision Tree b) Regression
c) Classification d) Random Forest

5) Which of the following is a disadvantage of decision trees?
a) Factor analysis
b) Decision trees are robust to outliers
c) Decision trees are prone to be overfit
d) None of these

6) When performing regression or classification, which of the following is the correct way to pre-process the data?
a) Normalize the data → PCA → training
b) PCA → normalize PCA output → training
c) Normalize the data → PCA → normalize PCA output → training
d) None of the above

7) Which of the following is a reasonable way to select the number of principal components "k"?
a) Choose k to be the smallest value so that at least 99% of the variance is retained.
b) Choose k to be 99% of m (k = 0.99*m, rounded to the nearest integer).
c) Choose k to be the largest value so that 99% of the variance is retained.
d) Use the elbow method

8) Supervised learning and unsupervised clustering both require which is correct according to the statement.
a) hidden attribute b) input attribute
c) output attribute d) categorical attribute

9) Following are the types of supervised learning ____.
a) regression b) classification
c) subgroup discovery d) All of above

10) The output of training process in machine learning is _____.
a) machine learning algorithm b) machine learning model
c) Null d) accuracy

11) Which of the following is a good test dataset characteristic?
a) is representative of the dataset as a whole
b) large enough to yield meaningful results
c) All of above
d) None of above

12) What characterize is hyperplane in geometrical model of machine learning?
a) A plane with 1 dimensional fewer than number of input attributes
b) A plane with 1 dimensional more than number of input attributes
c) A plane with 2 dimensional more than number of input attributes
d) A plane with 2 dimensional fewer than number of input attributes

13) You are given reviews of few Netflix series marked as positive, negative and neutral. Classifying reviews of a new Netflix series is an example of _____.
a) unsupervised learning b) semi supervised learning
c) supervised learning d) reinforcement learning

14) The problem of finding hidden structure in unlabeled data is called _____.
a) reinforcement learning b) unsupervised learning
c) supervised learning d) None

SLR-GF-394

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov -2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (BTN05613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Answer any Three. **12**
- **a)** Explain the roles of Statistics and Data Mining with Machine Learning.
- **b)** Differentiate between supervised learning & unsupervised learning.
- **c)** Explain the Machine Learning Cycle.
- **d)** write short note on Training machine learning systems.

Q.3 Answer any Two. **16**
- **a)** Explain any 2 limits of bias.
- **b)** Explain step by step execution in a Pilot Project.
- **c)** Describe the use of matrix in machine learning & Describe Error curve.

Section – II

Q.4 Write notes on any Three. **12**
- **a)** Training
- **b)** Validating
- **c)** Learning Curves
- **d)** Future of Machine Learning

Q.5 Answer any Two. **16**
- **a)** Explain Greedy Classification Trees.
- **b)** List out different ways Improving Machine Learning Models explain anyone.
- **c)** Explain any two applications of Machine Learning.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (BTN05613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

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c) Null d) accuracy

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5) What characterize is hyperplane in geometrical model of machine learning?
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c) supervised learning d) reinforcement learning

7) The problem of finding hidden structure in unlabeled data is called _____.
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c) supervised learning d) None

8) What is true about Machine Learning?
a) Machine Learning (ML) is that field of computer science.
b) ML is a type of artificial intelligence that extract patterns out of raw data by using an algorithm or method.
c) The main focus of ML is to allow computer systems learn from experience without being explicitly programmed or human intervention.
d) All of the above

9) ML is a field of AI consisting of learning algorithms that?
a) Improve their performance b) At executing some task
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10) Which of the following are ML methods?
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11) Which of the following is a widely used and effective machine learning algorithm based on the idea of bagging?
a) Decision Tree b) Regression
c) Classification d) Random Forest

12) Which of the following is a disadvantage of decision trees?
a) Factor analysis
b) Decision trees are robust to outliers
c) Decision trees are prone to be overfit
d) None of these

13) When performing regression or classification, which of the following is the correct way to pre-process the data?
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14) Which of the following is a reasonable way to select the number of principal components "k"?
a) Choose k to be the smallest value so that at least 99% of the variance is retained.
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c) Choose k to be the largest value so that 99% of the variance is retained.
d) Use the elbow method

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Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov -2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (BTN05613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Answer any Three. **12**
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- **b)** Differentiate between supervised learning & unsupervised learning.
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Q.3 Answer any Two. **16**
- **a)** Explain any 2 limits of bias.
- **b)** Explain step by step execution in a Pilot Project.
- **c)** Describe the use of matrix in machine learning & Describe Error curve.

Section – II

Q.4 Write notes on any Three. **12**
- **a)** Training
- **b)** Validating
- **c)** Learning Curves
- **d)** Future of Machine Learning

Q.5 Answer any Two. **16**
- **a)** Explain Greedy Classification Trees.
- **b)** List out different ways Improving Machine Learning Models explain anyone.
- **c)** Explain any two applications of Machine Learning.

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (BTN05613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

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b) A plane with 1 dimensional more than number of input attributes
c) A plane with 2 dimensional more than number of input attributes
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3) You are given reviews of few Netflix series marked as positive, negative and neutral. Classifying reviews of a new Netflix series is an example of _____.
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c) supervised learning d) reinforcement learning

4) The problem of finding hidden structure in unlabeled data is called _____.
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c) supervised learning d) None

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12) Supervised learning and unsupervised clustering both require which is correct according to the statement.

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13) Following are the types of supervised learning ____.

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c) subgroup discovery d) All of above

14) The output of training process in machine learning is _____.

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c) Null d) accuracy

SLR-GF-394

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov -2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (BTN05613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Answer any Three. **12**

a) Explain the roles of Statistics and Data Mining with Machine Learning.
b) Differentiate between supervised learning & unsupervised learning.
c) Explain the Machine Learning Cycle.
d) write short note on Training machine learning systems.

Q.3 Answer any Two. **16**

a) Explain any 2 limits of bias.
b) Explain step by step execution in a Pilot Project.
c) Describe the use of matrix in machine learning & Describe Error curve.

Section – II

Q.4 Write notes on any Three. **12**

a) Training
b) Validating
c) Learning Curves
d) Future of Machine Learning

Q.5 Answer any Two. **16**

a) Explain Greedy Classification Trees.
b) List out different ways Improving Machine Learning Models explain anyone.
c) Explain any two applications of Machine Learning.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (BTN05613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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c) Decision trees are prone to be overfit
d) None of these

SLR-GF-394

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov -2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (BTN05613)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Answer any Three. **12**
- **a)** Explain the roles of Statistics and Data Mining with Machine Learning.
- **b)** Differentiate between supervised learning & unsupervised learning.
- **c)** Explain the Machine Learning Cycle.
- **d)** write short note on Training machine learning systems.

Q.3 Answer any Two. **16**
- **a)** Explain any 2 limits of bias.
- **b)** Explain step by step execution in a Pilot Project.
- **c)** Describe the use of matrix in machine learning & Describe Error curve.

Section – II

Q.4 Write notes on any Three. **12**
- **a)** Training
- **b)** Validating
- **c)** Learning Curves
- **d)** Future of Machine Learning

Q.5 Answer any Two. **16**
- **a)** Explain Greedy Classification Trees.
- **b)** List out different ways Improving Machine Learning Models explain anyone.
- **c)** Explain any two applications of Machine Learning.

SLR-GF-403

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cyber Security (BTN05701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Figures drawn by pencil; ruler only indicate full marks.
5) Do not use pen to draw and label the diagrams.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A _____ takes place when one entity pretends to be different entity.
a) Replay b) Modification of messages
c) Denial of service d) Masquerade

2) Decryption algorithm takes the _____ and the ____ and produces the original plaintext.
a) Cipher text, Secret key b) Plaintext, Secret key
c) Cipher text, Public key d) None

3) Select the right option.

I) Substitution cipher	i) Vigenere cipher
II) Transposition cipher	ii) Caesar cipher
III) Multiple letter encryption cipher	iii) Rail fence
IV) Poly alphabetic cipher	iv) Playfair cipher

a) I-i, II-iii, III-ii, IV-iv b) I-ii, II-iii, III-iv, IV-i
c) I-ii, II-iv, III-iii, IV-i d) I-I, II-ii, III-iii, IV-iv

4) Which legislation in India specifically addresses cybercrime and information security?
a) IPC (Indian Penal Code)
b) ITA 2000 (Information Technology Act, 2000)
c) CRPC (Code of Criminal Procedure)
d) FEMA (Foreign Exchange Management Act)

5) What is emphasized as the "Survival Mantra for the Netizens" in the Cybercrime Era?
a) Offline Communication b) Digital Literacy
c) Ignoring Security Measures d) Dependence on Government

6) What role do Botnets play in the context of cybercrime?
a) Cybercrime detection
b) Cybersecurity education
c) Fueling and supporting cybercrime activities
d) Government surveillance

7) What is the term used to describe targeted harassment through online platforms in the context of cybercrimes?
a) Cyber Espionage
b) Cyber Bullying
c) Cyber Extortion
d) Cyber Vandalism

8) In Cyber security, what does the term "Social Cyber Stalking" specifically involve?
a) Hacking Social Media Accounts
b) Social Engineering Attacks
c) Cybersecurity Conferences
d) Online Gaming Strategies

9) What is the primary focus of the module "Proxy Servers and Anonymizers"?
a) Cybersecurity Policies
b) Online Privacy Tools
c) Social Media Platforms
d) Data Encryption Techniques

10) What is the term for unauthorized access to and manipulation of information on mobile phones?
a) Mobile Phishing
b) SIM Card Hacking
c) Mobile Hijacking
d) Mobile Attacks

11) In the context of organizational security policies for mobile computing, what is the focus of "Organizational Security Policies and Measures in Mobile Computing Era"?
a) Limiting Employee Mobility
b) Enhancing Device Speed
c) Mitigating Security Risks
d) Reducing Mobile Device Adoption

12) _____ is the term for attacks that target mobile/cell phones to gain unauthorized access or extract sensitive information?
a) Mobile Phreaking
b) Phone Cloning
c) SIM Card Skimming
d) Mobile Exploitation

13) In the Indian context, what is emphasized as the need for Cyber laws?
a) Technological Advancements
b) Economic Development
c) Social Media Influence
d) Legal Enforcement

14) Which legislation in India specifically addresses Cybercrimes and Cybersecurity?
a) IPC (Indian Penal Code)
b) ITA 2000 (Information Technology Act, 2000)
c) CRPC (Code of Criminal Procedure)
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SLR-GF-403

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cyber Security (BTN05701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Figures drawn by pencil; ruler only indicate full marks.
4) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Answer any three **12**

a) Describe with diagram the Model for Network Security.
b) Describe types of cybercrimes against an individual in detail.
c) Describe Viruses. How do viruses get disseminated? Explain with diagrams.
d) Define cyber stalking and outline the different categories of stalkers in this digital context. Additionally, elaborate on the mechanisms and processes involved in the act of stalking within the online environment.

Q.3 Answer any one **08**

a) In the context of cybercrimes, define Botnets and explain how these networks function as a critical element, detailing their specific role as the fuel for various types of cybercriminal activities.

OR

b) Differentiate the following:
a) Substitution and Transposition techniques
b) Symmetric and Asymmetric Encryption Techniques

Q.4 Answer any following **08**

Describe with diagram the Feistel Cipher structure and the actual parameters, design choices that determine the algorithm of Feistel cipher.

Section – II

Q.5 Answer any three following **12**

a) Differentiate Proxy Server and an Anonymizer.
b) Describe cybercrimes rooted using:
i) SQL Injection
ii) DOS attack
c) Discuss the role of digital signatures in The Indian IT Act. How do they contribute to ensuring security in digital transactions and communications?
d) Describe with punishments the changes made to the Section 66C, 66D, 66E, 66F of the Indian IT Act 2000.

Q.6 Answer any one **08**

a) Examine the security challenges posed by mobile devices in the era of wireless computing. What are the major vulnerabilities, and how can organizations address these challenges to ensure the security of sensitive information?

OR

b) Investigate the impact of cloud computing on the landscape of cyber offenses. How does the adoption of cloud technologies introduce new challenges and opportunities for cybercriminals? Discuss the security implications and measures organizations can take to enhance cloud computing security

Q.7 Answer any following **08**

Describe SQL Injection and list the steps for SQL Injection attack. How to prevent SQL Injection Attack?

SLR-GF-403

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cyber Security (BTN05701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Figures drawn by pencil; ruler only indicate full marks.
5) Do not use pen to draw and label the diagrams.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In Cyber security, what does the term "Social Cyber Stalking" specifically involve?
a) Hacking Social Media Accounts
b) Social Engineering Attacks
c) Cybersecurity Conferences
d) Online Gaming Strategies

2) What is the primary focus of the module "Proxy Servers and Anonymizers"?
a) Cybersecurity Policies b) Online Privacy Tools
c) Social Media Platforms d) Data Encryption Techniques

3) What is the term for unauthorized access to and manipulation of information on mobile phones?
a) Mobile Phishing b) SIM Card Hacking
c) Mobile Hijacking d) Mobile Attacks

4) In the context of organizational security policies for mobile computing, what is the focus of "Organizational Security Policies and Measures in Mobile Computing Era"?
a) Limiting Employee Mobility
b) Enhancing Device Speed
c) Mitigating Security Risks
d) Reducing Mobile Device Adoption

5) _____ is the term for attacks that target mobile/cell phones to gain unauthorized access or extract sensitive information?
a) Mobile Phreaking b) Phone Cloning
c) SIM Card Skimming d) Mobile Exploitation

6) In the Indian context, what is emphasized as the need for Cyber laws?
a) Technological Advancements b) Economic Development
c) Social Media Influence d) Legal Enforcement

7) Which legislation in India specifically addresses Cybercrimes and Cybersecurity?
a) IPC (Indian Penal Code)
b) ITA 2000 (Information Technology Act, 2000)
c) CRPC (Code of Criminal Procedure)
d) FEMA (Foreign Exchange Management Act)

8) A _____ takes place when one entity pretends to be different entity.
a) Replay
b) Modification of messages
c) Denial of service
d) Masquerade

9) Decryption algorithm takes the _____ and the ____ and produces the original plaintext.
a) Cipher text, Secret key
b) Plaintext, Secret key
c) Cipher text, Public key
d) None

10) Select the right option.

I) Substitution cipher	i) Vigenere cipher
II) Transposition cipher	ii) Caesar cipher
III) Multiple letter encryption cipher	iii) Rail fence
IV) Poly alphabetic cipher	iv) Playfair cipher

a) I-i, II-iii, III-ii, IV-iv
b) I-ii, II-iii, III-iv, IV-i
c) I-ii, II-iv, III-iii, IV-i
d) I-I, II-ii, III-iii, IV-iv

11) Which legislation in India specifically addresses cybercrime and information security?
a) IPC (Indian Penal Code)
b) ITA 2000 (Information Technology Act, 2000)
c) CRPC (Code of Criminal Procedure)
d) FEMA (Foreign Exchange Management Act)

12) What is emphasized as the "Survival Mantra for the Netizens" in the Cybercrime Era?
a) Offline Communication
b) Digital Literacy
c) Ignoring Security Measures
d) Dependence on Government

13) What role do Botnets play in the context of cybercrime?
a) Cybercrime detection
b) Cybersecurity education
c) Fueling and supporting cybercrime activities
d) Government surveillance

14) What is the term used to describe targeted harassment through online platforms in the context of cybercrimes?
a) Cyber Espionage
b) Cyber Bullying
c) Cyber Extortion
d) Cyber Vandalism

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cyber Security (BTN05701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Figures drawn by pencil; ruler only indicate full marks.
4) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Answer any three **12**

a) Describe with diagram the Model for Network Security.
b) Describe types of cybercrimes against an individual in detail.
c) Describe Viruses. How do viruses get disseminated? Explain with diagrams.
d) Define cyber stalking and outline the different categories of stalkers in this digital context. Additionally, elaborate on the mechanisms and processes involved in the act of stalking within the online environment.

Q.3 Answer any one **08**

a) In the context of cybercrimes, define Botnets and explain how these networks function as a critical element, detailing their specific role as the fuel for various types of cybercriminal activities.

OR

b) Differentiate the following:
a) Substitution and Transposition techniques
b) Symmetric and Asymmetric Encryption Techniques

Q.4 Answer any following **08**

Describe with diagram the Feistel Cipher structure and the actual parameters, design choices that determine the algorithm of Feistel cipher.

Section – II

Q.5 Answer any three following **12**

a) Differentiate Proxy Server and an Anonymizer.
b) Describe cybercrimes rooted using:
i) SQL Injection
ii) DOS attack
c) Discuss the role of digital signatures in The Indian IT Act. How do they contribute to ensuring security in digital transactions and communications?
d) Describe with punishments the changes made to the Section 66C, 66D, 66E, 66F of the Indian IT Act 2000.

Q.6 Answer any one **08**

a) Examine the security challenges posed by mobile devices in the era of wireless computing. What are the major vulnerabilities, and how can organizations address these challenges to ensure the security of sensitive information?

OR

b) Investigate the impact of cloud computing on the landscape of cyber offenses. How does the adoption of cloud technologies introduce new challenges and opportunities for cybercriminals? Discuss the security implications and measures organizations can take to enhance cloud computing security

Q.7 Answer any following **08**

Describe SQL Injection and list the steps for SQL Injection attack. How to prevent SQL Injection Attack?

SLR-GF-403

Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cyber Security (BTN05701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Figures drawn by pencil; ruler only indicate full marks.
5) Do not use pen to draw and label the diagrams.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In the context of organizational security policies for mobile computing, what is the focus of "Organizational Security Policies and Measures in Mobile Computing Era"?
a) Limiting Employee Mobility
b) Enhancing Device Speed
c) Mitigating Security Risks
d) Reducing Mobile Device Adoption

2) _____ is the term for attacks that target mobile/cell phones to gain unauthorized access or extract sensitive information?
a) Mobile Phreaking b) Phone Cloning
c) SIM Card Skimming d) Mobile Exploitation

3) In the Indian context, what is emphasized as the need for Cyber laws?
a) Technological Advancements b) Economic Development
c) Social Media Influence d) Legal Enforcement

4) Which legislation in India specifically addresses Cybercrimes and Cybersecurity?
a) IPC (Indian Penal Code)
b) ITA 2000 (Information Technology Act, 2000)
c) CRPC (Code of Criminal Procedure)
d) FEMA (Foreign Exchange Management Act)

5) A _____ takes place when one entity pretends to be different entity.
a) Replay b) Modification of messages
c) Denial of service d) Masquerade

6) Decryption algorithm takes the _____ and the ____ and produces the original plaintext.
a) Cipher text, Secret key b) Plaintext, Secret key
c) Cipher text, Public key d) None

7) Select the right option.

I)	Substitution cipher	i)	Vigenere cipher
II)	Transposition cipher	ii)	Caesar cipher
III)	Multiple letter encryption cipher	iii)	Rail fence
IV)	Poly alphabetic cipher	iv)	Playfair cipher

a) I-i, II-iii, III-ii, IV-iv
b) I-ii, II-iii, III-iv, IV-i
c) I-ii, II-iv, III-iii, IV-i
d) I-I, II-ii, III-iii, IV-iv

8) Which legislation in India specifically addresses cybercrime and information security?

a) IPC (Indian Penal Code)
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c) CRPC (Code of Criminal Procedure)
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9) What is emphasized as the "Survival Mantra for the Netizens" in the Cybercrime Era?

a) Offline Communication
b) Digital Literacy
c) Ignoring Security Measures
d) Dependence on Government

10) What role do Botnets play in the context of cybercrime?

a) Cybercrime detection
b) Cybersecurity education
c) Fueling and supporting cybercrime activities
d) Government surveillance

11) What is the term used to describe targeted harassment through online platforms in the context of cybercrimes?

a) Cyber Espionage
b) Cyber Bullying
c) Cyber Extortion
d) Cyber Vandalism

12) In Cyber security, what does the term "Social Cyber Stalking" specifically involve?

a) Hacking Social Media Accounts
b) Social Engineering Attacks
c) Cybersecurity Conferences
d) Online Gaming Strategies

13) What is the primary focus of the module "Proxy Servers and Anonymizers"?

a) Cybersecurity Policies
b) Online Privacy Tools
c) Social Media Platforms
d) Data Encryption Techniques

14) What is the term for unauthorized access to and manipulation of information on mobile phones?

a) Mobile Phishing
b) SIM Card Hacking
c) Mobile Hijacking
d) Mobile Attacks

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cyber Security (BTN05701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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4) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Answer any three **12**

a) Describe with diagram the Model for Network Security.
b) Describe types of cybercrimes against an individual in detail.
c) Describe Viruses. How do viruses get disseminated? Explain with diagrams.
d) Define cyber stalking and outline the different categories of stalkers in this digital context. Additionally, elaborate on the mechanisms and processes involved in the act of stalking within the online environment.

Q.3 Answer any one **08**

a) In the context of cybercrimes, define Botnets and explain how these networks function as a critical element, detailing their specific role as the fuel for various types of cybercriminal activities.

OR

b) Differentiate the following:
a) Substitution and Transposition techniques
b) Symmetric and Asymmetric Encryption Techniques

Q.4 Answer any following **08**

Describe with diagram the Feistel Cipher structure and the actual parameters, design choices that determine the algorithm of Feistel cipher.

Section – II

Q.5 Answer any three following **12**

a) Differentiate Proxy Server and an Anonymizer.
b) Describe cybercrimes rooted using:
i) SQL Injection
ii) DOS attack
c) Discuss the role of digital signatures in The Indian IT Act. How do they contribute to ensuring security in digital transactions and communications?
d) Describe with punishments the changes made to the Section 66C, 66D, 66E, 66F of the Indian IT Act 2000.

Q.6 Answer any one **08**

a) Examine the security challenges posed by mobile devices in the era of wireless computing. What are the major vulnerabilities, and how can organizations address these challenges to ensure the security of sensitive information?

OR

b) Investigate the impact of cloud computing on the landscape of cyber offenses. How does the adoption of cloud technologies introduce new challenges and opportunities for cybercriminals? Discuss the security implications and measures organizations can take to enhance cloud computing security

Q.7 Answer any following **08**

Describe SQL Injection and list the steps for SQL Injection attack. How to prevent SQL Injection Attack?

SLR-GF-403

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cyber Security (BTN05701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What role do Botnets play in the context of cybercrime?
a) Cybercrime detection
b) Cybersecurity education
c) Fueling and supporting cybercrime activities
d) Government surveillance

2) What is the term used to describe targeted harassment through online platforms in the context of cybercrimes?
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c) Cyber Extortion d) Cyber Vandalism

3) In Cyber security, what does the term "Social Cyber Stalking" specifically involve?
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c) Cybersecurity Conferences
d) Online Gaming Strategies

4) What is the primary focus of the module "Proxy Servers and Anonymizers"?
a) Cybersecurity Policies b) Online Privacy Tools
c) Social Media Platforms d) Data Encryption Techniques

5) What is the term for unauthorized access to and manipulation of information on mobile phones?
a) Mobile Phishing b) SIM Card Hacking
c) Mobile Hijacking d) Mobile Attacks

6) In the context of organizational security policies for mobile computing, what is the focus of "Organizational Security Policies and Measures in Mobile Computing Era"?
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c) Mitigating Security Risks
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a) Replay b) Modification of messages
c) Denial of service d) Masquerade

11) Decryption algorithm takes the _____ and the ____ and produces the original plaintext.

a) Cipher text, Secret key b) Plaintext, Secret key
c) Cipher text, Public key d) None

12) Select the right option.

I)	Substitution cipher	i)	Vigenere cipher
II)	Transposition cipher	ii)	Caesar cipher
III)	Multiple letter encryption cipher	iii)	Rail fence
IV)	Poly alphabetic cipher	iv)	Playfair cipher

a) I-i, II-iii, III-ii, IV-iv b) I-ii, II-iii, III-iv, IV-i
c) I-ii, II-iv, III-iii, IV-i d) I-I, II-ii, III-iii, IV-iv

13) Which legislation in India specifically addresses cybercrime and information security?

a) IPC (Indian Penal Code)
b) ITA 2000 (Information Technology Act, 2000)
c) CRPC (Code of Criminal Procedure)
d) FEMA (Foreign Exchange Management Act)

14) What is emphasized as the "Survival Mantra for the Netizens" in the Cybercrime Era?

a) Offline Communication b) Digital Literacy
c) Ignoring Security Measures d) Dependence on Government

SLR-GF-403

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cyber Security (BTN05701)

Day & Date: Wednesday 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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4) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Answer any three **12**

a) Describe with diagram the Model for Network Security.
b) Describe types of cybercrimes against an individual in detail.
c) Describe Viruses. How do viruses get disseminated? Explain with diagrams.
d) Define cyber stalking and outline the different categories of stalkers in this digital context. Additionally, elaborate on the mechanisms and processes involved in the act of stalking within the online environment.

Q.3 Answer any one **08**

a) In the context of cybercrimes, define Botnets and explain how these networks function as a critical element, detailing their specific role as the fuel for various types of cybercriminal activities.

OR

b) Differentiate the following:
a) Substitution and Transposition techniques
b) Symmetric and Asymmetric Encryption Techniques

Q.4 Answer any following **08**

Describe with diagram the Feistel Cipher structure and the actual parameters, design choices that determine the algorithm of Feistel cipher.

Section – II

Q.5 Answer any three following **12**

a) Differentiate Proxy Server and an Anonymizer.
b) Describe cybercrimes rooted using:
i) SQL Injection
ii) DOS attack
c) Discuss the role of digital signatures in The Indian IT Act. How do they contribute to ensuring security in digital transactions and communications?
d) Describe with punishments the changes made to the Section 66C, 66D, 66E, 66F of the Indian IT Act 2000.

Q.6 Answer any one **08**

a) Examine the security challenges posed by mobile devices in the era of wireless computing. What are the major vulnerabilities, and how can organizations address these challenges to ensure the security of sensitive information?

OR

b) Investigate the impact of cloud computing on the landscape of cyber offenses. How does the adoption of cloud technologies introduce new challenges and opportunities for cybercriminals? Discuss the security implications and measures organizations can take to enhance cloud computing security

Q.7 Answer any following **08**

Describe SQL Injection and list the steps for SQL Injection attack. How to prevent SQL Injection Attack?

SLR-GF-404

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information Systems (BTN05702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Write the correct answer from the options given below. **14**

1) Which level of the organization ESS specifically designed to serve?
a) A operational b) end user
c) middle management d) senior management

2) The term management information system designated or specific category of information system survey.
a) Integrated data processing throughout the phone
b) Transaction process reporting
c) The information technology functions
d) Middle management function

3) A /An _____ is typical a major source of data for other systems.
a) Transaction process system
b) Management information system
c) Executive support system
d) Knowledge management system

4) To monitor the status of internal operations and the firms' relations with the external environment. Managed managers need _____ system.
a) Decision support b) Knowledge
c) Transaction processing d) Management information

5) The _____ function is responsible for identifying customers A.
a) Finance and accounting b) Human resources
c) Manufacturing and production d) Sales and marketing

6) _____ not features of Internet and Web as commercial medium.
a) Ubiquity b) Personalization/customization
c) Interactivity d) None

7) DSS is widely used in the _____.
a) System implementation b) System flow
c) Planning d) Making system

8) Which of the following is / are components of an Expert System?
a) User Interface
b) Interference Engine
c) Knowledge Base & Data Acquisition Subsystem
d) All of the above mentioned

9) Which of the following Activities are associated with Strategic Management?
a) MIS strategy set → Organizational strategy set
b) Organizational strategy set → MIS strategy set
c) Business Process Set → MIS strategy set
d) None of the above mentioned

10) _____ is able to provide a specific niche or segment with the capabilities to identify, extend, and need of an organization.
a) System flow
b) Data flow diagram
c) Strategic Management Information System
d) None of the above mentioned

11) The basic component/components of Decision Support System is/are _____
a) Database
b) Model base
c) DSS software system
d) All of the above

12) Business intelligence Contemporary tools _____.
a) Data warehouses
b) Data marts
c) Hadoop
d) All above

13) From the options below, which of them is not a vulnerability to information security?
a) flood
b) without deleting data, disposal of storage media
c) unchanged default password
d) latest patches and updates not done

14) Possible threat to any information cannot be _____.
a) reduced
b) transferred
c) protected
d) ignored

Seat No.	

Set | P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information Systems (BTN05702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Three. **12**

a) How information systems are transforming business?
b) What are the Competitive strategies using information systems?
c) Differentiate Transaction Processing Systems and Management Information System.
d) Differentiate Industrial design and patent.

Q.3 Solve Any Two. **16**

a) What are systems Challenges to the protection individual privacy and intellectual property?
b) Why systems for collaboration and social business are so important and what technologies do they use?
c) What are the Contemporary Software Platform Trends?

Section – II

Q.4 Solve Any Three. **12**

a) Define the Policies for Information Systems Controls and Auditing IT Security.
b) What are traditional file environments and how it can improve?
c) What is role of databases to improve business performance and decision making.
d) Define information policy, data administration, and data quality assurance in the management of firm's data resources.

Q.5 Solve Any Two. **16**

a) Explain the e-commerce and Digital Marketing in business.
b) Explain what is meant by Business intelligence systems perspective.
c) Define Internet Security Defenses Technology and Security Management Tools of can be apply in MIS.

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information Systems (BTN05702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Write the correct answer from the options given below. 14

1) Which of the following is / are components of an Expert System?
a) User Interface
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2) Which of the following Activities are associated with Strategic Management?
a) MIS strategy set → Organizational strategy set
b) Organizational strategy set → MIS strategy set
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3) _____ is able to provide a specific niche or segment with the capabilities to identify, extend, and need of an organization.
a) System flow
b) Data flow diagram
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4) The basic component/components of Decision Support System is/are _____
a) Database b) Model base
c) DSS software system d) All of the above

5) Business intelligence Contemporary tools _____.
a) Data warehouses b) Data marts
c) Hadoop d) All above

6) From the options below, which of them is not a vulnerability to information security?
a) flood
b) without deleting data, disposal of storage media
c) unchanged default password
d) latest patches and updates not done

7) Possible threat to any information cannot be _____.
a) reduced b) transferred
c) protected d) ignored

8) Which level of the organization ESS specifically designed to serve?
a) A operational b) end user
c) middle management d) senior management

9) The term management information system designated or specific category of information system survey.
a) Integrated data processing throughout the phone
b) Transaction process reporting
c) The information technology functions
d) Middle management function

10) A /An _____ is typical a major source of data for other systems.
a) Transaction process system
b) Management information system
c) Executive support system
d) Knowledge management system

11) To monitor the status of internal operations and the firms' relations with the external environment. Managed managers need _____ system.
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c) Transaction processing d) Management information

12) The _____ function is responsible for identifying customers A.
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c) Manufacturing and production d) Sales and marketing

13) _____ not features of Internet and Web as commercial medium.
a) Ubiquity b) Personalization/customization
c) Interactivity d) None

14) DSS is widely used in the _____.
a) System implementation b) System flow
c) Planning d) Making system

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information Systems (BTN05702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Three. **12**

a) How information systems are transforming business?
b) What are the Competitive strategies using information systems?
c) Differentiate Transaction Processing Systems and Management Information System.
d) Differentiate Industrial design and patent.

Q.3 Solve Any Two. **16**

a) What are systems Challenges to the protection individual privacy and intellectual property?
b) Why systems for collaboration and social business are so important and what technologies do they use?
c) What are the Contemporary Software Platform Trends?

Section – II

Q.4 Solve Any Three. **12**

a) Define the Policies for Information Systems Controls and Auditing IT Security.
b) What are traditional file environments and how it can improve?
c) What is role of databases to improve business performance and decision making.
d) Define information policy, data administration, and data quality assurance in the management of firm's data resources.

Q.5 Solve Any Two. **16**

a) Explain the e-commerce and Digital Marketing in business.
b) Explain what is meant by Business intelligence systems perspective.
c) Define Internet Security Defenses Technology and Security Management Tools of can be apply in MIS.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information Systems (BTN05702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Write the correct answer from the options given below. 14

1) The basic component/components of Decision Support System is/are _____
a) Database b) Model base
c) DSS software system d) All of the above

2) Business intelligence Contemporary tools _____.
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3) From the options below, which of them is not a vulnerability to information security?
a) flood
b) without deleting data, disposal of storage media
c) unchanged default password
d) latest patches and updates not done

4) Possible threat to any information cannot be _____.
a) reduced b) transferred
c) protected d) ignored

5) Which level of the organization ESS specifically designed to serve?
a) A operational b) end user
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6) The term management information system designated or specific category of information system survey.
a) Integrated data processing throughout the phone
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c) The information technology functions
d) Middle management function

7) A /An _____ is typical a major source of data for other systems.
a) Transaction process system
b) Management information system
c) Executive support system
d) Knowledge management system

8) To monitor the status of internal operations and the firms' relations with the external environment. Managed managers need _____ system.
a) Decision support b) Knowledge
c) Transaction processing d) Management information

9) The _____ function is responsible for identifying customers A.
a) Finance and accounting b) Human resources
c) Manufacturing and production d) Sales and marketing

10) _____ not features of Internet and Web as commercial medium.
a) Ubiquity b) Personalization/customization
c) Interactivity d) None

11) DSS is widely used in the _____.
a) System implementation b) System flow
c) Planning d) Making system

12) Which of the following is / are components of an Expert System?
a) User Interface
b) Interference Engine
c) Knowledge Base & Data Acquisition Subsystem
d) All of the above mentioned

13) Which of the following Activities are associated with Strategic Management?
a) MIS strategy set → Organizational strategy set
b) Organizational strategy set → MIS strategy set
c) Business Process Set → MIS strategy set
d) None of the above mentioned

14) _____ is able to provide a specific niche or segment with the capabilities to identify, extend, and need of an organization.
a) System flow
b) Data flow diagram
c) Strategic Management Information System
d) None of the above mentioned

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information Systems (BTN05702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Three. **12**

a) How information systems are transforming business?
b) What are the Competitive strategies using information systems?
c) Differentiate Transaction Processing Systems and Management Information System.
d) Differentiate Industrial design and patent.

Q.3 Solve Any Two. **16**

a) What are systems Challenges to the protection individual privacy and intellectual property?
b) Why systems for collaboration and social business are so important and what technologies do they use?
c) What are the Contemporary Software Platform Trends?

Section – II

Q.4 Solve Any Three. **12**

a) Define the Policies for Information Systems Controls and Auditing IT Security.
b) What are traditional file environments and how it can improve?
c) What is role of databases to improve business performance and decision making.
d) Define information policy, data administration, and data quality assurance in the management of firm's data resources.

Q.5 Solve Any Two. **16**

a) Explain the e-commerce and Digital Marketing in business.
b) Explain what is meant by Business intelligence systems perspective.
c) Define Internet Security Defenses Technology and Security Management Tools of can be apply in MIS.

SLR-GF-404

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information Systems (BTN05702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Write the correct answer from the options given below. 14

1) _____ not features of Internet and Web as commercial medium.
a) Ubiquity b) Personalization/customization
c) Interactivity d) None

2) DSS is widely used in the _____.
a) System implementation b) System flow
c) Planning d) Making system

3) Which of the following is / are components of an Expert System?
a) User Interface
b) Interference Engine
c) Knowledge Base & Data Acquisition Subsystem
d) All of the above mentioned

4) Which of the following Activities are associated with Strategic Management?
a) MIS strategy set → Organizational strategy set
b) Organizational strategy set → MIS strategy set
c) Business Process Set → MIS strategy set
d) None of the above mentioned

5) _____ is able to provide a specific niche or segment with the capabilities to identify, extend, and need of an organization.
a) System flow
b) Data flow diagram
c) Strategic Management Information System
d) None of the above mentioned

6) The basic component/components of Decision Support System is/are _____
a) Database b) Model base
c) DSS software system d) All of the above

7) Business intelligence Contemporary tools _____.
a) Data warehouses b) Data marts
c) Hadoop d) All above

8) From the options below, which of them is not a vulnerability to information security?
a) flood
b) without deleting data, disposal of storage media
c) unchanged default password
d) latest patches and updates not done

9) Possible threat to any information cannot be _____.
a) reduced b) transferred
c) protected d) ignored

10) Which level of the organization ESS specifically designed to serve?
a) A operational b) end user
c) middle management d) senior management

11) The term management information system designated or specific category of information system survey.
a) Integrated data processing throughout the phone
b) Transaction process reporting
c) The information technology functions
d) Middle management function

12) A /An _____ is typical a major source of data for other systems.
a) Transaction process system
b) Management information system
c) Executive support system
d) Knowledge management system

13) To monitor the status of internal operations and the firms' relations with the external environment. Managed managers need _____ system.
a) Decision support b) Knowledge
c) Transaction processing d) Management information

14) The _____ function is responsible for identifying customers A.
a) Finance and accounting b) Human resources
c) Manufacturing and production d) Sales and marketing

SLR-GF-404

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information Systems (BTN05702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Three. **12**

a) How information systems are transforming business?
b) What are the Competitive strategies using information systems?
c) Differentiate Transaction Processing Systems and Management Information System.
d) Differentiate Industrial design and patent.

Q.3 Solve Any Two. **16**

a) What are systems Challenges to the protection individual privacy and intellectual property?
b) Why systems for collaboration and social business are so important and what technologies do they use?
c) What are the Contemporary Software Platform Trends?

Section – II

Q.4 Solve Any Three. **12**

a) Define the Policies for Information Systems Controls and Auditing IT Security.
b) What are traditional file environments and how it can improve?
c) What is role of databases to improve business performance and decision making.
d) Define information policy, data administration, and data quality assurance in the management of firm's data resources.

Q.5 Solve Any Two. **16**

a) Explain the e-commerce and Digital Marketing in business.
b) Explain what is meant by Business intelligence systems perspective.
c) Define Internet Security Defenses Technology and Security Management Tools of can be apply in MIS.

SLR-GF-408

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Blockchain Technology (BTN05708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve Multiple Choice Questions. **14**

1) Blockchain is a peer-to-peer _____ distributed ledger technology that makes the records of any digital asset transparent and unchangeable.
a) Decentralized b) Demanding
c) Secure d) Popular

2) Blockchain can perform user transactions without involving any third-party Intermediaries.
a) With the help of the third party
b) Without involving any third party
c) Without involving any owned
d) Without involving any authenticated

3) Blockchain has _____ versions.
a) 2 b) 3
c) 4 d) 5

4) What does a block in a Blockchain have?
a) Header & Digital ledger b) Bitcoins & Input
c) Transactions & Bitcoins d) Header & Transaction

5) Does a transaction generate new UTXOs for transferring the amount specified in the input UTXOS?
a) False b) True

6) _____ hosts the software needed for transaction initiation, validation, mining, block creation, and smart contract execution.
a) External Account b) EVM
c) Ethereum full node d) Smart Contract

7) A popular public-private key implementation known as Rivest-Shamir Adelman (RSA) algorithm is used for the Bitcoin and Ethereum Blockchain.
a) False b) True

8) What type of hash is used when there is a fixed number of items to be hashed, such as the items in a block header, and we are verifying the composite block integrity?

a) Tree-structured Hash
b) Complex hash
c) Simple Hash
d) Either

9) The transaction Merkle Tree root value in a Bitcoin block is calculated using, _____.

a) Hash of transactions
b) Previous block's hash
c) Number of transactions
d) None of these

10) Hash identifying each block in the blockchain is generated using which of the following cryptographic algorithm?

a) SHA128
b) SHA256
c) Both c) & d)
d) None of these

11) What is a smart contract?

a) Programs stored on a blockchain that run when predetermined conditions are met
b) Online contract
c) Digital contract
d) All of these

12) Where is a Blockchain's central server?

a) Where the blockchain is created
b) Located with the owner of the server
c) There is no central server, it is distributed
d) Ordered Node

13) Transactions per second (TPS) for Proof-of-Work Blockchain are approximate?

a) 24K per second
b) 175K per second
c) Only limited to the number of nodes on the network
d) 7-15 per second

14) The height of the block is the _____ in the chain between it and the genesis block.

a) Metadata that is
b) Number of blocks
c) Merkle tree hash
d) Size of the memory cache

SLR-GF-408

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Blockchain Technology (BTN05708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**
- **a)** Illustrate the types and applications of Blockchain?
- **b)** Explain P2P network applications file sharing and P2P network for blockchain.
- **c)** Extend the Cryptographic Hash Functions with example.
- **d)** Illustrate with example Cryptocurrency as the first blockchain application.

Q.3 Explain with example Hash Pointers, Hash chain and Merkel tree, Consensus mechanisms. **08**

OR

Illustrate with example decentralized identity management, transactions, incentivising and mining.

Q.4 Attempt any two. **08**
- **a)** Bitcoin Scripts
- **b)** Block chain and Distributed Ledger.
- **c)** Decentralization vs distributed.

Section – II

Q.5 Attempt any three. **12**
- **a)** Illustrate the algorithms for adjusting difficulty and retargeting in Consensus Mechanisms.
- **b)** List and interpret the purpose and types of smart contracts.
- **c)** Why there is a need for the consortium? Explain with example Hyperledger stack and Multichain blockchain.
- **d)** State and illustrate the applications of blockchain in privacy and security.

Q.6 Illustrate in detail Innovation in Hyperledger, smart contracts, and distributed applications in Hyperledger **08**

OR

Explain with example P2P network in Ethereum, consensus in Ethereum, scripts in Ethereum, Smart contracts?

Q.7 Attempt any two. **08**
- **a)** Data management and e-Governance.
- **b)** State and data structure in Ethereum.
- **c)** Proof of burn and proof of activity.

SLR-GF-408

Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Blockchain Technology (BTN05708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve Multiple Choice Questions. **14**

1) What type of hash is used when there is a fixed number of items to be hashed, such as the items in a block header, and we are verifying the composite block integrity?
a) Tree-structured Hash b) Complex hash
c) Simple Hash d) Either

2) The transaction Merkle Tree root value in a Bitcoin block is calculated using, _____.
a) Hash of transactions b) Previous block's hash
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3) Hash identifying each block in the blockchain is generated using which of the following cryptographic algorithm?
a) SHA128 b) SHA256
c) Both c) & d) d) None of these

4) What is a smart contract?
a) Programs stored on a blockchain that run when predetermined conditions are met
b) Online contract
c) Digital contract
d) All of these

5) Where is a Blockchain's central server?
a) Where the blockchain is created
b) Located with the owner of the server
c) There is no central server, it is distributed
d) Ordered Node

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a) 24K per second
b) 175K per second
c) Only limited to the number of nodes on the network
d) 7-15 per second

7) The height of the block is the _____ in the chain between it and the genesis block.
a) Metadata that is
b) Number of blocks
c) Merkle tree hash
d) Size of the memory cache

8) Blockchain is a peer-to-peer _____ distributed ledger technology that makes the records of any digital asset transparent and unchangeable.
a) Decentralized
b) Demanding
c) Secure
d) Popular

9) Blockchain can perform user transactions without involving any third-party Intermediaries.
a) With the help of the third party
b) Without involving any third party
c) Without involving any owned
d) Without involving any authenticated

10) Blockchain has _____ versions.
a) 2
b) 3
c) 4
d) 5

11) What does a block in a Blockchain have?
a) Header & Digital ledger
b) Bitcoins & Input
c) Transactions & Bitcoins
d) Header & Transaction

12) Does a transaction generate new UTXOs for transferring the amount specified in the input UTXOS?
a) False
b) True

13) _____ hosts the software needed for transaction initiation, validation, mining, block creation, and smart contract execution.
a) External Account
b) EVM
c) Ethereum full node
d) Smart Contract

14) A popular public-private key implementation known as Rivest-Shamir Adelman (RSA) algorithm is used for the Bitcoin and Ethereum Blockchain.
a) False
b) True

SLR-GF-408

Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Blockchain Technology (BTN05708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**
- **a)** Illustrate the types and applications of Blockchain?
- **b)** Explain P2P network applications file sharing and P2P network for blockchain.
- **c)** Extend the Cryptographic Hash Functions with example.
- **d)** Illustrate with example Cryptocurrency as the first blockchain application.

Q.3 Explain with example Hash Pointers, Hash chain and Merkel tree, Consensus mechanisms. **08**

OR

Illustrate with example decentralized identity management, transactions, incentivising and mining.

Q.4 Attempt any two. **08**
- **a)** Bitcoin Scripts
- **b)** Block chain and Distributed Ledger.
- **c)** Decentralization vs distributed.

Section – II

Q.5 Attempt any three. **12**
- **a)** Illustrate the algorithms for adjusting difficulty and retargeting in Consensus Mechanisms.
- **b)** List and interpret the purpose and types of smart contracts.
- **c)** Why there is a need for the consortium? Explain with example Hyperledger stack and Multichain blockchain.
- **d)** State and illustrate the applications of blockchain in privacy and security.

Q.6 Illustrate in detail Innovation in Hyperledger, smart contracts, and distributed applications in Hyperledger **08**

OR

Explain with example P2P network in Ethereum, consensus in Ethereum, scripts in Ethereum, Smart contracts?

Q.7 Attempt any two. **08**
- **a)** Data management and e-Governance.
- **b)** State and data structure in Ethereum.
- **c)** Proof of burn and proof of activity.

SLR-GF-408

Seat No.		Set	R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Blockchain Technology (BTN05708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve Multiple Choice Questions. **14**

1) What is a smart contract?
a) Programs stored on a blockchain that run when predetermined conditions are met
b) Online contract
c) Digital contract
d) All of these

2) Where is a Blockchain's central server?
a) Where the blockchain is created
b) Located with the owner of the server
c) There is no central server, it is distributed
d) Ordered Node

3) Transactions per second (TPS) for Proof-of-Work Blockchain are approximate?
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b) 175K per second
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d) 7-15 per second

4) The height of the block is the _____ in the chain between it and the genesis block.
a) Metadata that is b) Number of blocks
c) Merkle tree hash d) Size of the memory cache

5) Blockchain is a peer-to-peer _____ distributed ledger technology that makes the records of any digital asset transparent and unchangeable.
a) Decentralized b) Demanding
c) Secure d) Popular

6) Blockchain can perform user transactions without involving any third-party Intermediaries.
a) With the help of the third party
b) Without involving any third party
c) Without involving any owned
d) Without involving any authenticated

7) Blockchain has _____ versions.
a) 2 b) 3
c) 4 d) 5

8) What does a block in a Blockchain have?
a) Header & Digital ledger b) Bitcoins & Input
c) Transactions & Bitcoins d) Header & Transaction

9) Does a transaction generate new UTXOs for transferring the amount specified in the input UTXOS?
a) False b) True

10) _____ hosts the software needed for transaction initiation, validation, mining, block creation, and smart contract execution.
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a) Tree-structured Hash b) Complex hash
c) Simple Hash d) Either

13) The transaction Merkle Tree root value in a Bitcoin block is calculated using, _____.
a) Hash of transactions b) Previous block's hash
c) Number of transactions d) None of these

14) Hash identifying each block in the blockchain is generated using which of the following cryptographic algorithm?
a) SHA128 b) SHA256
c) Both c) & d) d) None of these

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Blockchain Technology (BTN05708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**
- **a)** Illustrate the types and applications of Blockchain?
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- **d)** Illustrate with example Cryptocurrency as the first blockchain application.

Q.3 Explain with example Hash Pointers, Hash chain and Merkel tree, Consensus mechanisms. **08**

OR

Illustrate with example decentralized identity management, transactions, incentivising and mining.

Q.4 Attempt any two. **08**
- **a)** Bitcoin Scripts
- **b)** Block chain and Distributed Ledger.
- **c)** Decentralization vs distributed.

Section – II

Q.5 Attempt any three. **12**
- **a)** Illustrate the algorithms for adjusting difficulty and retargeting in Consensus Mechanisms.
- **b)** List and interpret the purpose and types of smart contracts.
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Q.6 Illustrate in detail Innovation in Hyperledger, smart contracts, and distributed applications in Hyperledger **08**

OR

Explain with example P2P network in Ethereum, consensus in Ethereum, scripts in Ethereum, Smart contracts?

Q.7 Attempt any two. **08**
- **a)** Data management and e-Governance.
- **b)** State and data structure in Ethereum.
- **c)** Proof of burn and proof of activity.

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Blockchain Technology (BTN05708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve Multiple Choice Questions. **14**

1) _____ hosts the software needed for transaction initiation, validation, mining, block creation, and smart contract execution.
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5) Hash identifying each block in the blockchain is generated using which of the following cryptographic algorithm?
a) SHA128 b) SHA256
c) Both c) & d) d) None of these

6) What is a smart contract?
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d) All of these

7) Where is a Blockchain's central server?
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b) Number of blocks
c) Merkle tree hash
d) Size of the memory cache

10) Blockchain is a peer-to-peer _____ distributed ledger technology that makes the records of any digital asset transparent and unchangeable.
a) Decentralized
b) Demanding
c) Secure
d) Popular

11) Blockchain can perform user transactions without involving any third-party Intermediaries.
a) With the help of the third party
b) Without involving any third party
c) Without involving any owned
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12) Blockchain has _____ versions.
a) 2
b) 3
c) 4
d) 5

13) What does a block in a Blockchain have?
a) Header & Digital ledger
b) Bitcoins & Input
c) Transactions & Bitcoins
d) Header & Transaction

14) Does a transaction generate new UTXOs for transferring the amount specified in the input UTXOS?
a) False
b) True

SLR-GF-408

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Blockchain Technology (BTN05708)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**
- **a)** Illustrate the types and applications of Blockchain?
- **b)** Explain P2P network applications file sharing and P2P network for blockchain.
- **c)** Extend the Cryptographic Hash Functions with example.
- **d)** Illustrate with example Cryptocurrency as the first blockchain application.

Q.3 Explain with example Hash Pointers, Hash chain and Merkel tree, Consensus mechanisms. **08**

OR

Illustrate with example decentralized identity management, transactions, incentivising and mining.

Q.4 Attempt any two. **08**
- **a)** Bitcoin Scripts
- **b)** Block chain and Distributed Ledger.
- **c)** Decentralization vs distributed.

Section – II

Q.5 Attempt any three. **12**
- **a)** Illustrate the algorithms for adjusting difficulty and retargeting in Consensus Mechanisms.
- **b)** List and interpret the purpose and types of smart contracts.
- **c)** Why there is a need for the consortium? Explain with example Hyperledger stack and Multichain blockchain.
- **d)** State and illustrate the applications of blockchain in privacy and security.

Q.6 Illustrate in detail Innovation in Hyperledger, smart contracts, and distributed applications in Hyperledger **08**

OR

Explain with example P2P network in Ethereum, consensus in Ethereum, scripts in Ethereum, Smart contracts?

Q.7 Attempt any two. **08**
- **a)** Data management and e-Governance.
- **b)** State and data structure in Ethereum.
- **c)** Proof of burn and proof of activity.

SLR-GF-410

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Big Data Analytics (BTN05710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Hadoop is a framework that works with a variety of related tools. Common cohorts include _____.
a) MapReduce, Hive and HBase
b) MapReduce, MySQL and Google Apps
c) MapReduce, Hummer and Iguana
d) MapReduce, Heron and Trumpet

2) _____ is a platform for constructing data flows for extract, transform, and load (ETL) processing and analysis of large datasets.
a) Pig Latin b) Oozie
c) Pig d) Hive

3) Hive also support custom extensions written in _____.
a) C# b) Java
c) C d) C++

4) Point out the correct statement.
a) MapReduce tries to place the data and the compute as close as possible
b) Map Task in MapReduce is performed using the Mapper() function
c) Reduce Task in MapReduce is performed using the Map() function
d) All of the mentioned.

5) Running a _____ program involves running mapping tasks on many or all of the nodes in our cluster.
a) MapReduce b) Map
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6) A _____ serves as the master and there is only one Name Node per cluster.
a) Data Node b) Name Node
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7) Hadoop I/O Hadoop comes with a set of _____ for data I/O.
a) methods b) commands
c) classes d) none of the mentioned

8) How many formats of Sequence File are present in Hadoop I/O?
a) 2 b) 3
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9) Pig operates in mainly how many nodes?
a) Two b) Three
c) Four d) Five

10) Which of the following function is used to read data in PIG?
a) WRITE b) READ
c) LOAD d) None of the mentioned

11) Hive uses _____ for logging.
a) logj4 b) log41
c) log4i d) log4j

12) HBase is a distributed _____ database built on top of the Hadoop file system.
a) Column-oriented b) Row-oriented
c) Tuple-oriented d) None of the mentioned

13) Which of the following class provides access to configuration parameters?
a) Config b) Configuration
c) OutputConfig d) None of the mentioned

14) Apache HBase is a non-relational database modeled after Google's _____.
a) BigTop b) Bigtable
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SLR-GF-410

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Big Data Analytics (BTN05710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Define Map Reduce Framework and its functions.
b) Explain the process of Data Ingest with Flume Hadoop Tool.
c) Draw a diagram showing the process in Map reduce when client submitting a job.
d) Mention features of Apache scoop?
e) Explain Hadoop. List the core components of Hadoop

Q.3 Answer the following question.

a) What is meant by Big Data? Give Big Data examples? What are major characteristics of Big Data? What is the use of Big Data Analysis for an enterprise? **06**
b) What is HDFS? What are the main features of HDFS? How is Hadoop different from traditional RDBMS? **06**

SECTION - II

Q.4 Attempt the following (Any Four) **16**

a) What is PIG in Big Data? Explain the features of PIG.
b) What is HIVE? What are the different modes of HIVE? When to use HIVE?
c) What are the steps in writing something into Hbase by a client?
d) What is R programming language? How are commands in R written?
e) What are the advantages and disadvantages of R programming?

Q.5 Answer the following question.

a) Compare Hbase Versus RDBMS. **06**
b) How Pig Works? Describe in detail execution modes of Pig. **06**

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Big Data Analytics (BTN05710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) How many formats of Sequence File are present in Hadoop I/O?
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b) MapReduce, MySQL and Google Apps
c) MapReduce, Hummer and Iguana
d) MapReduce, Heron and Trumpet

9) _____ is a platform for constructing data flows for extract, transform, and load (ETL) processing and analysis of large datasets.

a) Pig Latin b) Oozie
c) Pig d) Hive

10) Hive also support custom extensions written in _____.

a) C# b) Java
c) C d) C++

11) Point out the correct statement.

a) MapReduce tries to place the data and the compute as close as possible
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SLR-GF-410

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Big Data Analytics (BTN05710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

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SECTION - II

Q.4 Attempt the following (Any Four) **16**

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Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Big Data Analytics (BTN05710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-GF-410

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Big Data Analytics (BTN05710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Attempt the following (Any Four) **16**

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SECTION - II

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Big Data Analytics (BTN05710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-GF-410

Seat No.		Set	S

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INFORMATION TECHNOLOGY ENGINEERING
Big Data Analytics (BTN05710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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SECTION - II

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SLR-GF-412

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (197046701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Given below are the ages of students from Kendriya Vidyalaya. We are building a machine learning model that uses the age of the student as a feature. However, we notice that our data has certain erroneous values in it. Which of the following normalization techniques would you use to normalize data with such erroneous values?

$$[15, 14, 12, 13, 120, 15, 16, 14, 12, 14, 11, 16, 14, 12, 13]$$

a) z-score b) min-max
c) log-transform d) mode

2) Let $f(x, y) = x_2 + (y_2/100)(x, y) = x_2 + (y_2/100)$. Gradient descent with a fixed step size α is run for f from an initial point $(x_0, y_0) = (10,0)(x0, y0) = (10,0)$. Given $\alpha = 1$, what will be updated values $(x_1, y_1)(x1, y1)$?

a) $(10, 0)$ b) $(0, 10)$
c) $(-10, 0)$ d) $(0, -10)$

3) Let J_1, J_2 and J_3 be a learning algorithm's cost while using batch gradient descent, mini batch gradient descent and stochastic gradient descent respectively. Given below are three statements about graphs with the cost J_i, on the $y-$ axis and the number of iterations on the $x-$axis:

i) The graph of J_1 has oscillations.
ii) The graph of J_2 does not have oscillations.
iii) The graph of J_3 does not have oscillations.

a) (i), (ii) and (iii) are correct b) Only (ii) is correct
c) Only (i) is correct d) None of the above

4) The government wants to build a model that predicts the water usage of a locality based on certain features. They start off with the model building process by collecting data from three major cities. To build a model that generalizes over all three cities, the best way to split the data is to take the data of two cities as the training data and the data of the third city as the test data.

a) True b) False

5) We are solving a multiclass classification with 6 classes. We have 4 features for each example in our data. There are two hidden layers with 6 units each. Each of the units use sigmoid activation. What are the total number of parameters in the neural network?

a) 114 b) 156
c) 102 d) 132

6) Using larger mini-batches in mini batch gradient descent allows you to reduce the variance of your gradient updates.

a) True b) False

7) Machine Learning automatically detects _____.

a) facts b) patterns
c) beliefs d) clouds

8) _____ and _____ are basic aspects of machine learning.

a) change, continual learning b) trial, error
c) generate, test d) compute, discard

9) The model created in machine learning is _____.

a) trained and rejected b) trained and predicted
c) trained and tested d) boosted and accepted

10) _____ is a testable way to confirm validity of algorithm.

a) test case b) hypothesis
c) input d) output

11) Supervised learning involves _____.

a) clustering b) classification
c) triggering d) firing

12) Biasness in data is tracked by _____.

a) Management b) ML algorithm
c) Employees d) Infrastructure

13) ML can be used to recommend _____.

a) cash b) products
c) wool d) code

14) For validation we usually use _____ percent of the dataset.

a) 10 b) 70
c) 20 d) 40

SLR-GF-412

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (197046701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four of the following **12**

a) What is ML? What makes a problem a candidate to be solved by ML?
b) State the basic steps involved in automating a "Fault Tolerant System" implemented using a machine learning approach.
c) Give the advantage of using 'Data mining' method for learning from data.
d) What are the related issues in the designing a Machine learning environment?
e) Compare between Supervised and Un-supervised learning algorithms

Q.3 Attempt any two **08**

a) Illustrate the basic steps involved in a machine learning approach with appropriate suggestions for each step to be implemented.
b) What are the parameters that suggest that a problem can be solved using a machine learning approach?
c) List and compare the different machine learning approaches and give examples of each.

Q.4 Attempt any one. **08**

a) For a "Crop Recommender System" suggest the requirements to be given and steps to be followed by the designer and developer to solve the problem by a machine learning approach.
b) A bag contains 6 white and 4 black balls. Two balls are drawn in random. Write a python program to find the probability that the drawn balls are of the same color.

Section-II

Q.5 Attempt any four. **12**

a) What is model validation? Give its split in a normal dataset.
b) Give the advantages of using decision trees to generate solutions.
c) What is snooping? Illustrate.
d) Illustrate the term 'Hyper parameter'
e) State the characteristics that are used to improve Machine Learning models.

Q.6 Attempt any two. **08**

a) What problems are encountered in cross validation of ML models?

b) List the requirements of sentiment analysis. Illustrate each with an example.

c) Illustrate the working of classifying images using ML with an example.

Q.7 Attempt any one. **08**

a) For a “Disaster management System” suggest the methodology of using the Perceptron model to classify good and unwanted circumstances for handling real time data.

b) Consider a disease dataset for a “Human Disease Detection” problem. How do we perform validation on the model we have created to generate best predictions? Justify your answer.

SLR-GF-412

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (197046701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

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SLR-GF-412

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c) What is snooping? Illustrate.
d) Illustrate the term 'Hyper parameter'
e) State the characteristics that are used to improve Machine Learning models.

Q.6 Attempt any two. **08**

a) What problems are encountered in cross validation of ML models?

b) List the requirements of sentiment analysis. Illustrate each with an example.

c) Illustrate the working of classifying images using ML with an example.

Q.7 Attempt any one. **08**

a) For a “Disaster management System” suggest the methodology of using the Perceptron model to classify good and unwanted circumstances for handling real time data.

b) Consider a disease dataset for a “Human Disease Detection” problem. How do we perform validation on the model we have created to generate best predictions? Justify your answer.

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (197046701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Supervised learning involves _____.
a) clustering b) classification
c) triggering d) firing

2) Biasness in data is tracked by _____.
a) Management b) ML algorithm
c) Employees d) Infrastructure

3) ML can be used to recommend _____.
a) cash b) products
c) wool d) code

4) For validation we usually use _____ percent of the dataset.
a) 10 b) 70
c) 20 d) 40

5) Given below are the ages of students from Kendriya Vidyalaya. We are building a machine learning model that uses the age of the student as a feature. However, we notice that our data has certain erroneous values in it. Which of the following normalization techniques would you use to normalize data with such erroneous values?

$$[15, 14, 12, 13, 120, 15, 16, 14, 12, 14, 11, 16, 14, 12, 13]$$

a) z-score b) min-max
c) log-transform d) mode

6) Let $f(x, y) = x_2 + (y_2/100)(x, y) = x_2 + (y_2/100)$. Gradient descent with a fixed step size α is run for f from an initial point $(x_0, y_0) = (10,0)(x0, y0) = (10,0)$. Given $\alpha = 1$, what will be updated values $(x_1, y_1)(x1, y1)$?
a) $(10, 0)$ b) $(0, 10)$
c) $(-10, 0)$ d) $(0, -10)$

7) Let J_1, J_2 and J_3 be a learning algorithm's cost while using batch gradient descent, mini batch gradient descent and stochastic gradient descent respectively. Given below are three statements about graphs with the cost J_i, on the $y-$ axis and the number of iterations on the $x-$axis:

i) The graph of J_1 has oscillations.
ii) The graph of J_2 does not have oscillations.
iii) The graph of J_3 does not have oscillations.

a) (i), (ii) and (iii) are correct
b) Only (ii) is correct
c) Only (i) is correct
d) None of the above

8) The government wants to build a model that predicts the water usage of a locality based on certain features. They start off with the model building process by collecting data from three major cities. To build a model that generalizes over all three cities, the best way to split the data is to take the data of two cities as the training data and the data of the third city as the test data.

a) True
b) False

9) We are solving a multiclass classification with 6 classes. We have 4 features for each example in our data. There are two hidden layers with 6 units each. Each of the units use sigmoid activation. What are the total number of parameters in the neural network?

a) 114
b) 156
c) 102
d) 132

10) Using larger mini-batches in mini batch gradient descent allows you to reduce the variance of your gradient updates.

a) True
b) False

11) Machine Learning automatically detects _____.

a) facts
b) patterns
c) beliefs
d) clouds

12) _____ and _____ are basic aspects of machine learning.

a) change, continual learning
b) trial, error
c) generate, test
d) compute, discard

13) The model created in machine learning is _____.

a) trained and rejected
b) trained and predicted
c) trained and tested
d) boosted and accepted

14) _____ is a testable way to confirm validity of algorithm.

a) test case
b) hypothesis
c) input
d) output

SLR-GF-412

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (197046701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following **12**

a) What is ML? What makes a problem a candidate to be solved by ML?
b) State the basic steps involved in automating a "Fault Tolerant System" implemented using a machine learning approach.
c) Give the advantage of using 'Data mining' method for learning from data.
d) What are the related issues in the designing a Machine learning environment?
e) Compare between Supervised and Un-supervised learning algorithms

Q.3 Attempt any two **08**

a) Illustrate the basic steps involved in a machine learning approach with appropriate suggestions for each step to be implemented.
b) What are the parameters that suggest that a problem can be solved using a machine learning approach?
c) List and compare the different machine learning approaches and give examples of each.

Q.4 Attempt any one. **08**

a) For a "Crop Recommender System" suggest the requirements to be given and steps to be followed by the designer and developer to solve the problem by a machine learning approach.
b) A bag contains 6 white and 4 black balls. Two balls are drawn in random. Write a python program to find the probability that the drawn balls are of the same color.

Section-II

Q.5 Attempt any four. **12**

a) What is model validation? Give its split in a normal dataset.
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c) Illustrate the working of classifying images using ML with an example.

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a) For a “Disaster management System” suggest the methodology of using the Perceptron model to classify good and unwanted circumstances for handling real time data.

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Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (197046701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-GF-412

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Machine Learning (197046701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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a) What is ML? What makes a problem a candidate to be solved by ML?
b) State the basic steps involved in automating a "Fault Tolerant System" implemented using a machine learning approach.
c) Give the advantage of using 'Data mining' method for learning from data.
d) What are the related issues in the designing a Machine learning environment?
e) Compare between Supervised and Un-supervised learning algorithms

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b) What are the parameters that suggest that a problem can be solved using a machine learning approach?
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b) A bag contains 6 white and 4 black balls. Two balls are drawn in random. Write a python program to find the probability that the drawn balls are of the same color.

Section-II

Q.5 Attempt any four. **12**

a) What is model validation? Give its split in a normal dataset.
b) Give the advantages of using decision trees to generate solutions.
c) What is snooping? Illustrate.
d) Illustrate the term 'Hyper parameter'
e) State the characteristics that are used to improve Machine Learning models.

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a) What problems are encountered in cross validation of ML models?

b) List the requirements of sentiment analysis. Illustrate each with an example.

c) Illustrate the working of classifying images using ML with an example.

Q.7 Attempt any one. **08**

a) For a “Disaster management System” suggest the methodology of using the Perceptron model to classify good and unwanted circumstances for handling real time data.

b) Consider a disease dataset for a “Human Disease Detection” problem. How do we perform validation on the model we have created to generate best predictions? Justify your answer.

SLR-GF-413

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Advanced Database System (197046702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ are the systems that integrate multiple heterogenous data sources.
a) Mediator b) Virtual Database
c) Multi database d) All of the above

2) Relation R (a,b,c,d) is divided based on criteria (a>=value) into two fragments. This is an example of _____ fragmentation.
a) horizontal b) vertical
c) mixed d) can not define

3) All groupings of {(pid,locid,timeid), (pid,locid), (locid,timeid), (pid,timeid), (pid), (locid), (timeid), ()} in one query can be achieved by using which of the following?
a) group by b) rollup
c) cube d) slice

4) A _____ node acts as the Slave and is responsible for executing a Task assigned to it by the master node.
a) MapReduce b) Mapper
c) TaskTracker d) JobTracker

5) Hadoop is a framework that works with a variety of related tools. Common cohorts include _____.
a) MapReduce, Hive and HBase
b) MapReduce, MySQL and Google Apps
c) MapReduce, Hummer and Iguana
d) MapReduce, Heron and Trumpet

6) Which of the following is not a NoSQL database?
a) SQL Server b) MongoDB
c) Cassandra d) None of the mentioned

7) A miner is _____.
a) Cryptographic algorithm
b) A secured distributed ledger
c) A person doing calculation
d) Computers that validate and process blockchain transactions

8) In Linear search, an initial seek is required to access file's _____.

a) First Primary index
b) First Secondary index
c) First Block
d) First Nonkey

9) A predicate that by satisfying individual simple condition, satisfies union of all records is called the _____.

a) Conjunction condition
b) Disjunction condition
c) Negation condition
d) A9 condition

10) In block chain, _____ tree stores all transactions in a block by producing a digital fingerprint of entire set of transactions.

a) Binary
b) Merkel
c) AVL
d) Red Black

11) Which of the following is not a blockchain component?

a) Ledger
b) Wallet
c) Certificate authority
d) Hash

12) What is the genesis block?

a) Any block created by the founder
b) The last block created in the Blockchain
c) The first block of a Blockchain
d) The first transaction in each block

13) Global wait-for graph can be constructed or updated under which scenario?

a) Whenever new edge is inserted or removed from one of the local wait for graph
b) Whenever number of changes has the local wait for graph
c) Whenever coordinator needs to invoke cycle detection algorithm
d) All of the above

14) Consider following transaction table. Support of Sandwich is _____.

Transactions ID	Item Name
1	Sandwich
1	Cookies
1	Milk
1	Egg
2	Burger
2	Pizza
2	Salad
2	Egg
2	Bottled Water
2	Chicken
3	Sandwich
3	Egg
3	Bottled Water

a) 7%
b) 15%
c) 66.66%
d) 100%

Seat No.	

Set **P**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Advanced Database System (197046702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any three. **12**

a) Explain Two Phase commit protocol.
b) Explain Interquery parallelism and intraquery parallelism.
c) Explain External merge sort algorithm.
d) Explain Semi join with example.

Q.3 Solve any one **08**

a) Explain Fragment and Replicate Join. Show stepwise join of following two relations using fragment and replicate join with two processors.

Sailors			
Std	**Name**	**Rating**	**Age**
28	Yuppy	9	35
31	Lubber	8	55
44	Guppy	5	42
58	Rusty	10	30

Reserves		
Std	**Bid**	**Day**
22	101	10/10/98
58	103	11/12/98
44	105	11/12/98

b) Explain steps in query processing with neat diagram.
Find at least two evaluation plans for the following query. Write relational algebra expression and draw tree.
Find the names of all instructors in the Music department together with the course title of all the courses that the instructors teach.

Instructor (id, name, dept_name, salary)
Teaches (id, course_id, sec_id, year)
Course(course_id, title, dept_name, credits)

Q.4 Write algorithm for nested loop join. **08**

Let r(A, B, C) and s(C, D, E) be two relations with 30000 tuples and 60000 tuples resp. Also 25 tuples fit on 1 block & 30 tuples fit on 1 block for r & s resp.

Estimate the number of disk block transfer and seek operations required for a natural join of r and s using nested-loop join if r is used as the outer relation.

Section – II

Q.5 Solve any three **12**

a) Explain working of proof of work consensus algorithm.

b) Define bigdata and explain various properties of big data.

c) Explain different types of NoSQL databases.

d) Explain Hadoop framework.

Q.6 Solve any one **08**

a) Given instance X = (female, young, plan B), which class label will be predicted by Naïve Bays Algorithm?

The class-labeled training dataset D

ID	Gender	Age	Policy	Channel
1	female	young	plan C	phone
2	male	young	plan A	email
3	male	young	plan A	email
4	female	middle-aged	plan C	email
5	female	middle-aged	plan B	phone
6	male	middle-aged	plan C	phone
7	male	senior	plan B	email
8	mate	senior	Plan C	phone
9	female	senior	plan A	phone

b) 1) Find frequent itemsets using Apriori algorithm considering minimum support 50%.

2) Find Association Rules Considering minimum confidence of 50%.

Transaction id	Items
1	{1,3,5}
2	{2,4,5}
3	{1,2,4,5}
4	{2,5}
5	{1,2,3,4,5}
6	{1,2,3,5}
7	{1,2}
8	{2,4,5,1}
9	{4,5}
10	{3,5}

Q.7 Find the result of the queries using following data. **08**

a) **SELECT** QUARTER, REGION, **SUM**(SALES) **FROM** SALESTABLE **GROUP BY CUBE** (QUARTER, REGION)

b) **SELECT** QUARTER, REGION, **SUM**(SALES)**FROM** SALESTABLE **GROUP BY ROLLUP** (QUARTER, REGION)

c) **SELECT** QUARTER, REGION, **SUM**(SALES) **FROM** SALESTABLE **GROUP BY** QUARTER, REGION

d) **SELECT** QUARTER, **SUM**(SALES)**FROM** SALESTABLE **GROUP BY** QUARTER

PRODUCT	QUARTER	REGION	SALES
A	Q1	Europe	10
A	Q1	America	20
A	Q2	Europe	20
A	Q2	America	50
A	Q3	America	20
A	Q4	Europe	10
A	Q4	America	30
B	Q1	Europe	40
B	Q1	America	60
B	Q2	Europe	20
B	Q2	America	10
B	Q3	America	20
B	Q4	Europe	10
B	Q4	America	40

Seat No.	

Set | Q

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Advanced Database System (197046702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.	

Set **Q**

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INFORMATION TECHNOLOGY ENGINEERING
Advanced Database System (197046702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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c) **SELECT** QUARTER, REGION, **SUM**(SALES) **FROM** SALESTABLE **GROUP BY** QUARTER, REGION

d) **SELECT** QUARTER, **SUM**(SALES)**FROM** SALESTABLE **GROUP BY** QUARTER

PRODUCT	QUARTER	REGION	SALES
A	Q1	Europe	10
A	Q1	America	20
A	Q2	Europe	20
A	Q2	America	50
A	Q3	America	20
A	Q4	Europe	10
A	Q4	America	30
B	Q1	Europe	40
B	Q1	America	60
B	Q2	Europe	20
B	Q2	America	10
B	Q3	America	20
B	Q4	Europe	10
B	Q4	America	40

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Advanced Database System (197046702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is not a blockchain component?
a) Ledger b) Wallet
c) Certificate authority d) Hash

2) What is the genesis block?
a) Any block created by the founder
b) The last block created in the Blockchain
c) The first block of a Blockchain
d) The first transaction in each block

3) Global wait-for graph can be constructed or updated under which scenario?
a) Whenever new edge is inserted or removed from one of the local wait for graph
b) Whenever number of changes has the local wait for graph
c) Whenever coordinator needs to invoke cycle detection algorithm
d) All of the above

4) Consider following transaction table. Support of Sandwich is _____.

Transactions ID	Item Name
1	Sandwich
1	Cookies
1	Milk
1	Egg
2	Burger
2	Pizza
2	Salad
2	Egg
2	Bottled Water
2	Chicken
3	Sandwich
3	Egg
3	Bottled Water

a) 7% b) 15%
c) 66.66% d) 100%

5) _____ are the systems that integrate multiple heterogenous data sources.
a) Mediator b) Virtual Database
c) Multi database d) All of the above

6) Relation R (a,b,c,d) is divided based on criteria (a>=value) into two fragments. This is an example of _____ fragmentation.
a) horizontal b) vertical
c) mixed d) can not define

7) All groupings of {(pid,locid,timeid), (pid,locid), (locid,timeid), (pid,timeid), (pid), (locid), (timeid), ()} in one query can be achieved by using which of the following?
a) group by b) rollup
c) cube d) slice

8) A _____ node acts as the Slave and is responsible for executing a Task assigned to it by the master node.
a) MapReduce b) Mapper
c) TaskTracker d) JobTracker

9) Hadoop is a framework that works with a variety of related tools. Common cohorts include _____.
a) MapReduce, Hive and HBase
b) MapReduce, MySQL and Google Apps
c) MapReduce, Hummer and Iguana
d) MapReduce, Heron and Trumpet

10) Which of the following is not a NoSQL database?
a) SQL Server b) MongoDB
c) Cassandra d) None of the mentioned

11) A miner is _____.
a) Cryptographic algorithm
b) A secured distributed ledger
c) A person doing calculation
d) Computers that validate and process blockchain transactions

12) In Linear search, an initial seek is required to access file's _____.
a) First Primary index b) First Secondary index
c) First Block d) First Nonkey

13) A predicate that by satisfying individual simple condition, satisfies union of all records is called the _____.
a) Conjunction condition b) Disjunction condition
c) Negation condition d) A9 condition

14) In block chain, _____ tree stores all transactions in a block by producing a digital fingerprint of entire set of transactions.
a) Binary b) Merkel
c) AVL d) Red Black

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Advanced Database System (197046702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any three. **12**

a) Explain Two Phase commit protocol.
b) Explain Interquery parallelism and intraquery parallelism.
c) Explain External merge sort algorithm.
d) Explain Semi join with example.

Q.3 Solve any one **08**

a) Explain Fragment and Replicate Join. Show stepwise join of following two relations using fragment and replicate join with two processors.

Sailors			
Std	**Name**	**Rating**	**Age**
28	Yuppy	9	35
31	Lubber	8	55
44	Guppy	5	42
58	Rusty	10	30

Reserves		
Std	**Bid**	**Day**
22	101	10/10/98
58	103	11/12/98
44	105	11/12/98

b) Explain steps in query processing with neat diagram.
Find at least two evaluation plans for the following query. Write relational algebra expression and draw tree.
Find the names of all instructors in the Music department together with the course title of all the courses that the instructors teach.

Instructor (id, name, dept_name, salary)
Teaches (id, course_id, sec_id, year)
Course(course_id, title, dept_name, credits)

Q.4 Write algorithm for nested loop join. **08**

Let r(A, B, C) and s(C, D, E) be two relations with 30000 tuples and 60000 tuples resp. Also 25 tuples fit on 1 block & 30 tuples fit on 1 block for r & s resp.

Estimate the number of disk block transfer and seek operations required for a natural join of r and s using nested-loop join if r is used as the outer relation.

Section – II

Q.5 Solve any three **12**

a) Explain working of proof of work consensus algorithm.

b) Define bigdata and explain various properties of big data.

c) Explain different types of NoSQL databases.

d) Explain Hadoop framework.

Q.6 Solve any one **08**

a) Given instance X = (female, young, plan B), which class label will be predicted by Naïve Bays Algorithm?

The class-labeled training dataset D

ID	Gender	Age	Policy	Channel
1	female	young	plan C	phone
2	male	young	plan A	email
3	male	young	plan A	email
4	female	middle-aged	plan C	email
5	female	middle-aged	plan B	phone
6	male	middle-aged	plan C	phone
7	male	senior	plan B	email
8	mate	senior	Plan C	phone
9	female	senior	plan A	phone

b) 1) Find frequent itemsets using Apriori algorithm considering minimum support 50%.

2) Find Association Rules Considering minimum confidence of 50%.

Transaction id	Items
1	{1,3,5}
2	{2,4,5}
3	{1,2,4,5}
4	{2,5}
5	{1,2,3,4,5}
6	{1,2,3,5}
7	{1,2}
8	{2,4,5,1}
9	{4,5}
10	{3,5}

Q.7 Find the result of the queries using following data. **08**

a) **SELECT** QUARTER, REGION, **SUM**(SALES) **FROM** SALESTABLE **GROUP BY CUBE** (QUARTER, REGION)

b) **SELECT** QUARTER, REGION, **SUM**(SALES)**FROM** SALESTABLE **GROUP BY ROLLUP** (QUARTER, REGION)

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PRODUCT	QUARTER	REGION	SALES
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A	Q2	Europe	20
A	Q2	America	50
A	Q3	America	20
A	Q4	Europe	10
A	Q4	America	30
B	Q1	Europe	40
B	Q1	America	60
B	Q2	Europe	20
B	Q2	America	10
B	Q3	America	20
B	Q4	Europe	10
B	Q4	America	40

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Advanced Database System (197046702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Advanced Database System (197046702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section –I

Q.2 Solve any three. **12**

a) Explain Two Phase commit protocol.
b) Explain Interquery parallelism and intraquery parallelism.
c) Explain External merge sort algorithm.
d) Explain Semi join with example.

Q.3 Solve any one **08**

a) Explain Fragment and Replicate Join. Show stepwise join of following two relations using fragment and replicate join with two processors.

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Std	**Name**	**Rating**	**Age**
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58	Rusty	10	30

Reserves		
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22	101	10/10/98
58	103	11/12/98
44	105	11/12/98

b) Explain steps in query processing with neat diagram.
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Find the names of all instructors in the Music department together with the course title of all the courses that the instructors teach.

Instructor (id, name, dept_name, salary)
Teaches (id, course_id, sec_id, year)
Course(course_id, title, dept_name, credits)

Q.4 Write algorithm for nested loop join. **08**

Let r(A, B, C) and s(C, D, E) be two relations with 30000 tuples and 60000 tuples resp. Also 25 tuples fit on 1 block & 30 tuples fit on 1 block for r & s resp.

Estimate the number of disk block transfer and seek operations required for a natural join of r and s using nested-loop join if r is used as the outer relation.

Section – II

Q.5 Solve any three **12**

a) Explain working of proof of work consensus algorithm.

b) Define bigdata and explain various properties of big data.

c) Explain different types of NoSQL databases.

d) Explain Hadoop framework.

Q.6 Solve any one **08**

a) Given instance X = (female, young, plan B), which class label will be predicted by Naïve Bays Algorithm?

The class-labeled training dataset D

ID	Gender	Age	Policy	Channel
1	female	young	plan C	phone
2	male	young	plan A	email
3	male	young	plan A	email
4	female	middle-aged	plan C	email
5	female	middle-aged	plan B	phone
6	male	middle-aged	plan C	phone
7	male	senior	plan B	email
8	mate	senior	Plan C	phone
9	female	senior	plan A	phone

b) 1) Find frequent itemsets using Apriori algorithm considering minimum support 50%.

2) Find Association Rules Considering minimum confidence of 50%.

Transaction id	Items
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8	{2,4,5,1}
9	{4,5}
10	{3,5}

Q.7 Find the result of the queries using following data. **08**

a) **SELECT** QUARTER, REGION, **SUM**(SALES) **FROM** SALESTABLE **GROUP BY CUBE** (QUARTER, REGION)

b) **SELECT** QUARTER, REGION, **SUM**(SALES)**FROM** SALESTABLE **GROUP BY ROLLUP** (QUARTER, REGION)

c) **SELECT** QUARTER, REGION, **SUM**(SALES) **FROM** SALESTABLE **GROUP BY** QUARTER, REGION

d) **SELECT** QUARTER, **SUM**(SALES)**FROM** SALESTABLE **GROUP BY** QUARTER

PRODUCT	QUARTER	REGION	SALES
A	Q1	Europe	10
A	Q1	America	20
A	Q2	Europe	20
A	Q2	America	50
A	Q3	America	20
A	Q4	Europe	10
A	Q4	America	30
B	Q1	Europe	40
B	Q1	America	60
B	Q2	Europe	20
B	Q2	America	10
B	Q3	America	20
B	Q4	Europe	10
B	Q4	America	40

SLR-GF-414

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Software Testing and Quality Assurance (197046703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve Multiple Choice Questions. **14**

1) Which of the following is the way of ensuring that the tests are actually testing code?
a) Control structure testing b) Complex path testing
c) Code coverage d) Quality assurance of software

2) Which of the following is not a part of Software Configuration Management Basics?
a) Identification b) Version
c) Auditing and Reviewing d) Status Accounting

3) Which of the following is not a software testing generic characteristics?
a) Different testing techniques are appropriate at different points in time
b) Testing is conducted by the developer of the software or an independent test group
c) Testing and debugging are different activities, but debugging must be accommodated in any testing strategy
d) None of these

4) Specifying a set of test cases or test paths for each item to be tested at that level is known as _____
a) Test case generation b) Test case design
c) Both a & b d) None of these

5) Alpha testing is done at _____
a) Developer's end b) User's end
c) Developer's & User's end d) None of these

6) A testing conducted at the developer's site under validation testing.
a) Alpha b) Gamma
c) Lambda d) unit

7) A _____ is tested to ensure that information properly flows into and out of the system.
a) module interface b) local data structure
c) boundary conditions d) paths

8) Which of the following is a black box testing strategy?
a) All Statements Coverage b) Control Structure Coverage
c) Cause-Effect Graphs d) All Paths Coverage

9) Testing done without planning and Documentation is called _____
a) Unit testing b) Regression testing
c) Adhoc testing d) None of these

10) By collecting _____ during software testing, it is possible to develop meaningful guidelines to halt the testing process.
a) Failure intensity b) Testing time
c) Metrics d) All of these

11) Debugging Program is a program which runs concurrently with the program under test & provide commands to _____.
a) examine memory & registers
b) stop execution at a particular point
c) search for references for particular variables, constant and registers
d) all of these

12) Which of the following is not a part of bug report?
a) Test case b) Output
c) Software Version d) LOC

13) Which of the following is one of the steps in the integration testing of OO software?
a) cluster testing b) thread-based testing
c) use-based testing d) none of these

14) Which testing tool does a simple job of enforcing standards in a uniform way of many programs?
a) Static Analyzer
b) Code Inspector
c) Standard Enforcer
d) Both Code Inspector & Standard Enforcer

SLR-GF-414

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Software Testing and Quality Assurance (197046703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any three **12**

a) What is software testing? Illustrate what is essential for software testing, also extend the features of testing?
b) Extend in detail the black box, data and dynamic testing techniques.
c) Illustrate with example Volume, Stress, and Load Testing.
d) State & summarize the challenges in security, performance & volume testing.

Q.3 Identify in detail testing strategy Smoke, Sanity, Ad hoc, Usability, and Acceptance testing with example. **08**

OR

Illustrate with example software verification and validation, also explain the ad-hoc and regression testing.

Q.4 Write note on (any two) **08**

a) Principles of Software Testing & Test Policy
b) Big-Bang Testing & Sandwich Testing
c) Alpha, Beta & Gamma Testing

Section – II

Q.5 Solve any three **12**

a) Extend with example Writing and Tracking test cases and the goal of Test Case Planning.
b) What is open source testing tools, justify with example?
c) Illustrate with example Elements of Software Quality Assurance, SQA Processes and Product Characteristics.
d) What is data flow testing? Explain the feasible paths and test selection criteria in data flow testing.

Q.6 Illustrate and extend automation test case study of any application tested on selenium tool. **08**

OR

Explain the following w.r.t quality:

i) Quality Concepts
ii) Software Quality Dilemma
iii) Achieving Software Quality
iv) Achieving Software Quality

Q.7 **Write note on (Any Two)** **08**

a) Differentiate between failure, error and fault
b) ISO 9000 and CMM
c) Random Testing and Software Reliability

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Software Testing and Quality Assurance (197046703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
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Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve Multiple Choice Questions. **14**

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4) Debugging Program is a program which runs concurrently with the program under test & provide commands to _____.
a) examine memory & registers
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6) Which of the following is one of the steps in the integration testing of OO software?
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Seat No.	

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Section – II

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Seat No.	

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INFORMATION TECHNOLOGY ENGINEERING
Software Testing and Quality Assurance (197046703)

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Duration: 30 Minutes Marks:14

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d) Both Code Inspector & Standard Enforcer

5) Which of the following is the way of ensuring that the tests are actually testing code?
a) Control structure testing b) Complex path testing
c) Code coverage d) Quality assurance of software

6) Which of the following is not a part of Software Configuration Management Basics?
a) Identification b) Version
c) Auditing and Reviewing d) Status Accounting

7) Which of the following is not a software testing generic characteristics?
a) Different testing techniques are appropriate at different points in time
b) Testing is conducted by the developer of the software or an independent test group
c) Testing and debugging are different activities, but debugging must be accommodated in any testing strategy
d) None of these

8) Specifying a set of test cases or test paths for each item to be tested at that level is known as _____
a) Test case generation b) Test case design
c) Both a & b d) None of these

9) Alpha testing is done at _____
a) Developer's end b) User's end
c) Developer's & User's end d) None of these

10) A testing conducted at the developer's site under validation testing.
a) Alpha b) Gamma
c) Lambda d) unit

11) A _____ is tested to ensure that information properly flows into and out of the system.
a) module interface b) local data structure
c) boundary conditions d) paths

12) Which of the following is a black box testing strategy?
a) All Statements Coverage b) Control Structure Coverage
c) Cause-Effect Graphs d) All Paths Coverage

13) Testing done without planning and Documentation is called _____
a) Unit testing b) Regression testing
c) Adhoc testing d) None of these

14) By collecting _____ during software testing, it is possible to develop meaningful guidelines to halt the testing process.
a) Failure intensity b) Testing time
c) Metrics d) All of these

SLR-GF-414

Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Software Testing and Quality Assurance (197046703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any three **12**

a) What is software testing? Illustrate what is essential for software testing, also extend the features of testing?
b) Extend in detail the black box, data and dynamic testing techniques.
c) Illustrate with example Volume, Stress, and Load Testing.
d) State & summarize the challenges in security, performance & volume testing.

Q.3 Identify in detail testing strategy Smoke, Sanity, Ad hoc, Usability, and Acceptance testing with example. **08**

OR

Illustrate with example software verification and validation, also explain the ad-hoc and regression testing.

Q.4 Write note on (any two) **08**

a) Principles of Software Testing & Test Policy
b) Big-Bang Testing & Sandwich Testing
c) Alpha, Beta & Gamma Testing

Section – II

Q.5 Solve any three **12**

a) Extend with example Writing and Tracking test cases and the goal of Test Case Planning.
b) What is open source testing tools, justify with example?
c) Illustrate with example Elements of Software Quality Assurance, SQA Processes and Product Characteristics.
d) What is data flow testing? Explain the feasible paths and test selection criteria in data flow testing.

Q.6 Illustrate and extend automation test case study of any application tested on selenium tool. **08**

OR

Explain the following w.r.t quality:

i) Quality Concepts
ii) Software Quality Dilemma
iii) Achieving Software Quality
iv) Achieving Software Quality

Q.7 **Write note on (Any Two)** **08**

a) Differentiate between failure, error and fault
b) ISO 9000 and CMM
c) Random Testing and Software Reliability

Seat No.	

Set S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Software Testing and Quality Assurance (197046703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve Multiple Choice Questions. **14**

1) A testing conducted at the developer's site under validation testing.
a) Alpha b) Gamma
c) Lambda d) unit

2) A _____ is tested to ensure that information properly flows into and out of the system.
a) module interface b) local data structure
c) boundary conditions d) paths

3) Which of the following is a black box testing strategy?
a) All Statements Coverage b) Control Structure Coverage
c) Cause-Effect Graphs d) All Paths Coverage

4) Testing done without planning and Documentation is called _____
a) Unit testing b) Regression testing
c) Adhoc testing d) None of these

5) By collecting _____ during software testing, it is possible to develop meaningful guidelines to halt the testing process.
a) Failure intensity b) Testing time
c) Metrics d) All of these

6) Debugging Program is a program which runs concurrently with the program under test & provide commands to _____.
a) examine memory & registers
b) stop execution at a particular point
c) search for references for particular variables, constant and registers
d) all of these

7) Which of the following is not a part of bug report?
a) Test case b) Output
c) Software Version d) LOC

8) Which of the following is one of the steps in the integration testing of OO software?
a) cluster testing b) thread-based testing
c) use-based testing d) none of these

9) Which testing tool does a simple job of enforcing standards in a uniform way of many programs?
a) Static Analyzer
b) Code Inspector
c) Standard Enforcer
d) Both Code Inspector & Standard Enforcer

10) Which of the following is the way of ensuring that the tests are actually testing code?
a) Control structure testing
b) Complex path testing
c) Code coverage
d) Quality assurance of software

11) Which of the following is not a part of Software Configuration Management Basics?
a) Identification
b) Version
c) Auditing and Reviewing
d) Status Accounting

12) Which of the following is not a software testing generic characteristics?
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b) Testing is conducted by the developer of the software or an independent test group
c) Testing and debugging are different activities, but debugging must be accommodated in any testing strategy
d) None of these

13) Specifying a set of test cases or test paths for each item to be tested at that level is known as _____
a) Test case generation
b) Test case design
c) Both a & b
d) None of these

14) Alpha testing is done at _____
a) Developer's end
b) User's end
c) Developer's & User's end
d) None of these

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Software Testing and Quality Assurance (197046703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any three **12**

a) What is software testing? Illustrate what is essential for software testing, also extend the features of testing?
b) Extend in detail the black box, data and dynamic testing techniques.
c) Illustrate with example Volume, Stress, and Load Testing.
d) State & summarize the challenges in security, performance & volume testing.

Q.3 Identify in detail testing strategy Smoke, Sanity, Ad hoc, Usability, and Acceptance testing with example. **08**

OR

Illustrate with example software verification and validation, also explain the ad-hoc and regression testing.

Q.4 Write note on (any two) **08**

a) Principles of Software Testing & Test Policy
b) Big-Bang Testing & Sandwich Testing
c) Alpha, Beta & Gamma Testing

Section – II

Q.5 Solve any three **12**

a) Extend with example Writing and Tracking test cases and the goal of Test Case Planning.
b) What is open source testing tools, justify with example?
c) Illustrate with example Elements of Software Quality Assurance, SQA Processes and Product Characteristics.
d) What is data flow testing? Explain the feasible paths and test selection criteria in data flow testing.

Q.6 Illustrate and extend automation test case study of any application tested on selenium tool. **08**

OR

Explain the following w.r.t quality:

i) Quality Concepts
ii) Software Quality Dilemma
iii) Achieving Software Quality
iv) Achieving Software Quality

Q.7 **Write note on (Any Two)** **08**

a) Differentiate between failure, error and fault
b) ISO 9000 and CMM
c) Random Testing and Software Reliability

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Distributed Systems (197046704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What are the different ways in which clients and servers are dispersed across machines?
a) Servers and clients can be on same machines
b) Servers may not run on dedicated machines
c) Distribution cannot be interposed between an OS and the file system
d) OS cannot be distributed with the file system a part of that distribution

2) In distributed systems, link and site failure is detected by _____.
a) Polling b) Token passing
c) Handshaking d) None of these

3) Single coordinator approach has the following disadvantages _____.
a) Deadlock b) Slow response
c) Bottleneck d) One request per second

4) Logical extension of computation migration is _____.
a) System migration b) Process migration
c) Thread migration d) Data migration

5) The Zero Capacity queue is referred to as a _____.
a) Message system with buffering
b) Link
c) Message system with no buffering
d) None of these

6) Which are the two complementary deadlock-prevention schemes using timestamps?
a) The wound-wait scheme
b) The wait-n-watch scheme
c) The wait-die & wound-wait scheme
d) The wait-wound & wound-wait scheme

7) The file once created cannot be changed is called _____.
a) Mutex file b) Immutable file
c) Mutable file d) None of these

8) For proper synchronization in distributed systems _____.
a) Prevention from the deadlock is must
b) Prevention from the deadlock & starvation is must
c) Prevention from the starvation is must
d) None of these

9) What are not the characteristics of a DFS?
a) Login transparency and access transparency
b) No Multiplicity of user's physical location
c) Files need not contain information about their
d) No Multiplicity if files

10) According to the ring algorithm, links between processes are _____.
a) Unidirectional b) Bidirectional
c) Both a & b d) none of these

11) What are the characteristics of tightly coupled system?
i) Different clock ii) Use communication links
iii) Same clock iv) Distributed systems
a) i) b) i) and iv)
c) ii), iii) and iv) d) i), ii) and iii)

12) What is not a major reason for building distributed systems?
a) Resource sharing b) Computation speedup
c) Simplicity d) Reliability

13) What are the characteristics of stateless server?
a) They are redundant to keep data safe
b) They are not fault-tolerant upon client or server failures
c) They store all information file server
d) Easier to implement

14) Bounded capacity and unbounded capacity queues are referred to as _____.
a) Programmed buffering b) User defined buffering
c) Automatic buffering d) No buffering

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Distributed Systems (197046704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Three. **12**
- **a)** Illustrate all the models for designing distributed systems?
- **b)** Explain in detail the Issues in IPC by Message Passing, Synchronization?
- **c)** Draw and illustrate the RPC Model?
- **d)** Draw and explain the implementation of logical clocks by using counters and physical clocks?

Q.3 **a)** Interpret with example Event Ordering and Election algorithms? **08**

OR

b) Illustrate with example the client server binding in distributed environment?

Q.4 Attempt any Two. **08**
- **a)** Communication Protocols for RPCs.
- **b)** Desirable features of Good Message-Passing System.
- **c)** Clock Synchronization.

Section – II

Q.5 Solve any Three. **12**
- **a)** Explain with example the Lamport's Algorithm?
- **b)** Illustrate the Issues in Deadlock Detection and Resolution?
- **c)** Explain with example the algorithm for implementing Distributed Shared Memory?
- **d)** Extend in detail Avoidance, Prevention algorithms and Hierarchical deadlock detection algorithms?

Q.6 **a)** Explain all deadlock handling strategies in Distributed Systems? **08**

OR

b) Extend all the mechanisms for building Distributed File System?

Q.7 Attempt any Two. **08**
- **a)** Coherence Protocols.
- **b)** Hierarchical deadlock detection algorithms.
- **c)** Token-Based Algorithms for distributed mutual exclusion.

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Distributed Systems (197046704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) For proper synchronization in distributed systems _____.
a) Prevention from the deadlock is must
b) Prevention from the deadlock & starvation is must
c) Prevention from the starvation is must
d) None of these

2) What are not the characteristics of a DFS?
a) Login transparency and access transparency
b) No Multiplicity of user's physical location
c) Files need not contain information about their
d) No Multiplicity if files

3) According to the ring algorithm, links between processes are _____.
a) Unidirectional b) Bidirectional
c) Both a & b d) none of these

4) What are the characteristics of tightly coupled system?
i) Different clock ii) Use communication links
iii) Same clock iv) Distributed systems
a) i) b) i) and iv)
c) ii), iii) and iv) d) i), ii) and iii)

5) What is not a major reason for building distributed systems?
a) Resource sharing b) Computation speedup
c) Simplicity d) Reliability

6) What are the characteristics of stateless server?
a) They are redundant to keep data safe
b) They are not fault-tolerant upon client or server failures
c) They store all information file server
d) Easier to implement

7) Bounded capacity and unbounded capacity queues are referred to as _____.
a) Programmed buffering b) User defined buffering
c) Automatic buffering d) No buffering

8) What are the different ways in which clients and servers are dispersed across machines?
a) Servers and clients can be on same machines
b) Servers may not run on dedicated machines
c) Distribution cannot be interposed between an OS and the file system
d) OS cannot be distributed with the file system a part of that distribution

9) In distributed systems, link and site failure is detected by _____.
a) Polling
b) Token passing
c) Handshaking
d) None of these

10) Single coordinator approach has the following disadvantages _____.
a) Deadlock
b) Slow response
c) Bottleneck
d) One request per second

11) Logical extension of computation migration is _____.
a) System migration
b) Process migration
c) Thread migration
d) Data migration

12) The Zero Capacity queue is referred to as a _____.
a) Message system with buffering
b) Link
c) Message system with no buffering
d) None of these

13) Which are the two complementary deadlock-prevention schemes using timestamps?
a) The wound-wait scheme
b) The wait-n-watch scheme
c) The wait-die & wound-wait scheme
d) The wait-wound & wound-wait scheme

14) The file once created cannot be changed is called _____.
a) Mutex file
b) Immutable file
c) Mutable file
d) None of these

SLR-GF-415

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Distributed Systems (197046704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Three. **12**
- **a)** Illustrate all the models for designing distributed systems?
- **b)** Explain in detail the Issues in IPC by Message Passing, Synchronization?
- **c)** Draw and illustrate the RPC Model?
- **d)** Draw and explain the implementation of logical clocks by using counters and physical clocks?

Q.3 **a)** Interpret with example Event Ordering and Election algorithms? **08**

OR

b) Illustrate with example the client server binding in distributed environment?

Q.4 Attempt any Two. **08**
- **a)** Communication Protocols for RPCs.
- **b)** Desirable features of Good Message-Passing System.
- **c)** Clock Synchronization.

Section – II

Q.5 Solve any Three. **12**
- **a)** Explain with example the Lamport's Algorithm?
- **b)** Illustrate the Issues in Deadlock Detection and Resolution?
- **c)** Explain with example the algorithm for implementing Distributed Shared Memory?
- **d)** Extend in detail Avoidance, Prevention algorithms and Hierarchical deadlock detection algorithms?

Q.6 **a)** Explain all deadlock handling strategies in Distributed Systems? **08**

OR

b) Extend all the mechanisms for building Distributed File System?

Q.7 Attempt any Two. **08**
- **a)** Coherence Protocols.
- **b)** Hierarchical deadlock detection algorithms.
- **c)** Token-Based Algorithms for distributed mutual exclusion.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Distributed Systems (197046704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What are the characteristics of tightly coupled system?
i) Different clock ii) Use communication links
iii) Same clock iv) Distributed systems
a) i) b) i) and iv)
c) ii), iii) and iv) d) i), ii) and iii)

2) What is not a major reason for building distributed systems?
a) Resource sharing b) Computation speedup
c) Simplicity d) Reliability

3) What are the characteristics of stateless server?
a) They are redundant to keep data safe
b) They are not fault-tolerant upon client or server failures
c) They store all information file server
d) Easier to implement

4) Bounded capacity and unbounded capacity queues are referred to as _____.
a) Programmed buffering b) User defined buffering
c) Automatic buffering d) No buffering

5) What are the different ways in which clients and servers are dispersed across machines?
a) Servers and clients can be on same machines
b) Servers may not run on dedicated machines
c) Distribution cannot be interposed between an OS and the file system
d) OS cannot be distributed with the file system a part of that distribution

6) In distributed systems, link and site failure is detected by _____.
a) Polling b) Token passing
c) Handshaking d) None of these

7) Single coordinator approach has the following disadvantages _____.
a) Deadlock b) Slow response
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8) Logical extension of computation migration is _____.
a) System migration b) Process migration
c) Thread migration d) Data migration

9) The Zero Capacity queue is referred to as a _____.
a) Message system with buffering
b) Link
c) Message system with no buffering
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10) Which are the two complementary deadlock-prevention schemes using timestamps?
a) The wound-wait scheme
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11) The file once created cannot be changed is called _____.
a) Mutex file b) Immutable file
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12) For proper synchronization in distributed systems _____.
a) Prevention from the deadlock is must
b) Prevention from the deadlock & starvation is must
c) Prevention from the starvation is must
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13) What are not the characteristics of a DFS?
a) Login transparency and access transparency
b) No Multiplicity of user's physical location
c) Files need not contain information about their
d) No Multiplicity if files

14) According to the ring algorithm, links between processes are _____.
a) Unidirectional b) Bidirectional
c) Both a & b d) none of these

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Distributed Systems (197046704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Three. **12**
- **a)** Illustrate all the models for designing distributed systems?
- **b)** Explain in detail the Issues in IPC by Message Passing, Synchronization?
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Q.3 **a)** Interpret with example Event Ordering and Election algorithms? **08**

OR

b) Illustrate with example the client server binding in distributed environment?

Q.4 Attempt any Two. **08**
- **a)** Communication Protocols for RPCs.
- **b)** Desirable features of Good Message-Passing System.
- **c)** Clock Synchronization.

Section – II

Q.5 Solve any Three. **12**
- **a)** Explain with example the Lamport's Algorithm?
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Q.6 **a)** Explain all deadlock handling strategies in Distributed Systems? **08**

OR

b) Extend all the mechanisms for building Distributed File System?

Q.7 Attempt any Two. **08**
- **a)** Coherence Protocols.
- **b)** Hierarchical deadlock detection algorithms.
- **c)** Token-Based Algorithms for distributed mutual exclusion.

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Distributed Systems (197046704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which are the two complementary deadlock-prevention schemes using timestamps?
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c) The wait-die & wound-wait scheme
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12) Single coordinator approach has the following disadvantages _____.
a) Deadlock b) Slow response
c) Bottleneck d) One request per second

13) Logical extension of computation migration is _____.
a) System migration b) Process migration
c) Thread migration d) Data migration

14) The Zero Capacity queue is referred to as a _____.
a) Message system with buffering
b) Link
c) Message system with no buffering
d) None of these

SLR-GF-415

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Distributed Systems (197046704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Three. **12**
- **a)** Illustrate all the models for designing distributed systems?
- **b)** Explain in detail the Issues in IPC by Message Passing, Synchronization?
- **c)** Draw and illustrate the RPC Model?
- **d)** Draw and explain the implementation of logical clocks by using counters and physical clocks?

Q.3 **a)** Interpret with example Event Ordering and Election algorithms? **08**

OR

b) Illustrate with example the client server binding in distributed environment?

Q.4 Attempt any Two. **08**
- **a)** Communication Protocols for RPCs.
- **b)** Desirable features of Good Message-Passing System.
- **c)** Clock Synchronization.

Section – II

Q.5 Solve any Three. **12**
- **a)** Explain with example the Lamport's Algorithm?
- **b)** Illustrate the Issues in Deadlock Detection and Resolution?
- **c)** Explain with example the algorithm for implementing Distributed Shared Memory?
- **d)** Extend in detail Avoidance, Prevention algorithms and Hierarchical deadlock detection algorithms?

Q.6 **a)** Explain all deadlock handling strategies in Distributed Systems? **08**

OR

b) Extend all the mechanisms for building Distributed File System?

Q.7 Attempt any Two. **08**
- **a)** Coherence Protocols.
- **b)** Hierarchical deadlock detection algorithms.
- **c)** Token-Based Algorithms for distributed mutual exclusion.

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Data Mining (197046707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following is an essential process in which the intelligent methods are applied to extract data patterns?
a) Warehousing b) Data Mining
c) Text Mining d) Data Selection

2) Which of the following is NOT a common data mining technique?
a) Decision tree induction b) Association rule learning
c) Neural network training d) Clustering

3) What is the main goal of the Apriori algorithm in data mining?
a) Clustering b) Classification
c) Association rule mining d) Regression analysis

4) Market basket analysis is a technique used to identify:
a) Trending products in a store
b) Strong associations between items in a shopping basket
c) Weak associations between items in a shopping basket
d) Products with the highest sales volume

5) Which of the following techniques is commonly used in market basket analysis?
a) Decision trees b) Neural networks
c) Association rule mining d) K-means clustering

6) Which of the following is NOT a type of classification method in data mining?
a) Decision tree b) Logistic regression
c) Naive Bayes d) Clustering

7) What does the "K" in K-nearest neighbors (KNN) classification stand for?
a) The number of features in the data
b) The number of classes in the data
c) The number of nearest neighbors used to classify a data point
d) The number of dimensions in the data

8) Which of the following is NOT a type of clustering method?
a) K-means
b) Density-based
c) Hierarchical
d) Regression

9) Which of the following is NOT a characteristic of hierarchical clustering?
a) It is a top-down approach
b) It creates a tree-like structure
c) It is computationally efficient
d) It is sensitive to noise and outliers

10) What is the minimum support threshold in the Apriori algorithm?
a) The minimum number of times an item must appear in the dataset for it to be considered for analysis
b) The minimum number of items that must be present in a transaction for it to be considered for analysis
c) The minimum probability that an association rule must meet to be considered valid
d) The minimum number of items that must be present in a transaction for it to be considered for association rule analysis

11) Which of the following is NOT a type of web mining?
a) Web structure mining
b) Web content mining
c) Web usage mining
d) Web security mining

12) How is web content mining different from traditional data mining?
a) Web content mining focuses on text data, while traditional data mining focuses on numerical data
b) Web content mining is only applicable to the web, while traditional data mining can be applied to any data set
c) Web content mining requires specialized algorithms, while traditional data mining uses general.
d) Web content mining is more difficult to implement than traditional data mining.

13) Which of the following is NOT a type of classification method in data mining?
a) Decision tree
b) Logistic regression
c) Naive Bayes
d) Clustering

14) What is the main goal of outlier detection in data mining?
a) To identify patterns in data
b) To identify errors in data
c) To identify rare events in data
d) To identify relationship on data

SLR-GF-416

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Data Mining (197046707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) Describe Data Mining and basic data mining tasks. List the main challenges and limitations of data mining?

b) In real-world data, tuples with missing values for some attributes are a common occurrence. Describe various methods for handling this problem.

c) Define Market Basket Analysis. Describe Frequent Itemsets, Closed Itemset and Association Rules.

d) What do you mean by data reduction? Why is it used? Write names of 3 data reduction strategies.

Q.3 Attempt the following (Any One) **08**

a) Describe the steps involved in data mining when viewed as a process of knowledge discovery in detail with diagram.

OR

b) Discuss about constraint based association rule mining with examples and state how association mining to correlation analysis is dealt with

Q.4 Answer the following **08**

a) What are the steps involved in preparing the data for classification? Describe the data classification process with a neat diagram. How does the Naive Bayesian classification work?

SECTION - II

Q.5 Attempt the following (Any Three) **12**

a) Differentiate between Clustering and Classification.

b) Define Outlier Detection? State briefly outlier detection methods.

c) Explain parallel and distributed algorithms.

d) Compare Data mining techniques and Web mining techniques.

Q.6 Attempt the following (Any One) **08**

a) What is clustering? State with a suitable diagram the classification of clustering algorithms. Explain in details about Agglomerative and Divisive Hierarchical Clustering.

OR

b) What is the definition of the support and confidence measures used in the Apriori algorithm? Given an example for Apriori with transactions and explain Apriori-gen-algorithm

Q.7 Answer the following **08**

What is web mining and how does it differ from traditional data mining? Discuss the following types of web mining:

a) Web structure mining
b) Web content mining
c) Web usage mining

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Set Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Data Mining (197046707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is NOT a type of clustering method?
a) K-means b) Density-based
c) Hierarchical d) Regression

2) Which of the following is NOT a characteristic of hierarchical clustering?
a) It is a top-down approach
b) It creates a tree-like structure
c) It is computationally efficient
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3) What is the minimum support threshold in the Apriori algorithm?
a) The minimum number of times an item must appear in the dataset for it to be considered for analysis
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4) Which of the following is NOT a type of web mining?
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d) Web content mining is more difficult to implement than traditional data mining.

6) Which of the following is NOT a type of classification method in data mining?
a) Decision tree
b) Logistic regression
c) Naive Bayes
d) Clustering

7) What is the main goal of outlier detection in data mining?
a) To identify patterns in data
b) To identify errors in data
c) To identify rare events in data
d) To identify relationship on data

8) Which of the following is an essential process in which the intelligent methods are applied to extract data patterns?
a) Warehousing
b) Data Mining
c) Text Mining
d) Data Selection

9) Which of the following is NOT a common data mining technique?
a) Decision tree induction
b) Association rule learning
c) Neural network training
d) Clustering

10) What is the main goal of the Apriori algorithm in data mining?
a) Clustering
b) Classification
c) Association rule mining
d) Regression analysis

11) Market basket analysis is a technique used to identify:
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c) Weak associations between items in a shopping basket
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a) Decision tree
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14) What does the "K" in K-nearest neighbors (KNN) classification stand for?
a) The number of features in the data
b) The number of classes in the data
c) The number of nearest neighbors used to classify a data point
d) The number of dimensions in the data

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Data Mining (197046707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt the following (Any Three) **12**

a) Describe Data Mining and basic data mining tasks. List the main challenges and limitations of data mining?

b) In real-world data, tuples with missing values for some attributes are a common occurrence. Describe various methods for handling this problem.

c) Define Market Basket Analysis. Describe Frequent Itemsets, Closed Itemset and Association Rules.

d) What do you mean by data reduction? Why is it used? Write names of 3 data reduction strategies.

Q.3 Attempt the following (Any One) **08**

a) Describe the steps involved in data mining when viewed as a process of knowledge discovery in detail with diagram.

OR

b) Discuss about constraint based association rule mining with examples and state how association mining to correlation analysis is dealt with

Q.4 Answer the following **08**

a) What are the steps involved in preparing the data for classification? Describe the data classification process with a neat diagram. How does the Naive Bayesian classification work?

SECTION - II

Q.5 Attempt the following (Any Three) **12**

a) Differentiate between Clustering and Classification.

b) Define Outlier Detection? State briefly outlier detection methods.

c) Explain parallel and distributed algorithms.

d) Compare Data mining techniques and Web mining techniques.

Q.6 Attempt the following (Any One) **08**

a) What is clustering? State with a suitable diagram the classification of clustering algorithms. Explain in details about Agglomerative and Divisive Hierarchical Clustering.

OR

b) What is the definition of the support and confidence measures used in the Apriori algorithm? Given an example for Apriori with transactions and explain Apriori-gen-algorithm

Q.7 Answer the following **08**

What is web mining and how does it differ from traditional data mining? Discuss the following types of web mining:

a) Web structure mining
b) Web content mining
c) Web usage mining

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Data Mining (197046707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is NOT a type of web mining?
a) Web structure mining b) Web content mining
c) Web usage mining d) Web security mining

2) How is web content mining different from traditional data mining?
a) Web content mining focuses on text data, while traditional data mining focuses on numerical data
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3) Which of the following is NOT a type of classification method in data mining?
a) Decision tree b) Logistic regression
c) Naive Bayes d) Clustering

4) What is the main goal of outlier detection in data mining?
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b) To identify errors in data
c) To identify rare events in data
d) To identify relationship on data

5) Which of the following is an essential process in which the intelligent methods are applied to extract data patterns?
a) Warehousing b) Data Mining
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6) Which of the following is NOT a common data mining technique?
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c) Neural network training d) Clustering

7) What is the main goal of the Apriori algorithm in data mining?
a) Clustering b) Classification
c) Association rule mining d) Regression analysis

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b) It creates a tree-like structure
c) It is computationally efficient
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14) What is the minimum support threshold in the Apriori algorithm?
a) The minimum number of times an item must appear in the dataset for it to be considered for analysis
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c) The minimum probability that an association rule must meet to be considered valid
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Seat No.		Set	R

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Data Mining (197046707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) Describe Data Mining and basic data mining tasks. List the main challenges and limitations of data mining?

b) In real-world data, tuples with missing values for some attributes are a common occurrence. Describe various methods for handling this problem.

c) Define Market Basket Analysis. Describe Frequent Itemsets, Closed Itemset and Association Rules.

d) What do you mean by data reduction? Why is it used? Write names of 3 data reduction strategies.

Q.3 Attempt the following (Any One) **08**

a) Describe the steps involved in data mining when viewed as a process of knowledge discovery in detail with diagram.

OR

b) Discuss about constraint based association rule mining with examples and state how association mining to correlation analysis is dealt with

Q.4 Answer the following **08**

a) What are the steps involved in preparing the data for classification? Describe the data classification process with a neat diagram. How does the Naive Bayesian classification work?

SECTION - II

Q.5 Attempt the following (Any Three) **12**

a) Differentiate between Clustering and Classification.

b) Define Outlier Detection? State briefly outlier detection methods.

c) Explain parallel and distributed algorithms.

d) Compare Data mining techniques and Web mining techniques.

Q.6 Attempt the following (Any One) **08**

a) What is clustering? State with a suitable diagram the classification of clustering algorithms. Explain in details about Agglomerative and Divisive Hierarchical Clustering.

OR

b) What is the definition of the support and confidence measures used in the Apriori algorithm? Given an example for Apriori with transactions and explain Apriori-gen-algorithm

Q.7 Answer the following **08**

What is web mining and how does it differ from traditional data mining? Discuss the following types of web mining:

a) Web structure mining
b) Web content mining
c) Web usage mining

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Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Data Mining (197046707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following is NOT a type of classification method in data mining?
a) Decision tree b) Logistic regression
c) Naive Bayes d) Clustering

2) What does the "K" in K-nearest neighbors (KNN) classification stand for?
a) The number of features in the data
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c) The number of nearest neighbors used to classify a data point
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c) Hierarchical d) Regression

4) Which of the following is NOT a characteristic of hierarchical clustering?
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b) To identify errors in data
c) To identify rare events in data
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10) Which of the following is an essential process in which the intelligent methods are applied to extract data patterns?
a) Warehousing
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d) Data Selection

11) Which of the following is NOT a common data mining technique?
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12) What is the main goal of the Apriori algorithm in data mining?
a) Clustering
b) Classification
c) Association rule mining
d) Regression analysis

13) Market basket analysis is a technique used to identify:
a) Trending products in a store
b) Strong associations between items in a shopping basket
c) Weak associations between items in a shopping basket
d) Products with the highest sales volume

14) Which of the following techniques is commonly used in market basket analysis?
a) Decision trees
b) Neural networks
c) Association rule mining
d) K-means clustering

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (Old) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Data Mining (197046707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) Describe Data Mining and basic data mining tasks. List the main challenges and limitations of data mining?

b) In real-world data, tuples with missing values for some attributes are a common occurrence. Describe various methods for handling this problem.

c) Define Market Basket Analysis. Describe Frequent Itemsets, Closed Itemset and Association Rules.

d) What do you mean by data reduction? Why is it used? Write names of 3 data reduction strategies.

Q.3 Attempt the following (Any One) **08**

a) Describe the steps involved in data mining when viewed as a process of knowledge discovery in detail with diagram.

OR

b) Discuss about constraint based association rule mining with examples and state how association mining to correlation analysis is dealt with

Q.4 Answer the following **08**

a) What are the steps involved in preparing the data for classification? Describe the data classification process with a neat diagram. How does the Naive Bayesian classification work?

SECTION - II

Q.5 Attempt the following (Any Three) **12**

a) Differentiate between Clustering and Classification.

b) Define Outlier Detection? State briefly outlier detection methods.

c) Explain parallel and distributed algorithms.

d) Compare Data mining techniques and Web mining techniques.

Q.6 Attempt the following (Any One) **08**

a) What is clustering? State with a suitable diagram the classification of clustering algorithms. Explain in details about Agglomerative and Divisive Hierarchical Clustering.

OR

b) What is the definition of the support and confidence measures used in the Apriori algorithm? Given an example for Apriori with transactions and explain Apriori-gen-algorithm

Q.7 Answer the following **08**

What is web mining and how does it differ from traditional data mining? Discuss the following types of web mining:

a) Web structure mining
b) Web content mining
c) Web usage mining

SLR-GF-419

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information System (197046801)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which level of the organization ESS specifically designed to serve?
a) An operational b) end user
c) middle management d) senior management

2) The term management information system designated or specific category of information system survey.
a) Integrated data processing throughout the phone
b) Transaction process reporting
c) The information technology functions
d) Middle management function

3) A /An _____ is typical a major source of data for other systems.
a) Transaction process system b) Management information system
c) Executive support system d) Knowledge management system

4) To monitor the status of internal operations and the firms' relations with the external environment. Managed managers need _____ system.
a) decision support b) knowledge
c) transaction processing d) management information

5) The _____ function is responsible for identifying customers A.
a) Finance and accounting
b) Human resources
c) Manufacturing and production
d) Sales and marketing

6) _____ not features of Internet and Web as commercial medium.
a) Ubiquity b) Personalization/customization
c) Interactivity d) None

7) DSS is widely used in the _____.
a) System implementation b) System flow
c) Planning d) Making system

8) Which of the following is / are components of an Expert System?
a) User Interface
b) Interference Engine
c) Knowledge Base & Data Acquisition Subsystem
d) All of the above mentioned

9) Which of the following Activities are associated with Strategic Management?
a) MIS strategy set → Organizational strategy set
b) Organizational strategy set → MIS strategy set
c) Business Process Set → MIS strategy set
d) None of the above mentioned

10) _____ is able to provide a specific niche or segment with the capabilities to identify, extend, and need of an organization.
a) System flow
b) Data flow diagram
c) Strategic Management Information System
d) None of the above mentioned

11) The basic component/components of Decision Support System is/are, ____.
a) Database b) Model base
c) DSS software system d) All of the above

12) Business intelligence Contemporary tools _____
a) Data warehouses b) Data marts
c) Hadoop d) All above

13) From the options below, which of them is not a vulnerability to information security?
a) flood
b) without deleting data, disposal of storage media
c) unchanged default password
d) latest patches and updates not done

14) Possible threat to any information cannot be _____.
a) reduced b) transferred
c) protected d) ignored

SLR-GF-419

Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information System (197046801)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three of the followings **12**

a) How information systems are transforming business?
b) What are the Competitive strategies using information systems?
c) Differentiate Transaction Processing Systems and Management Information System.
d) Differentiate Industrial design and Patent

Q.3 Solve any two of the followings **16**

a) What are systems Challenges to the protection individual privacy and intellectual property?
b) Why systems for collaboration and social business are so important and what technologies do they use?
c) What are the Contemporary Software Platform Trends?

Section – II

Q.4 Solve any three of the followings **12**

a) What are the policies for Information Systems Controls and Auditing IT Security?
b) How Business Intelligence advantage over traditional file environment?
c) Evaluate tools and technologies for accessing information from databases to improve business performance and decision making.
d) Assess the role of information policy, data administration, and data quality assurance in the management of firm's data resources.

Q.5 Solve any two of the followings **16**

a) What is the role of the e-commerce and Digital Marketing in business?
b) Explain what is meant by Business intelligence systems perspective.
c) How the Tools of Security Management and Internet worked Security Defenses Technology can be apply?

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information System (197046801)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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3) _____ is able to provide a specific niche or segment with the capabilities to identify, extend, and need of an organization.
a) System flow
b) Data flow diagram
c) Strategic Management Information System
d) None of the above mentioned

4) The basic component/components of Decision Support System is/are, ____.
a) Database b) Model base
c) DSS software system d) All of the above

5) Business intelligence Contemporary tools _____
a) Data warehouses b) Data marts
c) Hadoop d) All above

6) From the options below, which of them is not a vulnerability to information security?
a) flood
b) without deleting data, disposal of storage media
c) unchanged default password
d) latest patches and updates not done

7) Possible threat to any information cannot be _____.
a) reduced b) transferred
c) protected d) ignored

8) Which level of the organization ESS specifically designed to serve?
a) An operational b) end user
c) middle management d) senior management

9) The term management information system designated or specific category of information system survey.
a) Integrated data processing throughout the phone
b) Transaction process reporting
c) The information technology functions
d) Middle management function

10) A /An _____ is typical a major source of data for other systems.
a) Transaction process system b) Management information system
c) Executive support system d) Knowledge management system

11) To monitor the status of internal operations and the firms' relations with the external environment. Managed managers need _____ system.
a) decision support b) knowledge
c) transaction processing d) management information

12) The _____ function is responsible for identifying customers A.
a) Finance and accounting
b) Human resources
c) Manufacturing and production
d) Sales and marketing

13) _____ not features of Internet and Web as commercial medium.
a) Ubiquity b) Personalization/customization
c) Interactivity d) None

14) DSS is widely used in the _____.
a) System implementation b) System flow
c) Planning d) Making system

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Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information System (197046801)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three of the followings **12**

a) How information systems are transforming business?
b) What are the Competitive strategies using information systems?
c) Differentiate Transaction Processing Systems and Management Information System.
d) Differentiate Industrial design and Patent

Q.3 Solve any two of the followings **16**

a) What are systems Challenges to the protection individual privacy and intellectual property?
b) Why systems for collaboration and social business are so important and what technologies do they use?
c) What are the Contemporary Software Platform Trends?

Section – II

Q.4 Solve any three of the followings **12**

a) What are the policies for Information Systems Controls and Auditing IT Security?
b) How Business Intelligence advantage over traditional file environment?
c) Evaluate tools and technologies for accessing information from databases to improve business performance and decision making.
d) Assess the role of information policy, data administration, and data quality assurance in the management of firm's data resources.

Q.5 Solve any two of the followings **16**

a) What is the role of the e-commerce and Digital Marketing in business?
b) Explain what is meant by Business intelligence systems perspective.
c) How the Tools of Security Management and Internet worked Security Defenses Technology can be apply?

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information System (197046801)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The basic component/components of Decision Support System is/are, ____.
a) Database b) Model base
c) DSS software system d) All of the above

2) Business intelligence Contemporary tools _____
a) Data warehouses b) Data marts
c) Hadoop d) All above

3) From the options below, which of them is not a vulnerability to information security?
a) flood
b) without deleting data, disposal of storage media
c) unchanged default password
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4) Possible threat to any information cannot be _____.
a) reduced b) transferred
c) protected d) ignored

5) Which level of the organization ESS specifically designed to serve?
a) An operational b) end user
c) middle management d) senior management

6) The term management information system designated or specific category of information system survey.
a) Integrated data processing throughout the phone
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c) The information technology functions
d) Middle management function

7) A /An _____ is typical a major source of data for other systems.
a) Transaction process system b) Management information system
c) Executive support system d) Knowledge management system

8) To monitor the status of internal operations and the firms' relations with the external environment. Managed managers need _____ system.
a) decision support b) knowledge
c) transaction processing d) management information

9) The _____ function is responsible for identifying customers A.
a) Finance and accounting
b) Human resources
c) Manufacturing and production
d) Sales and marketing

10) _____ not features of Internet and Web as commercial medium.
a) Ubiquity b) Personalization/customization
c) Interactivity d) None

11) DSS is widely used in the _____.
a) System implementation b) System flow
c) Planning d) Making system

12) Which of the following is / are components of an Expert System?
a) User Interface
b) Interference Engine
c) Knowledge Base & Data Acquisition Subsystem
d) All of the above mentioned

13) Which of the following Activities are associated with Strategic Management?
a) MIS strategy set → Organizational strategy set
b) Organizational strategy set → MIS strategy set
c) Business Process Set → MIS strategy set
d) None of the above mentioned

14) _____ is able to provide a specific niche or segment with the capabilities to identify, extend, and need of an organization.
a) System flow
b) Data flow diagram
c) Strategic Management Information System
d) None of the above mentioned

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Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information System (197046801)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three of the followings **12**

a) How information systems are transforming business?
b) What are the Competitive strategies using information systems?
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d) Differentiate Industrial design and Patent

Q.3 Solve any two of the followings **16**

a) What are systems Challenges to the protection individual privacy and intellectual property?
b) Why systems for collaboration and social business are so important and what technologies do they use?
c) What are the Contemporary Software Platform Trends?

Section – II

Q.4 Solve any three of the followings **12**

a) What are the policies for Information Systems Controls and Auditing IT Security?
b) How Business Intelligence advantage over traditional file environment?
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Q.5 Solve any two of the followings **16**

a) What is the role of the e-commerce and Digital Marketing in business?
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c) How the Tools of Security Management and Internet worked Security Defenses Technology can be apply?

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information System (197046801)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ not features of Internet and Web as commercial medium.
a) Ubiquity b) Personalization/customization
c) Interactivity d) None

2) DSS is widely used in the _____.
a) System implementation b) System flow
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3) Which of the following is / are components of an Expert System?
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b) Organizational strategy set → MIS strategy set
c) Business Process Set → MIS strategy set
d) None of the above mentioned

5) _____ is able to provide a specific niche or segment with the capabilities to identify, extend, and need of an organization.
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c) DSS software system d) All of the above

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b) without deleting data, disposal of storage media
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9) Possible threat to any information cannot be _____.
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c) protected d) ignored

10) Which level of the organization ESS specifically designed to serve?
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c) middle management d) senior management

11) The term management information system designated or specific category of information system survey.
a) Integrated data processing throughout the phone
b) Transaction process reporting
c) The information technology functions
d) Middle management function

12) A /An _____ is typical a major source of data for other systems.
a) Transaction process system b) Management information system
c) Executive support system d) Knowledge management system

13) To monitor the status of internal operations and the firms' relations with the external environment. Managed managers need _____ system.
a) decision support b) knowledge
c) transaction processing d) management information

14) The _____ function is responsible for identifying customers A.
a) Finance and accounting
b) Human resources
c) Manufacturing and production
d) Sales and marketing

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Seat No.	

Set S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Management Information System (197046801)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any three of the followings **12**

a) How information systems are transforming business?
b) What are the Competitive strategies using information systems?
c) Differentiate Transaction Processing Systems and Management Information System.
d) Differentiate Industrial design and Patent

Q.3 Solve any two of the followings **16**

a) What are systems Challenges to the protection individual privacy and intellectual property?
b) Why systems for collaboration and social business are so important and what technologies do they use?
c) What are the Contemporary Software Platform Trends?

Section – II

Q.4 Solve any three of the followings **12**

a) What are the policies for Information Systems Controls and Auditing IT Security?
b) How Business Intelligence advantage over traditional file environment?
c) Evaluate tools and technologies for accessing information from databases to improve business performance and decision making.
d) Assess the role of information policy, data administration, and data quality assurance in the management of firm's data resources.

Q.5 Solve any two of the followings **16**

a) What is the role of the e-commerce and Digital Marketing in business?
b) Explain what is meant by Business intelligence systems perspective.
c) How the Tools of Security Management and Internet worked Security Defenses Technology can be apply?

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Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Assurance and Security (197046802)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Figures drawn by pencil ruler only indicate full marks.
5) Do not use pen to draw and label the diagrams.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) A _____ is difficult to detect, because they do not allow any alteration of data.

I) Active attack II) Passive attack
III) Network attack IV) Cyber attack

a) Only I b) Only II
c) I and II both d) I, II, IV

2) _____ is the protection of data from unauthorized disclosure.

a) Message Authentication b) Data Confidentiality
c) Access Control d) Data integrity

3) Encryption protects against: _____.

a) Attacks b) Viruses
c) Manipulation of data d) All of the above

4) What is an advantage of RSA over DES?

a) It can provide digital signature and encryption functionality
b) It uses fewer resources and encrypts quicker because it uses symmetric keys
c) It is a block cipher versus a stream cipher
d) It employs a one-time encryption pad

5) _____ defines public key infrastructure.

a) RFC 2822 b) RFA 3024
c) RFC 2228 d) None of these

6) Which of the following field in digital certificate is/are optional?

1) Certificate validity period 2) Subject's common name
3) Issuer public key 4) Issuer office address

a) 1 & 2 b) 2 & 3
c) 1, 3 & 4 d) 3 & 4

7) In IPSec Security association, before two parties can communicate securely, they need to establish _____.
a) security association (SA)
b) authentication header (AH)
c) encapsulating security payload (ESEP)
d) none of above

8) The method of cracking the password by noting the key strokes of keyboard is called _____.
a) Phishing
b) Spyware
c) Keylogging
d) All the above

9) Which of these is not a type of malware?
a) Worm
b) Horses
c) Virus
d) Botnets

10) What are examples of malware spreads?
a) Social Network
b) Pirated Software
c) Removable Media
d) All the above

11) _____ is a computer on a network which acts as an intermediary for connections with other computers on that network.
a) Hotspot
b) Proxy server
c) Host machine
d) Main server machine

12) IP Level security encompasses three functional areas: _____, _____ and _____.
a) Authentication, Confidentiality and Integrity
b) Confidentiality, Integrity and Peer Authentication
c) Authentication, Confidentiality and Key Management
d) Access Control, Resource availability and Key management

13) The classes of intruders identified by Anderson are: _____.
1) Masquerader
2) Criminal
3) Misfeasor
4) Culprit
5) Clandestine User

a) 1, 3, 4, 5
b) 1, 2, 3
c) 1, 3, 5
d) All of the above

14) The advantage of Internet of Key Exchange (IKE) Phase 1 main mode IKE Phase 1 aggressive mode is _____.
a) main mode uses fewer messages
b) main mode provides greater security
c) main mode hides the identities of the communicating entities
d) main mode has a larger suite of options for key exchange right

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Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Assurance and Security (197046802)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Figures drawn by pencil ruler only indicate full marks.
4) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Attempt any three of the following. **12**

a) Describe security attacks with diagrams.
b) Discuss the $X.509$ Certificates
c) Explain in detail with diagram:
i) SSL Architecture
ii) SSL Record Protocol and its Operation
d) Elaborate row column transposition cipher and Caesar substitution cipher with an example each.

Q.3 Answer Any One **08**

a) Elaborate DES Algorithm? Explain its general depiction with its strengths and weakness.

OR

b) Elaborate the working of Classical Feistel Network and state the parameters and design choices that determine the actual algorithm of a Feistel cipher structure.

Q.4 Answer the following **08**

Describe RSA algorithm for keys generation. Using RSA algorithm perform encryption and decryption for $p = 3;\ q = 11, e = 7; M = 5$

Section – II

Q.5 Attempt the following (Any Three) **12**

a) Describe the five principles services provided by PGP.
b) What is cybercrime? Elaborate Trojan Horse and Backdoors.
c) Difference between Proxy server and an anonymizer.
d) State the services provides by IPSec. Give application of IP Sec.

Q.6 Answer Any One **08**

a) What is Firewall? State the characteristics of Firewall and its types with diagram.

OR

b) Define Virus. How do viruses get disseminated? Explain with diagrams.

Q.7 Answer the following **08**

Elaborate Information Technology Act 2000.
Elaborate the following offences enumerated in IT Act 2000 explicitly specifying the ingredients and punishments applicable.

a) Section 65
b) Section 66
c) Section 43
d) Section 76

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Assurance and Security (197046802)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
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5) Do not use pen to draw and label the diagrams.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The method of cracking the password by noting the key strokes of keyboard is called _____.
a) Phishing b) Spyware
c) Keylogging d) All the above

2) Which of these is not a type of malware?
a) Worm b) Horses
c) Virus d) Botnets

3) What are examples of malware spreads?
a) Social Network b) Pirated Software
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4) _____ is a computer on a network which acts as an intermediary for connections with other computers on that network.
a) Hotspot b) Proxy server
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5) IP Level security encompasses three functional areas: _____, _____ and _____.
a) Authentication, Confidentiality and Integrity
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c) 1, 3, 5 d) All of the above

7) The advantage of Internet of Key Exchange (IKE) Phase 1 main mode IKE Phase 1 aggressive mode is _____.
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8) A _____ is difficult to detect, because they do not allow any alteration of data.
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II) Passive attack
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a) Only I
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9) _____ is the protection of data from unauthorized disclosure.
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10) Encryption protects against: _____.
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11) What is an advantage of RSA over DES?
a) It can provide digital signature and encryption functionality
b) It uses fewer resources and encrypts quicker because it uses symmetric keys
c) It is a block cipher versus a stream cipher
d) It employs a one-time encryption pad

12) _____ defines public key infrastructure.
a) RFC 2822
b) RFA 3024
c) RFC 2228
d) None of these

13) Which of the following field in digital certificate is/are optional?
1) Certificate validity period
2) Subject's common name
3) Issuer public key
4) Issuer office address
a) 1 & 2
b) 2 & 3
c) 1, 3 & 4
d) 3 & 4

14) In IPSec Security association, before two parties can communicate securely, they need to establish _____.
a) security association (SA)
b) authentication header (AH)
c) encapsulating security payload (ESEP)
d) none of above

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Assurance and Security (197046802)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any three of the following. **12**

a) Describe security attacks with diagrams.
b) Discuss the $X.509$ Certificates
c) Explain in detail with diagram:
i) SSL Architecture
ii) SSL Record Protocol and its Operation
d) Elaborate row column transposition cipher and Caesar substitution cipher with an example each.

Q.3 Answer Any One **08**

a) Elaborate DES Algorithm? Explain its general depiction with its strengths and weakness.

OR

b) Elaborate the working of Classical Feistel Network and state the parameters and design choices that determine the actual algorithm of a Feistel cipher structure.

Q.4 Answer the following **08**

Describe RSA algorithm for keys generation. Using RSA algorithm perform encryption and decryption for $p = 3;\ q = 11, e = 7; M = 5$

Section – II

Q.5 Attempt the following (Any Three) **12**

a) Describe the five principles services provided by PGP.
b) What is cybercrime? Elaborate Trojan Horse and Backdoors.
c) Difference between Proxy server and an anonymizer.
d) State the services provides by IPSec. Give application of IP Sec.

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a) What is Firewall? State the characteristics of Firewall and its types with diagram.

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b) Section 66
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Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Assurance and Security (197046802)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is a computer on a network which acts as an intermediary for connections with other computers on that network.
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2) IP Level security encompasses three functional areas: _____, _____ and _____.
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11) In IPSec Security association, before two parties can communicate securely, they need to establish _____.

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Assurance and Security (197046802)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any three of the following. **12**

a) Describe security attacks with diagrams.
b) Discuss the $X.509$ Certificates
c) Explain in detail with diagram:
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ii) SSL Record Protocol and its Operation
d) Elaborate row column transposition cipher and Caesar substitution cipher with an example each.

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OR

b) Elaborate the working of Classical Feistel Network and state the parameters and design choices that determine the actual algorithm of a Feistel cipher structure.

Q.4 Answer the following **08**

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Section – II

Q.5 Attempt the following (Any Three) **12**

a) Describe the five principles services provided by PGP.
b) What is cybercrime? Elaborate Trojan Horse and Backdoors.
c) Difference between Proxy server and an anonymizer.
d) State the services provides by IPSec. Give application of IP Sec.

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a) What is Firewall? State the characteristics of Firewall and its types with diagram.

OR

b) Define Virus. How do viruses get disseminated? Explain with diagrams.

Q.7 Answer the following **08**

Elaborate Information Technology Act 2000.
Elaborate the following offences enumerated in IT Act 2000 explicitly specifying the ingredients and punishments applicable.

a) Section 65
b) Section 66
c) Section 43
d) Section 76

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Assurance and Security (197046802)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Figures drawn by pencil ruler only indicate full marks.
5) Do not use pen to draw and label the diagrams.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following field in digital certificate is/are optional?
1) Certificate validity period 2) Subject's common name
3) Issuer public key 4) Issuer office address

a) 1 & 2 b) 2 & 3
c) 1, 3 & 4 d) 3 & 4

2) In IPSec Security association, before two parties can communicate securely, they need to establish _____.
a) security association (SA)
b) authentication header (AH)
c) encapsulating security payload (ESEP)
d) none of above

3) The method of cracking the password by noting the key strokes of keyboard is called _____.
a) Phishing b) Spyware
c) Keylogging d) All the above

4) Which of these is not a type of malware?
a) Worm b) Horses
c) Virus d) Botnets

5) What are examples of malware spreads?
a) Social Network b) Pirated Software
c) Removable Media d) All the above

6) _____ is a computer on a network which acts as an intermediary for connections with other computers on that network.
a) Hotspot b) Proxy server
c) Host machine d) Main server machine

7) IP Level security encompasses three functional areas: _____, _____ and _____.
a) Authentication, Confidentiality and Integrity
b) Confidentiality, Integrity and Peer Authentication
c) Authentication, Confidentiality and Key Management
d) Access Control, Resource availability and Key management

8) The classes of intruders identified by Anderson are: _____.
1) Masquerader
2) Criminal
3) Misfeasor
4) Culprit
5) Clandestine User

a) 1, 3, 4, 5 b) 1, 2, 3
c) 1, 3, 5 d) All of the above

9) The advantage of Internet of Key Exchange (IKE) Phase 1 main mode IKE Phase 1 aggressive mode is _____.
a) main mode uses fewer messages
b) main mode provides greater security
c) main mode hides the identities of the communicating entities
d) main mode has a larger suite of options for key exchange right

10) A _____ is difficult to detect, because they do not allow any alteration of data.
I) Active attack II) Passive attack
III) Network attack IV) Cyber attack

a) Only I b) Only II
c) I and II both d) I, II, IV

11) _____ is the protection of data from unauthorized disclosure.
a) Message Authentication b) Data Confidentiality
c) Access Control d) Data integrity

12) Encryption protects against: _____.
a) Attacks b) Viruses
c) Manipulation of data d) All of the above

13) What is an advantage of RSA over DES?
a) It can provide digital signature and encryption functionality
b) It uses fewer resources and encrypts quicker because it uses symmetric keys
c) It is a block cipher versus a stream cipher
d) It employs a one-time encryption pad

14) _____ defines public key infrastructure.
a) RFC 2822 b) RFA 3024
c) RFC 2228 d) None of these

SLR-GF-420

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Assurance and Security (197046802)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Figures drawn by pencil ruler only indicate full marks.
4) Do not use pen to draw and label the diagrams.

Section – I

Q.2 Attempt any three of the following. **12**

a) Describe security attacks with diagrams.
b) Discuss the $X.509$ Certificates
c) Explain in detail with diagram:
i) SSL Architecture
ii) SSL Record Protocol and its Operation
d) Elaborate row column transposition cipher and Caesar substitution cipher with an example each.

Q.3 Answer Any One **08**

a) Elaborate DES Algorithm? Explain its general depiction with its strengths and weakness.

OR

b) Elaborate the working of Classical Feistel Network and state the parameters and design choices that determine the actual algorithm of a Feistel cipher structure.

Q.4 Answer the following **08**

Describe RSA algorithm for keys generation. Using RSA algorithm perform encryption and decryption for $p = 3;\ q = 11, e = 7; M = 5$

Section – II

Q.5 Attempt the following (Any Three) **12**

a) Describe the five principles services provided by PGP.
b) What is cybercrime? Elaborate Trojan Horse and Backdoors.
c) Difference between Proxy server and an anonymizer.
d) State the services provides by IPSec. Give application of IP Sec.

Q.6 Answer Any One **08**

a) What is Firewall? State the characteristics of Firewall and its types with diagram.

OR

b) Define Virus. How do viruses get disseminated? Explain with diagrams.

Q.7 Answer the following **08**

Elaborate Information Technology Act 2000.
Elaborate the following offences enumerated in IT Act 2000 explicitly specifying the ingredients and punishments applicable.

a) Section 65
b) Section 66
c) Section 43
d) Section 76

SLR-GF-422

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (197046806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve Multiple Choice Questions. **14**

1) Cloud computing is an abstraction based on the notion of pooling physical resources and presenting them as a _____ resource.
a) Real b) Virtual
c) Cloud d) All of these

2) Which of the following is the deployment model?
a) Public b) Private
c) Hybrid d) All of these

3) Find out the wrong statement.
a) Public cloud may be managed by the constituent organization(s) or by a third party
b) A community cloud may be managed by the constituent organization(s) or by a third party
c) Private clouds may be either on- or off-premises
d) None of these

4) Which of the following is the most important area of concern in cloud computing?
a) Security b) Storage
c) Scalability d) All of these

5) Which of the following architectural standards is working with cloud computing industry?
a) Service-oriented architecture b) Standardized Web services
c) Web-application frameworks d) All of these

6) Point out the wrong statement.
a) You can use proxy and brokerage services to separate clients from direct access to shared cloud storage
b) Any distributed application has a much greater attack surface than an application that is closely held on a Local Area Network
c) Cloud computing doesn't have vulnerabilities associated with Internet applications
d) All of these

7) Which of the following service provider provides the highest level of service?
a) SaaS b) PaaS
c) IaaS d) All of these

8) Find out the correct statement.
a) The Windows Azure service it The Windows Azure Platform allows a developer to modify his application so it can run in the cloud on virtual machines hosted in Microsoft data centers
b) Windows Azure serves as a cloud operating system
c) With Azure's architecture, an application can run locally, run in the cloud, or some combination of both
d) All of these

9) Which of the following element allows you to create and manage virtual machines that serve either in a Web role and a Worker role?
a) Compute b) Application
c) Storage d) None of these

10) Azure Storage plays the same role in Azure that _____ plays in Amazon Web Services.
a) S3 b) EC2
c) EC3 d) All of these

11) Cloud Front supports _____ data by performing static data transfers and streaming content from one Cloud Front location to another.
a) Table caching b) Geocaching
c) Index caching d) Windows Media Server

12) Amazon Relational Database Service is a variant of the _____ 5.1 database system.
a) Oracle b) MySQL
c) SQL Server d) All of these

13) Which of the following was formerly called SQL Server Data Service?
a) AppFabric b) SQL Azure
c) WCF d) All of these

14) Which of the following application delivery platform's main focus is on desktop installations?
a) Microsoft App-V b) Microsoft Hyper
c) Amazon EC2 d) All of these

SLR-GF-422

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (197046806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Extend the impact of cloud computing on users?
- **b)** Interpret compute, storage, networking and IAM services of AWS?
- **c)** Illustrate financial and technological implications of running an application on public cloud?
- **d)** Explain with neat comparison security management in the cloud?

Q.3 Explain in detail the Security Vulnerability, Patch, and Configuration Management? **08**

OR

Identify with example the IaaS, PaaS and SaaS availability management?

Q.4 Attempt any two. **08**
- **a)** Designing elastic, highly available, and resilient infrastructure for Microsoft Azure.
- **b)** CloudStack
- **c)** Public Cloud Vendors and offerings.

Section – II

Q.5 Attempt any three. **12**
- **a)** What is privacy? Explain with Account or Service Hijacking in cloud?
- **b)** Explain in detail the security concerns in Traditional IT?
- **c)** Illustrate the Data Loss or Leakage in cloud computing with example?
- **d)** Explain the Insecure Interfaces, APIs and Malicious Insiders for cloud privacy?

Q.6 Explain with example challenges in Cloud Computing in terms of Application Security, Server Security, and Network Security? **08**

OR

Illustrate & explain in detail why cloud is essential in terms of business perspective? Interpret establishing your cloud vision?

Q.7 Attempt any two. **08**
- **a)** Buying Cloud Services.
- **b)** Building ROI from Cloud Computing.
- **c)** When and not to migrate to Cloud.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (197046806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve Multiple Choice Questions. **14**

1) Find out the correct statement.
a) The Windows Azure service it The Windows Azure Platform allows a developer to modify his application so it can run in the cloud on virtual machines hosted in Microsoft data centers
b) Windows Azure serves as a cloud operating system
c) With Azure's architecture, an application can run locally, run in the cloud, or some combination of both
d) All of these

2) Which of the following element allows you to create and manage virtual machines that serve either in a Web role and a Worker role?
a) Compute b) Application
c) Storage d) None of these

3) Azure Storage plays the same role in Azure that _____ plays in Amazon Web Services.
a) S3 b) EC2
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4) Cloud Front supports _____ data by performing static data transfers and streaming content from one Cloud Front location to another.
a) Table caching b) Geocaching
c) Index caching d) Windows Media Server

5) Amazon Relational Database Service is a variant of the _____ 5.1 database system.
a) Oracle b) MySQL
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6) Which of the following was formerly called SQL Server Data Service?
a) AppFabric b) SQL Azure
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7) Which of the following application delivery platform's main focus is on desktop installations?

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c) Amazon EC2
d) All of these

8) Cloud computing is an abstraction based on the notion of pooling physical resources and presenting them as a _____ resource.

a) Real
b) Virtual
c) Cloud
d) All of these

9) Which of the following is the deployment model?

a) Public
b) Private
c) Hybrid
d) All of these

10) Find out the wrong statement.

a) Public cloud may be managed by the constituent organization(s) or by a third party
b) A community cloud may be managed by the constituent organization(s) or by a third party
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11) Which of the following is the most important area of concern in cloud computing?

a) Security
b) Storage
c) Scalability
d) All of these

12) Which of the following architectural standards is working with cloud computing industry?

a) Service-oriented architecture
b) Standardized Web services
c) Web-application frameworks
d) All of these

13) Point out the wrong statement.

a) You can use proxy and brokerage services to separate clients from direct access to shared cloud storage
b) Any distributed application has a much greater attack surface than an application that is closely held on a Local Area Network
c) Cloud computing doesn't have vulnerabilities associated with Internet applications
d) All of these

14) Which of the following service provider provides the highest level of service?

a) SaaS
b) PaaS
c) IaaS
d) All of these

SLR-GF-422

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (197046806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Extend the impact of cloud computing on users?
- **b)** Interpret compute, storage, networking and IAM services of AWS?
- **c)** Illustrate financial and technological implications of running an application on public cloud?
- **d)** Explain with neat comparison security management in the cloud?

Q.3 Explain in detail the Security Vulnerability, Patch, and Configuration Management? **08**

OR

Identify with example the IaaS, PaaS and SaaS availability management?

Q.4 Attempt any two. **08**
- **a)** Designing elastic, highly available, and resilient infrastructure for Microsoft Azure.
- **b)** CloudStack
- **c)** Public Cloud Vendors and offerings.

Section – II

Q.5 Attempt any three. **12**
- **a)** What is privacy? Explain with Account or Service Hijacking in cloud?
- **b)** Explain in detail the security concerns in Traditional IT?
- **c)** Illustrate the Data Loss or Leakage in cloud computing with example?
- **d)** Explain the Insecure Interfaces, APIs and Malicious Insiders for cloud privacy?

Q.6 Explain with example challenges in Cloud Computing in terms of Application Security, Server Security, and Network Security? **08**

OR

Illustrate & explain in detail why cloud is essential in terms of business perspective? Interpret establishing your cloud vision?

Q.7 Attempt any two. **08**
- **a)** Buying Cloud Services.
- **b)** Building ROI from Cloud Computing.
- **c)** When and not to migrate to Cloud.

SLR-GF-422

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (197046806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve Multiple Choice Questions. **14**

1) Cloud Front supports _____ data by performing static data transfers and streaming content from one Cloud Front location to another.
a) Table caching b) Geocaching
c) Index caching d) Windows Media Server

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7) Find out the wrong statement.
a) Public cloud may be managed by the constituent organization(s) or by a third party
b) A community cloud may be managed by the constituent organization(s) or by a third party
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a) Security
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a) Service-oriented architecture
b) Standardized Web services
c) Web-application frameworks
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10) Point out the wrong statement.

a) You can use proxy and brokerage services to separate clients from direct access to shared cloud storage
b) Any distributed application has a much greater attack surface than an application that is closely held on a Local Area Network
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11) Which of the following service provider provides the highest level of service?

a) SaaS
b) PaaS
c) IaaS
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12) Find out the correct statement.

a) The Windows Azure service it The Windows Azure Platform allows a developer to modify his application so it can run in the cloud on virtual machines hosted in Microsoft data centers
b) Windows Azure serves as a cloud operating system
c) With Azure's architecture, an application can run locally, run in the cloud, or some combination of both
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13) Which of the following element allows you to create and manage virtual machines that serve either in a Web role and a Worker role?

a) Compute
b) Application
c) Storage
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a) S3
b) EC2
c) EC3
d) All of these

SLR-GF-422

Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (197046806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt any three. **12**
- **a)** Extend the impact of cloud computing on users?
- **b)** Interpret compute, storage, networking and IAM services of AWS?
- **c)** Illustrate financial and technological implications of running an application on public cloud?
- **d)** Explain with neat comparison security management in the cloud?

Q.3 Explain in detail the Security Vulnerability, Patch, and Configuration Management? **08**

OR

Identify with example the IaaS, PaaS and SaaS availability management?

Q.4 Attempt any two. **08**
- **a)** Designing elastic, highly available, and resilient infrastructure for Microsoft Azure.
- **b)** CloudStack
- **c)** Public Cloud Vendors and offerings.

Section – II

Q.5 Attempt any three. **12**
- **a)** What is privacy? Explain with Account or Service Hijacking in cloud?
- **b)** Explain in detail the security concerns in Traditional IT?
- **c)** Illustrate the Data Loss or Leakage in cloud computing with example?
- **d)** Explain the Insecure Interfaces, APIs and Malicious Insiders for cloud privacy?

Q.6 Explain with example challenges in Cloud Computing in terms of Application Security, Server Security, and Network Security? **08**

OR

Illustrate & explain in detail why cloud is essential in terms of business perspective? Interpret establishing your cloud vision?

Q.7 Attempt any two. **08**
- **a)** Buying Cloud Services.
- **b)** Building ROI from Cloud Computing.
- **c)** When and not to migrate to Cloud.

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (197046806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve Multiple Choice Questions. **14**

1) Point out the wrong statement.
a) You can use proxy and brokerage services to separate clients from direct access to shared cloud storage
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c) Cloud computing doesn't have vulnerabilities associated with Internet applications
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2) Which of the following service provider provides the highest level of service?
a) SaaS b) PaaS
c) IaaS d) All of these

3) Find out the correct statement.
a) The Windows Azure service it The Windows Azure Platform allows a developer to modify his application so it can run in the cloud on virtual machines hosted in Microsoft data centers
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c) With Azure's architecture, an application can run locally, run in the cloud, or some combination of both
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4) Which of the following element allows you to create and manage virtual machines that serve either in a Web role and a Worker role?
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5) Azure Storage plays the same role in Azure that _____ plays in Amazon Web Services.
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a) Public b) Private
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13) Which of the following is the most important area of concern in cloud computing?

a) Security b) Storage
c) Scalability d) All of these

14) Which of the following architectural standards is working with cloud computing industry?

a) Service-oriented architecture b) Standardized Web services
c) Web-application frameworks d) All of these

SLR-GF-422

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Cloud Computing (197046806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any three. **12**
- **a)** Extend the impact of cloud computing on users?
- **b)** Interpret compute, storage, networking and IAM services of AWS?
- **c)** Illustrate financial and technological implications of running an application on public cloud?
- **d)** Explain with neat comparison security management in the cloud?

Q.3 Explain in detail the Security Vulnerability, Patch, and Configuration Management? **08**

OR

Identify with example the IaaS, PaaS and SaaS availability management?

Q.4 Attempt any two. **08**
- **a)** Designing elastic, highly available, and resilient infrastructure for Microsoft Azure.
- **b)** CloudStack
- **c)** Public Cloud Vendors and offerings.

Section – II

Q.5 Attempt any three. **12**
- **a)** What is privacy? Explain with Account or Service Hijacking in cloud?
- **b)** Explain in detail the security concerns in Traditional IT?
- **c)** Illustrate the Data Loss or Leakage in cloud computing with example?
- **d)** Explain the Insecure Interfaces, APIs and Malicious Insiders for cloud privacy?

Q.6 Explain with example challenges in Cloud Computing in terms of Application Security, Server Security, and Network Security? **08**

OR

Illustrate & explain in detail why cloud is essential in terms of business perspective? Interpret establishing your cloud vision?

Q.7 Attempt any two. **08**
- **a)** Buying Cloud Services.
- **b)** Building ROI from Cloud Computing.
- **c)** When and not to migrate to Cloud.

SLR-GF-423

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (197046807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What is the main challenge/s of NLP?
a) Handling Ambiguity of Sentences
b) Handling Tokenization
c) Handling POS-Tagging
d) All of the mentioned

2) What is Morphological Segmentation?
a) identify the class of the morphemes
b) Does Discourse Analysis
c) Is an extension of propositional logic
d) None of the mentioned Algorithms are often used in NLP

3) "Rohan Was With Her, They Both Go Together", In The Given Sentence Who Is Her Is Unclear, Specify The Type Of Ambiguity?
a) Anaphoric Ambiguity b) Semantic Ambiguity
c) Pragmatics Ambiguity d) Lexical Ambiguity

4) Which of the following technique is used to remove semantic ambiguity?
a) Word Sense Disambiguation b) Fuzzy Logic
c) Shallow Semantic Analysis d) Syntactic analysis

5) Which of these terms refer to the study of speech process?
a) Phonetics b) Phonetic substances
c) Phonology d) Semantics

6) Which of these terms refer to the study of hearing and perception of speech sounds?
a) Auditory phonetics b) Acoustic phonetics
c) Articulatory phonetics d) Laboratory phonetics

7) Which algorithm is used for solving temporal probabilistic reasoning?
a) Hill-climbing search b) Hidden Markov model
c) Depth-first search d) Breadth-first search

8) Which algorithm works by first running the standard forward pass to compute?
a) Smoothing b) Modified smoothing
c) HMM d) Depth-first search algorithm

9) _____ is the process of identifying and extracting opinions and emotions expressed in text data.
a) Text Classification b) Sentiment Analysis
c) Speech Recognition d) Text Summarization

10) Chatbots and virtual assistants use NLP to understand natural language and provide human-like responses to _____.
a) social media posts, and customer review
b) queries and requests
c) automatically identify and classify named entities
d) recognize and transcribe spoken language

11) Algorithms are often used in NLP applications to _____.
a) Predict solutions readily available
b) Automatically learn patterns and relationships in language data
c) Fix language constructs
d) Decide language sequences

12) Speech processing is a complex and highly coordinated process that involves multiple areas of the _____ working together.
a) Heart b) Brain
c) Soul d) Mind

13) Sounds produced by the lower lip and upper teeth _____.
a) Bilabial b) Labiodental
c) Alveolar d) Palatal

14) Word boundary detection is the process of identifying the _____ between words in a stream of spoken or written language.
a) mean b) boundary
c) median d) variance

SLR-GF-423

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (197046807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three: **12**
- **a)** Illustrate the Biology behind speech processing.
- **b)** How are word boundaries detected? Illustrate.
- **c)** List the different theories w.r.t word analysis.
- **d)** Illustrate Top-down parsing algorithm with an appropriate example.
- **e)** Compare between Arguments and Adjuncts.

Q.3 Attempt any Two: **08**
- **a)** Illustrate the various Parsing Algorithms.
- **b)** How is ambiguity resolved in parsing? Illustrate.
- **c)** List various training issues in Parsing. Illustrate any one.

Q.4 Attempt any One: **08**
- **a)** Illustrate the morphology paradigms. How finite state machines help?
- **b)** Give the basic characteristics of Morphological diversity in Indian languages.

Section – II

Q.5 Attempt any Three: **12**
- **a)** Give the graphical model for sequences.
- **b)** What is Machine Translation? State the tools used.
- **c)** Where are semantic relations used? Illustrate.
- **d)** What is GISA ++? Where is it used?
- **e)** What are the applications of NLP?

Q.6 Attempt any Two: **08**
- **a)** What is Phonology? What are the methods to deal with it?
- **b)** How are semantic relations dealt with in NLP? State various methods.
- **c)** Illustrate the working of Sentiment with an example.

Q.7 Attempt any One: **08**
- **a)** State Baum Welch Algorithm. How is it related to semantics?
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SLR-GF-423

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (197046807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which algorithm works by first running the standard forward pass to compute?
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9) What is Morphological Segmentation?
a) identify the class of the morphemes
b) Does Discourse Analysis
c) Is an extension of propositional logic
d) None of the mentioned Algorithms are often used in NLP

10) "Rohan Was With Her, They Both Go Together", In The Given Sentence Who Is Her Is Unclear, Specify The Type Of Ambiguity?
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11) Which of the following technique is used to remove semantic ambiguity?
a) Word Sense Disambiguation b) Fuzzy Logic
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12) Which of these terms refer to the study of speech process?
a) Phonetics b) Phonetic substances
c) Phonology d) Semantics

13) Which of these terms refer to the study of hearing and perception of speech sounds?
a) Auditory phonetics b) Acoustic phonetics
c) Articulatory phonetics d) Laboratory phonetics

14) Which algorithm is used for solving temporal probabilistic reasoning?
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SLR-GF-423

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (197046807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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- **b)** How are word boundaries detected? Illustrate.
- **c)** List the different theories w.r.t word analysis.
- **d)** Illustrate Top-down parsing algorithm with an appropriate example.
- **e)** Compare between Arguments and Adjuncts.

Q.3 Attempt any Two: **08**
- **a)** Illustrate the various Parsing Algorithms.
- **b)** How is ambiguity resolved in parsing? Illustrate.
- **c)** List various training issues in Parsing. Illustrate any one.

Q.4 Attempt any One: **08**
- **a)** Illustrate the morphology paradigms. How finite state machines help?
- **b)** Give the basic characteristics of Morphological diversity in Indian languages.

Section – II

Q.5 Attempt any Three: **12**
- **a)** Give the graphical model for sequences.
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- **d)** What is GISA ++? Where is it used?
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- **a)** What is Phonology? What are the methods to deal with it?
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Q.7 Attempt any One: **08**
- **a)** State Baum Welch Algorithm. How is it related to semantics?
- **b)** Compare between Machine analysis and Machine Translation.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (197046807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (197046807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any Three: **12**
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Section – II

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (197046807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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SLR-GF-423

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Natural Language Processing (197046807)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any Three: **12**
- **a)** Illustrate the Biology behind speech processing.
- **b)** How are word boundaries detected? Illustrate.
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- **e)** Compare between Arguments and Adjuncts.

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- **a)** Illustrate the various Parsing Algorithms.
- **b)** How is ambiguity resolved in parsing? Illustrate.
- **c)** List various training issues in Parsing. Illustrate any one.

Q.4 Attempt any One: **08**
- **a)** Illustrate the morphology paradigms. How finite state machines help?
- **b)** Give the basic characteristics of Morphological diversity in Indian languages.

Section – II

Q.5 Attempt any Three: **12**
- **a)** Give the graphical model for sequences.
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- **a)** What is Phonology? What are the methods to deal with it?
- **b)** How are semantic relations dealt with in NLP? State various methods.
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Q.7 Attempt any One: **08**
- **a)** State Baum Welch Algorithm. How is it related to semantics?
- **b)** Compare between Machine analysis and Machine Translation.

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Retrieval (197046808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternative. **14**

1) Distance between two series is found by _____.
a) $(S[i] - Q[i])^2$ b) $\left(\sum(S[i] - Q[i])\right)^2$
c) $(\sum(S[i] - Q[i])^{1/2})^2$ d) $(\sum(S[i] - Q[i])^2)^{1/2}$

2) Find five similar stocks to IBM's stock is example of _____ query.
a) Nearest neighbor b) all pairs
c) spatial join d) none of these

3) _____ evaluation allows the application to control when to do work of obtaining new results.
a) Full b) Lazy
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5) If query is 'Digital Library' and system retrieves all pages containing words 'Digital Library as entered in query. This is example of _____ retrieval.
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6) The string _____ comes in the range between 'pace' and 'pavement'.
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7) _____ predicates can be answered by using some form of metadata and database schema.
a) Attribute b) Structural
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8) In _____ algorithm Match and occurrence heuristic combined while sequential searching.
a) KMP b) BM
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9) Data blades are supported by _____.
a) ORACLE b) Illustra
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10) GEMINI approach to solve cross-talk problem in two dimensional color images is _____.
a) Distance between Histograms
b) Single Average of RGB values
c) Average color vector
d) differences of averages of RGB values

11) Words fishing, fished, and fisher are reduced to the root word fish is called _____ in logical view.
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12) Web servers that send a given query to several search engines, Web directories and other databases, collect the answers and unify them are _____.
a) Metaserchers b) Savyserch
c) Metacrawlers d) All

13) In the collection of 1000 documents, 100 index terms are defined. What will be size of each document weight vector in Boolean model?
a) 10 b) 100
c) 10000 d) can't say

14) Drawback of crawler-indexer architecture is problem in gathering data due to _____.
a) Highly dynamic data b) High load at server
c) Saturated communication links d) All of the above

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Retrieval (197046808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three: **12**

a) Explain various models of Browsing.
b) Explain precision histograms.
c) Explain context queries with example.
d) State difference between Information Retrieval and data retrieval.
e) Explain intra-cluster similarity and inter-cluster dissimilarity with example.

Q.3 Attempt any one: **08**

a) Define retrieval performance evaluation and explain how performance is evaluated? What are different measures of evaluation?
b) Calculate weight vectors for the following documents using vector model and find the result of query: **Universe Galaxy**
Doc 1: “Computers have brought the world to our fingertips. We will try to understand at a basic level the science -- old and new -- underlying this new Computational Universe. Our quest takes us on a broad sweep of scientific knowledge and related technologies... Ultimately, this study makes us look anew at ourselves-- our genome; language; music; knowledge; and, above all, the mystery of our intelligence.”
Doc 2: “An introduction to computer science in the context of scientific, engineering, and commercial applications. The goal of the course is to teach basic principles and practical issues, while at the same time preparing students to use computers effectively for applications in computer science ...”
Consider keywords: Universe, knowledge, principles, engineering, applications.

Q.4 Explain various steps of document preprocessing using neat diagram. **08**

Section – II

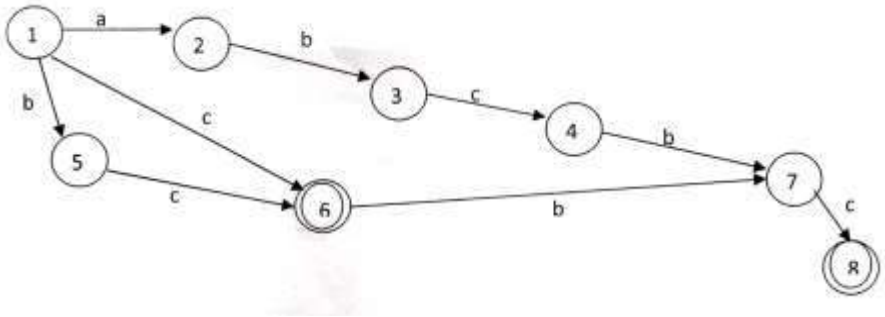
Q.5 Attempt any three: **12**

a) Construct nondeterministic finite automaton for pattern ‘course’ with at most 2 errors and find whether word ‘court’ is accepted or not.
b) Define conceptual structure of type Generic Letter and Business_product_ letter.
c) How the degree of relevance of retrieved objects is calculated in multimedia query language?
d) Explain different techniques of crawling web.

Q.6 Attempt any one: **08**

a) State the problem statement of approximate string matching. Whether following string is matched for given text and pattern if allowed errors are 2. Use dynamic approach.
Text: GARVEY Pattern: AVERY

b) For the following suffix automaton, find the occurrences of the pattern in given text. Show stepwise result.
Pattern: cbcba Text: aabacbacbcba



Q.7 What is ranking? Explain HITS and Pagerank algorithm. **08**

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Retrieval (197046808)

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Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Retrieval (197046808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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a) Define retrieval performance evaluation and explain how performance is evaluated? What are different measures of evaluation?
b) Calculate weight vectors for the following documents using vector model and find the result of query: **Universe Galaxy**
Doc 1: “Computers have brought the world to our fingertips. We will try to understand at a basic level the science -- old and new -- underlying this new Computational Universe. Our quest takes us on a broad sweep of scientific knowledge and related technologies... Ultimately, this study makes us look anew at ourselves-- our genome; language; music; knowledge; and, above all, the mystery of our intelligence.”
Doc 2: “An introduction to computer science in the context of scientific, engineering, and commercial applications. The goal of the course is to teach basic principles and practical issues, while at the same time preparing students to use computers effectively for applications in computer science ...”
Consider keywords: Universe, knowledge, principles, engineering, applications.

Q.4 Explain various steps of document preprocessing using neat diagram. **08**

Section – II

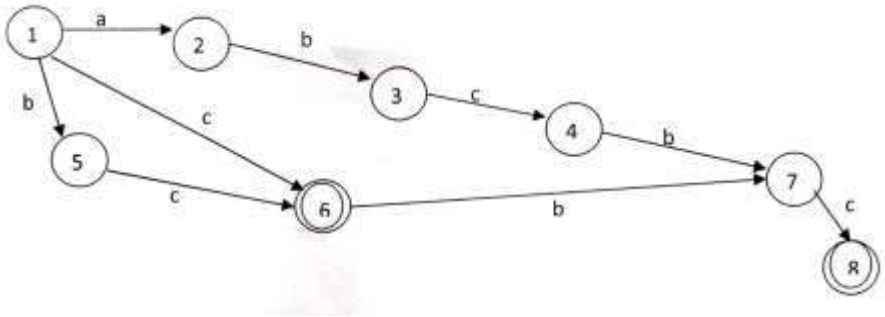
Q.5 Attempt any three: **12**

a) Construct nondeterministic finite automaton for pattern ‘course’ with at most 2 errors and find whether word ‘court’ is accepted or not.
b) Define conceptual structure of type Generic Letter and Business_product_ letter.
c) How the degree of relevance of retrieved objects is calculated in multimedia query language?
d) Explain different techniques of crawling web.

Q.6 Attempt any one: **08**

a) State the problem statement of approximate string matching. Whether following string is matched for given text and pattern if allowed errors are 2. Use dynamic approach.
Text: GARVEY Pattern: AVERY

b) For the following suffix automaton, find the occurrences of the pattern in given text. Show stepwise result.
Pattern: cbcba Text: aabacbacbcba



Q.7 What is ranking? Explain HITS and Pagerank algorithm. **08**

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Retrieval (197046808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternative. **14**

1) Words fishing, fished, and fisher are reduced to the root word fish is called _____ in logical view.
a) Removing stop-words b) creating noun groups
c) Stemming d) structure recognition

2) Web servers that send a given query to several search engines, Web directories and other databases, collect the answers and unify them are _____.
a) Metaserchers b) Savyserch
c) Metacrawlers d) All

3) In the collection of 1000 documents, 100 index terms are defined. What will be size of each document weight vector in Boolean model?
a) 10 b) 100
c) 10000 d) can't say

4) Drawback of crawler-indexer architecture is problem in gathering data due to _____.
a) Highly dynamic data b) High load at server
c) Saturated communication links d) All of the above

5) Distance between two series is found by _____.
a) $(S[i] - Q[i])^2$ b) $\left(\sum(S[i] - Q[i])\right)^2$
c) $(\sum(S[i] - Q[i])^{1/2})^2$ d) $(\sum(S[i] - Q[i])^2)^{1/2}$

6) Find five similar stocks to IBM's stock is example of _____ query.
a) Nearest neighbor b) all pairs
c) spatial join d) none of these

7) _____ evaluation allows the application to control when to do work of obtaining new results.
a) Full b) Lazy
c) both a) and b) d) none of these

8) Fraction of documents known (to the user) to be relevant which has actually been retrieved is _____.

a) Coverage b) novelty
c) Recall effort d) relative recall

9) If query is 'Digital Library' and system retrieves all pages containing words 'Digital Library as entered in query. This is example of _____ retrieval.

a) Data b) Information
c) Multimedia d) none of these

10) The string _____ comes in the range between 'pace' and 'pavement'.

a) Pattern b) Placement
c) Piece d) Paucity

11) _____ predicates can be answered by using some form of metadata and database schema.

a) Attribute b) Structural
c) Semantic d) All

12) In _____ algorithm Match and occurrence heuristic combined while sequential searching.

a) KMP b) BM
c) BDM d) Shift-Or

13) Data blades are supported by _____.

a) ORACLE b) Illustra
c) Sybase SQL d) SQL3

14) GEMINI approach to solve cross-talk problem in two dimensional color images is _____.

a) Distance between Histograms
b) Single Average of RGB values
c) Average color vector
d) differences of averages of RGB values

SLR-GF-424

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Retrieval (197046808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three: **12**

a) Explain various models of Browsing.
b) Explain precision histograms.
c) Explain context queries with example.
d) State difference between Information Retrieval and data retrieval.
e) Explain intra-cluster similarity and inter-cluster dissimilarity with example.

Q.3 Attempt any one: **08**

a) Define retrieval performance evaluation and explain how performance is evaluated? What are different measures of evaluation?
b) Calculate weight vectors for the following documents using vector model and find the result of query: **Universe Galaxy**
Doc 1: “Computers have brought the world to our fingertips. We will try to understand at a basic level the science -- old and new -- underlying this new Computational Universe. Our quest takes us on a broad sweep of scientific knowledge and related technologies... Ultimately, this study makes us look anew at ourselves-- our genome; language; music; knowledge; and, above all, the mystery of our intelligence.”
Doc 2: “An introduction to computer science in the context of scientific, engineering, and commercial applications. The goal of the course is to teach basic principles and practical issues, while at the same time preparing students to use computers effectively for applications in computer science ...”
Consider keywords: Universe, knowledge, principles, engineering, applications.

Q.4 Explain various steps of document preprocessing using neat diagram. **08**

Section – II

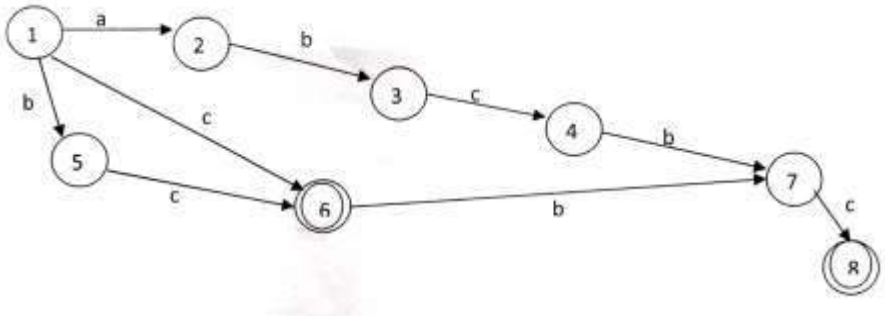
Q.5 Attempt any three: **12**

a) Construct nondeterministic finite automaton for pattern ‘course’ with at most 2 errors and find whether word ‘court’ is accepted or not.
b) Define conceptual structure of type Generic Letter and Business_product_ letter.
c) How the degree of relevance of retrieved objects is calculated in multimedia query language?
d) Explain different techniques of crawling web.

Q.6 Attempt any one: **08**

a) State the problem statement of approximate string matching. Whether following string is matched for given text and pattern if allowed errors are 2. Use dynamic approach.
Text: GARVEY Pattern: AVERY

b) For the following suffix automaton, find the occurrences of the pattern in given text. Show stepwise result.
Pattern: cbcba Text: aabacbacbcba



Q.7 What is ranking? Explain HITS and Pagerank algorithm. **08**

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Retrieval (197046808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternative. **14**

1) The string _____ comes in the range between 'pace' and 'pavement'.
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c) Piece d) Paucity

2) _____ predicates can be answered by using some form of metadata and database schema.
a) Attribute b) Structural
c) Semantic d) All

3) In _____ algorithm Match and occurrence heuristic combined while sequential searching.
a) KMP b) BM
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4) Data blades are supported by _____.
a) ORACLE b) Illustra
c) Sybase SQL d) SQL3

5) GEMINI approach to solve cross-talk problem in two dimensional color images is _____.
a) Distance between Histograms
b) Single Average of RGB values
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d) differences of averages of RGB values

6) Words fishing, fished, and fisher are reduced to the root word fish is called _____ in logical view.
a) Removing stop-words b) creating noun groups
c) Stemming d) structure recognition

7) Web servers that send a given query to several search engines, Web directories and other databases, collect the answers and unify them are _____.
a) Metaserchers b) Savyserch
c) Metacrawlers d) All

8) In the collection of 1000 documents, 100 index terms are defined. What will be size of each document weight vector in Boolean model?

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10) Distance between two series is found by _____.

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12) _____ evaluation allows the application to control when to do work of obtaining new results.

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c) both a) and b) d) none of these

13) Fraction of documents known (to the user) to be relevant which has actually been retrieved is _____.

a) Coverage b) novelty
c) Recall effort d) relative recall

14) If query is 'Digital Library' and system retrieves all pages containing words 'Digital Library as entered in query. This is example of _____ retrieval.

a) Data b) Information
c) Multimedia d) none of these

SLR-GF-424

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Information Retrieval (197046808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three: **12**

a) Explain various models of Browsing.
b) Explain precision histograms.
c) Explain context queries with example.
d) State difference between Information Retrieval and data retrieval.
e) Explain intra-cluster similarity and inter-cluster dissimilarity with example.

Q.3 Attempt any one: **08**

a) Define retrieval performance evaluation and explain how performance is evaluated? What are different measures of evaluation?
b) Calculate weight vectors for the following documents using vector model and find the result of query: **Universe Galaxy**
Doc 1: “Computers have brought the world to our fingertips. We will try to understand at a basic level the science -- old and new -- underlying this new Computational Universe. Our quest takes us on a broad sweep of scientific knowledge and related technologies... Ultimately, this study makes us look anew at ourselves-- our genome; language; music; knowledge; and, above all, the mystery of our intelligence.”
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Consider keywords: Universe, knowledge, principles, engineering, applications.

Q.4 Explain various steps of document preprocessing using neat diagram. **08**

Section – II

Q.5 Attempt any three: **12**

a) Construct nondeterministic finite automaton for pattern ‘course’ with at most 2 errors and find whether word ‘court’ is accepted or not.
b) Define conceptual structure of type Generic Letter and Business_product_ letter.
c) How the degree of relevance of retrieved objects is calculated in multimedia query language?
d) Explain different techniques of crawling web.

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a) State the problem statement of approximate string matching. Whether following string is matched for given text and pattern if allowed errors are 2. Use dynamic approach.
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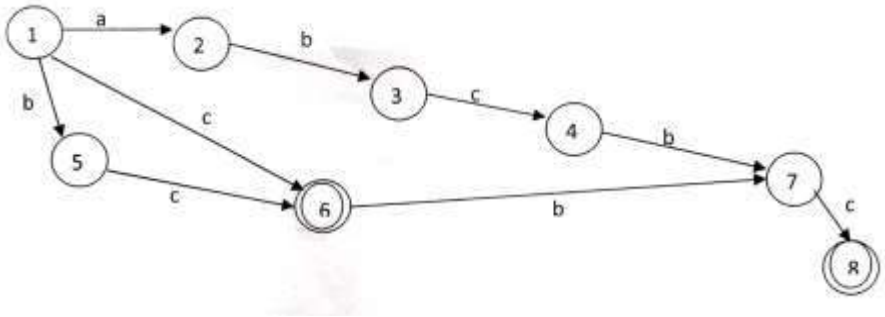


Q.7 What is ranking? Explain HITS and Pagerank algorithm. **08**

SLR-GF-425

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System – III (BTN07501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from options. **14**

1) For n bus power system size of Y bus matrix is _____.
a) $(n-1)\times(n-1)$ b) $(n-2)\times(n-2)$
c) $n\times n$ d) $(n-1)\times(n-2)$

2) The off-diagonal elements in an Y Bus are called as _____.
a) Driving point admittance b) Mutual admittance
c) Self-admittance d) All of these

3) What is the value of $(1+a+a^2)$?
a) 0 b) 1
c) -1 d) ∞

4) The unidirectional transient component of short circuit current is called _____.
a) DC offset Current b) DC onset current
c) AC offset Current d) None of the above

5) The three phase SC MVA to be interrupted by a circuit breaker in a power system is given by _____.
a) root 3*post fault line voltage in kv * SC current in KA
b) 3* Pre fault line voltage in KV* SC current in KA
c) root 3 * Pre fault line voltage in KV* SC current in KA
d) 1/root 3 * Pre fault line voltage in KV* SC current in KA

6) The positive sequence current is always equal to _____.
a) Always zero
b) 1/3 of the negative sequence current
c) Negative sequence current
d) 3 times the negative sequence current

7) A 25 MVA, 33 kv transformer has a p.u impedance of 0.9.The p.u. impedance at a new base of 50 MVA at 11 kv would be _____.
a) 16.2 b) 10.4
c) 14.4 d) 12.2

8) Advantages of gauss seidel method is/are _____.
a) calculation time for each iteration is less
b) number of iterations are less
c) applicable for large power system network
d) all of the above

9) Which bus is swing bus?
a) Slack bus b) PV bus
c) PQ bus d) load bus

10) What is the value of zero sequence impedance in line-to-line faults?
a) $Z_0 = 1$ b) $Z_0 = \infty$
c) $Z_0 = 3\,Z_n$ d) $Z_0 = 0$

11) In which fault zero sequence network is not conducted?
a) line to ground b) line to line
c) ground to neutral d) line to neutral

12) Equal area criterion is used to study _____.
a) load flow analysis b) fault analysis
c) stability analysis d) none of these

13) The most common buses in power system are _____.
a) slack bus b) generator bus
c) load bus d) a and b

14) The theoretical maximum power occurs when _____.
a) del=0 b) del=30
c) del=60 d) del=90

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System – III (BTN07501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

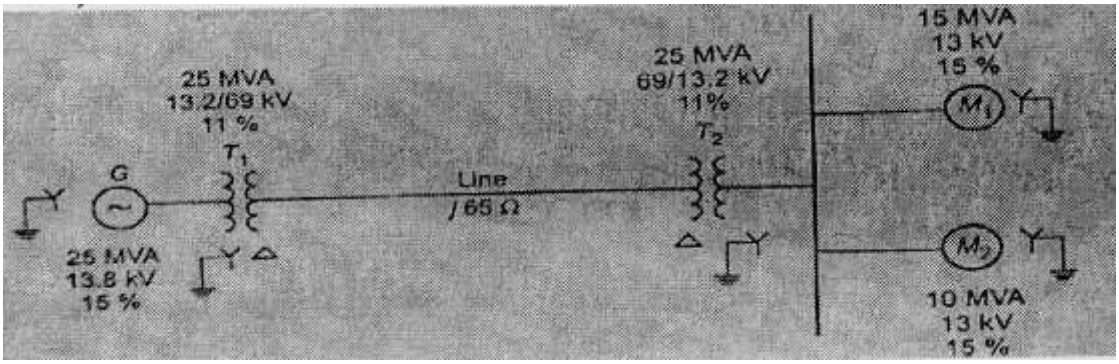
Section – I

Q.2 **Solve any four.** **16**

a) With the help of sample power system explain step by step method for formation of Y bus using singular Transformation.
b) What is per unit system (pu)? Explain the advantages of pu system.
c) With a neat sketch explain the symmetrical short circuit of a synchronous machine on no-load and constant excitation.
d) Express the representation of in pu (per unit) system in
1) Transmission model
2) Transformers
e) Write a short note on selection of circuit breaker.
f) Explain transient on transmission line.

Q.3 **Solve any two.** **12**

a) Draw the reactance diagram of the system shown in the fig. the ratings of the components are G: 25 MVA, 13.8 KV, X" = 15%, T1 = 25 MVA, 13.2 KV/69 KV, X = 11%, T2 = 25 MVA, 69 KV/13.2 KV, X = 11%, M1 = 15 MVA, 13 KV, X" = 15%, and M2 = 10 MVA, 13 KV, X" = 15%, XTL = j 65 ohm.



b) The line currents in a 3-phase supply to an unbalanced load are respectively Ia = 10 + j20, Ib = 12 - j10 and Ic = -3 - j5 amperes. The phase sequence is abc. Determine the sequence components of currents.
c) Explain how a balanced set of three phase voltages can be represented by three sets of symmetrical components.

Section – II

Q.4 **Solve any four.** **16**

a) Briefly explain the rotor and dynamics swing equation.

b) Explain with sequence network various open conductor faults on the power system.

c) Determine the fault currents in each phase following a double line-to ground short circuit at the terminals of a star-connected synchronous generator operating initially on an open circuit voltage of 1 pu. The positive, negative and zero sequence reactance of the generator are, respectively, j0.35, j0.25 and j0.20, and its star point is isolated from ground.

d) Discuss the various types of buses used in the load flow studies.

e) State and derive equal area criterion of stability.

f) Derive the power flow equations in rectangular form for the load flow analysis.

Q.5 **Solve any two.** **12**

a) Derive an expression for double line to ground fault (LLG) on an unloaded generator through a fault impedance.

b) Derive expressions for load flow analysis by Gauss-Siedal method.

c) A generator rated 11 kV, 20 MVA has reactances of X1 = 15%, X2 = 10% and X0 = 20%. Find the reactances in ohms that are required to limit the fault current to 2 p.u. when a line to ground fault occurs. Repeat the analysis for a LLG fault also for a fault current of 2 pu.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System – III (BTN07501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from options. **14**

1) Advantages of gauss seidel method is/are _____.
a) calculation time for each iteration is less
b) number of iterations are less
c) applicable for large power system network
d) all of the above

2) Which bus is swing bus?
a) Slack bus b) PV bus
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3) What is the value of zero sequence impedance in line-to-line faults?
a) $Z_0 = 1$ b) $Z_0 = \infty$
c) $Z_0 = 3\,Z_n$ d) $Z_0 = 0$

4) In which fault zero sequence network is not conducted?
a) line to ground b) line to line
c) ground to neutral d) line to neutral

5) Equal area criterion is used to study _____.
a) load flow analysis b) fault analysis
c) stability analysis d) none of these

6) The most common buses in power system are _____.
a) slack bus b) generator bus
c) load bus d) a and b

7) The theoretical maximum power occurs when _____.
a) del=0 b) del=30
c) del=60 d) del=90

8) For n bus power system size of Y bus matrix is _____.
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13) The positive sequence current is always equal to _____.
a) Always zero
b) 1/3 of the negative sequence current
c) Negative sequence current
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14) A 25 MVA, 33 kv transformer has a p.u impedance of 0.9.The p.u. impedance at a new base of 50 MVA at 11 kv would be _____.
a) 16.2 b) 10.4
c) 14.4 d) 12.2

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System – III (BTN07501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 **Solve any four.** **16**

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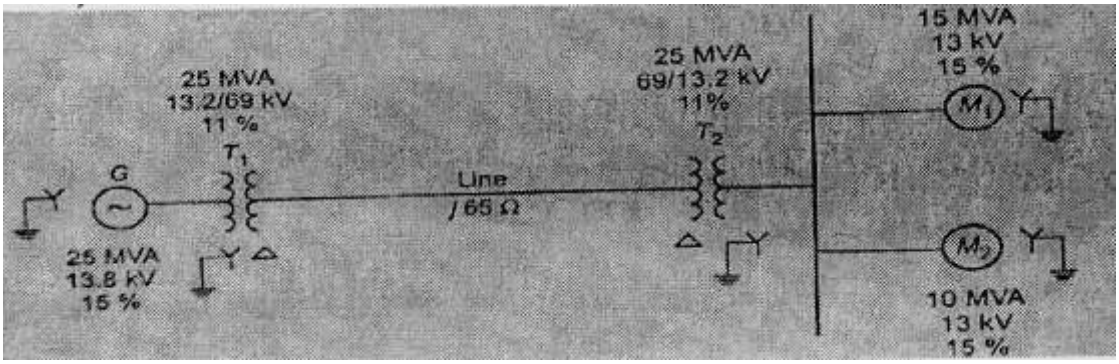
b) What is per unit system (pu)? Explain the advantages of pu system.
c) With a neat sketch explain the symmetrical short circuit of a synchronous machine on no-load and constant excitation.
d) Express the representation of in pu (per unit) system in
1) Transmission model
2) Transformers
e) Write a short note on selection of circuit breaker.
f) Explain transient on transmission line.

Q.3 **Solve any two.** **12**

a) Draw the reactance diagram of the system shown in the fig. the ratings of the components are G: 25 MVA, 13.8 KV, X" = 15%, T1 = 25 MVA, 13.2 KV/69 KV, X = 11%, T2 = 25 MVA, 69 KV/13.2 KV, X = 11%, M1 = 15 MVA, 13 KV, X" = 15%, and M2 = 10 MVA, 13 KV, X" = 15%, XTL = j 65 ohm.



b) The line currents in a 3-phase supply to an unbalanced load are respectively Ia = 10 + j20, Ib = 12 - j10 and Ic = -3 - j5 amperes. The phase sequence is abc. Determine the sequence components of currents.
c) Explain how a balanced set of three phase voltages can be represented by three sets of symmetrical components.

Section – II

Q.4 **Solve any four.** **16**

a) Briefly explain the rotor and dynamics swing equation.

b) Explain with sequence network various open conductor faults on the power system.

c) Determine the fault currents in each phase following a double line-to ground short circuit at the terminals of a star-connected synchronous generator operating initially on an open circuit voltage of 1 pu. The positive, negative and zero sequence reactance of the generator are, respectively, j0.35, j0.25 and j0.20, and its star point is isolated from ground.

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f) Derive the power flow equations in rectangular form for the load flow analysis.

Q.5 **Solve any two.** **12**

a) Derive an expression for double line to ground fault (LLG) on an unloaded generator through a fault impedance.

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c) A generator rated 11 kV, 20 MVA has reactances of X1 = 15%, X2 = 10% and X0 = 20%. Find the reactances in ohms that are required to limit the fault current to 2 p.u. when a line to ground fault occurs. Repeat the analysis for a LLG fault also for a fault current of 2 pu.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System – III (BTN07501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from options. **14**

1) In which fault zero sequence network is not conducted?
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2) Equal area criterion is used to study _____.
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a) del=0 b) del=30
c) del=60 d) del=90

5) For n bus power system size of Y bus matrix is _____.
a) $(n-1)\times(n-1)$ b) $(n-2)\times(n-2)$
c) $n\times n$ d) $(n-1)\times(n-2)$

6) The off-diagonal elements in an Y Bus are called as _____.
a) Driving point admittance b) Mutual admittance
c) Self-admittance d) All of these

7) What is the value of $(1+a+a^2)$?
a) 0 b) 1
c) -1 d) ∞

8) The unidirectional transient component of short circuit current is called _____.
a) DC offset Current b) DC onset current
c) AC offset Current d) None of the above

9) The three phase SC MVA to be interrupted by a circuit breaker in a power system is given by _____.
a) root 3*post fault line voltage in kv * SC current in KA
b) 3* Pre fault line voltage in KV* SC current in KA
c) root 3 * Pre fault line voltage in KV* SC current in KA
d) 1/root 3 * Pre fault line voltage in KV* SC current in KA

10) The positive sequence current is always equal to _____.
a) Always zero
b) 1/3 of the negative sequence current
c) Negative sequence current
d) 3 times the negative sequence current

11) A 25 MVA, 33 kv transformer has a p.u impedance of 0.9.The p.u. impedance at a new base of 50 MVA at 11 kv would be _____.
a) 16.2 b) 10.4
c) 14.4 d) 12.2

12) Advantages of gauss seidel method is/are _____.
a) calculation time for each iteration is less
b) number of iterations are less
c) applicable for large power system network
d) all of the above

13) Which bus is swing bus?
a) Slack bus b) PV bus
c) PQ bus d) load bus

14) What is the value of zero sequence impedance in line-to-line faults?
a) $Z_0 = 1$ b) $Z_0 = \infty$
c) $Z_0 = 3\,Z_n$ d) $Z_0 = 0$

SLR-GF-425

Seat No.	

Set R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System – III (BTN07501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

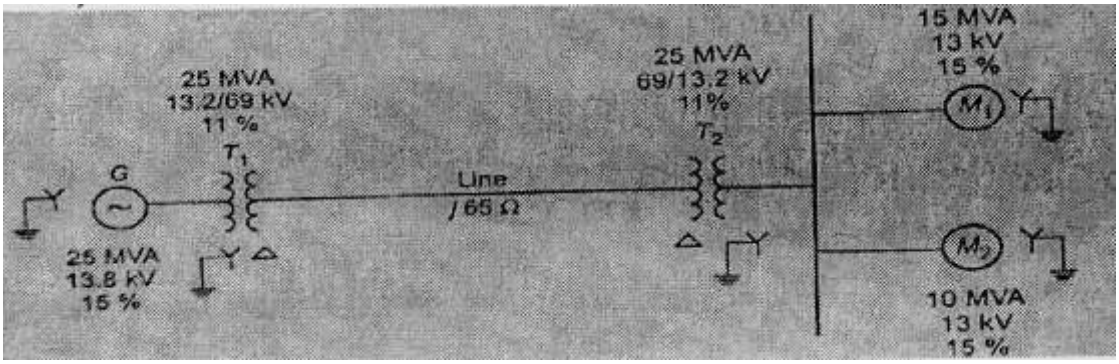
Section – I

Q.2 Solve any four. **16**

a) With the help of sample power system explain step by step method for formation of Y bus using singular Transformation.
b) What is per unit system (pu)? Explain the advantages of pu system.
c) With a neat sketch explain the symmetrical short circuit of a synchronous machine on no-load and constant excitation.
d) Express the representation of in pu (per unit) system in
1) Transmission model
2) Transformers
e) Write a short note on selection of circuit breaker.
f) Explain transient on transmission line.

Q.3 Solve any two. **12**

a) Draw the reactance diagram of the system shown in the fig. the ratings of the components are G: 25 MVA, 13.8 KV, X" = 15%, T1 = 25 MVA, 13.2 KV/69 KV, X = 11%, T2 = 25 MVA, 69 KV/13.2 KV, X = 11%, M1 = 15 MVA, 13 KV, X" = 15%, and M2 = 10 MVA, 13 KV, X" = 15%, XTL = j 65 ohm.



b) The line currents in a 3-phase supply to an unbalanced load are respectively Ia = 10 + j20, Ib = 12 - j10 and Ic = -3 - j5 amperes. The phase sequence is abc. Determine the sequence components of currents.
c) Explain how a balanced set of three phase voltages can be represented by three sets of symmetrical components.

Section – II

Q.4 Solve any four. **16**

a) Briefly explain the rotor and dynamics swing equation.

b) Explain with sequence network various open conductor faults on the power system.

c) Determine the fault currents in each phase following a double line-to ground short circuit at the terminals of a star-connected synchronous generator operating initially on an open circuit voltage of 1 pu. The positive, negative and zero sequence reactance of the generator are, respectively, j0.35, j0.25 and j0.20, and its star point is isolated from ground.

d) Discuss the various types of buses used in the load flow studies.

e) State and derive equal area criterion of stability.

f) Derive the power flow equations in rectangular form for the load flow analysis.

Q.5 Solve any two. **12**

a) Derive an expression for double line to ground fault (LLG) on an unloaded generator through a fault impedance.

b) Derive expressions for load flow analysis by Gauss-Siedal method.

c) A generator rated 11 kV, 20 MVA has reactances of X1 = 15%, X2 = 10% and X0 = 20%. Find the reactances in ohms that are required to limit the fault current to 2 p.u. when a line to ground fault occurs. Repeat the analysis for a LLG fault also for a fault current of 2 pu.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System – III (BTN07501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from options. **14**

1) The positive sequence current is always equal to _____.
a) Always zero
b) 1/3 of the negative sequence current
c) Negative sequence current
d) 3 times the negative sequence current

2) A 25 MVA, 33 kv transformer has a p.u impedance of 0.9.The p.u. impedance at a new base of 50 MVA at 11 kv would be _____.
a) 16.2 b) 10.4
c) 14.4 d) 12.2

3) Advantages of gauss seidel method is/are _____.
a) calculation time for each iteration is less
b) number of iterations are less
c) applicable for large power system network
d) all of the above

4) Which bus is swing bus?
a) Slack bus b) PV bus
c) PQ bus d) load bus

5) What is the value of zero sequence impedance in line-to-line faults?
a) $Z_0 = 1$ b) $Z_0 = \infty$
c) $Z_0 = 3\,Z_n$ d) $Z_0 = 0$

6) In which fault zero sequence network is not conducted?
a) line to ground b) line to line
c) ground to neutral d) line to neutral

7) Equal area criterion is used to study _____.
a) load flow analysis b) fault analysis
c) stability analysis d) none of these

8) The most common buses in power system are _____.
a) slack bus b) generator bus
c) load bus d) a and b

9) The theoretical maximum power occurs when _____.
a) del=0 b) del=30
c) del=60 d) del=90

10) For n bus power system size of Y bus matrix is _____.
a) $(n-1)\times(n-1)$ b) $(n-2)\times(n-2)$
c) $n\times n$ d) $(n-1)\times(n-2)$

11) The off-diagonal elements in an Y Bus are called as _____.
a) Driving point admittance b) Mutual admittance
c) Self-admittance d) All of these

12) What is the value of $(1+a+a^2)$?
a) 0 b) 1
c) -1 d) ∞

13) The unidirectional transient component of short circuit current is called _____.
a) DC offset Current b) DC onset current
c) AC offset Current d) None of the above

14) The three phase SC MVA to be interrupted by a circuit breaker in a power system is given by _____.
a) root 3*post fault line voltage in kv * SC current in KA
b) 3* Pre fault line voltage in KV* SC current in KA
c) root 3 * Pre fault line voltage in KV* SC current in KA
d) 1/root 3 * Pre fault line voltage in KV* SC current in KA

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System – III (BTN07501)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

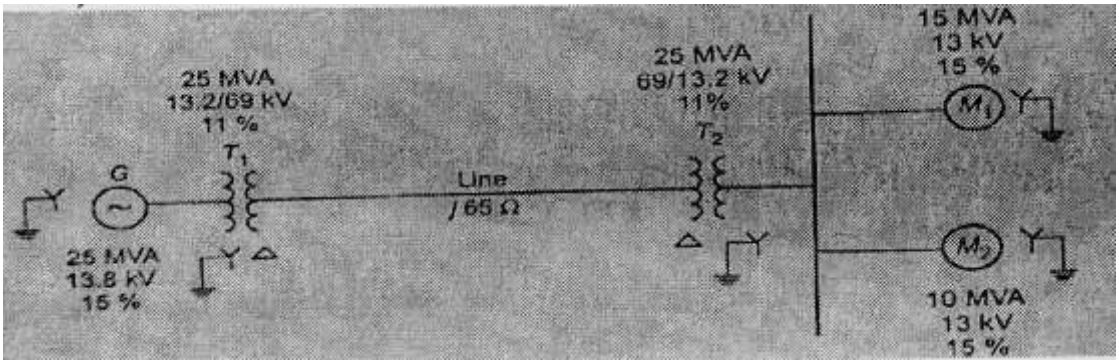
Section – I

Q.2 **Solve any four.** **16**

a) With the help of sample power system explain step by step method for formation of Y bus using singular Transformation.
b) What is per unit system (pu)? Explain the advantages of pu system.
c) With a neat sketch explain the symmetrical short circuit of a synchronous machine on no-load and constant excitation.
d) Express the representation of in pu (per unit) system in
1) Transmission model
2) Transformers
e) Write a short note on selection of circuit breaker.
f) Explain transient on transmission line.

Q.3 **Solve any two.** **12**

a) Draw the reactance diagram of the system shown in the fig. the ratings of the components are G: 25 MVA, 13.8 KV, X" = 15%, T1 = 25 MVA, 13.2 KV/69 KV, X = 11%, T2 = 25 MVA, 69 KV/13.2 KV, X = 11%, M1 = 15 MVA, 13 KV, X" = 15%, and M2 = 10 MVA, 13 KV, X" = 15%, XTL = j 65 ohm.



b) The line currents in a 3-phase supply to an unbalanced load are respectively Ia = 10 + j20, Ib = 12 - j10 and Ic = -3 - j5 amperes. The phase sequence is abc. Determine the sequence components of currents.
c) Explain how a balanced set of three phase voltages can be represented by three sets of symmetrical components.

Section – II

Q.4 **Solve any four.** **16**

a) Briefly explain the rotor and dynamics swing equation.

b) Explain with sequence network various open conductor faults on the power system.

c) Determine the fault currents in each phase following a double line-to ground short circuit at the terminals of a star-connected synchronous generator operating initially on an open circuit voltage of 1 pu. The positive, negative and zero sequence reactance of the generator are, respectively, j0.35, j0.25 and j0.20, and its star point is isolated from ground.

d) Discuss the various types of buses used in the load flow studies.

e) State and derive equal area criterion of stability.

f) Derive the power flow equations in rectangular form for the load flow analysis.

Q.5 **Solve any two.** **12**

a) Derive an expression for double line to ground fault (LLG) on an unloaded generator through a fault impedance.

b) Derive expressions for load flow analysis by Gauss-Siedal method.

c) A generator rated 11 kV, 20 MVA has reactances of X1 = 15%, X2 = 10% and X0 = 20%. Find the reactances in ohms that are required to limit the fault current to 2 p.u. when a line to ground fault occurs. Repeat the analysis for a LLG fault also for a fault current of 2 pu.

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Linear Control System (BTN07502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks
4) Assume suitable data if necessary.

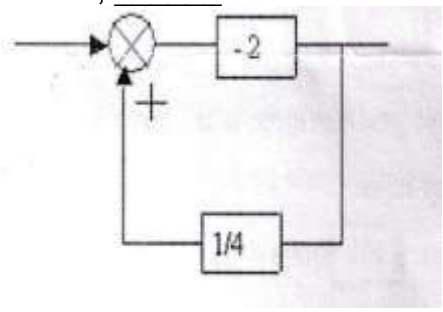
MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following statements is not necessarily correct for the open loop control system?
a) Less expensive
b) Generally free from problems of non-linearities
c) Input command is the sole factor responsible for providing the control action
d) The presence of non-linearities causes malfunctioning

2) The gain of the given system is, _____.



a) -8/3 b) 8/3
c) -4/3 d) 2/3

3) Under the force-voltage analogy, the reciprocal of capacitance is analogous to _____.
a) Spring stiffness
b) Coefficient of friction
c) Rate of change of velocity
d) Rate of change of displacement

4) AC servomotor is basically a _____.
a) single phase induction motor b) universal motor
c) two-phase induction motor d) three phase induction motor

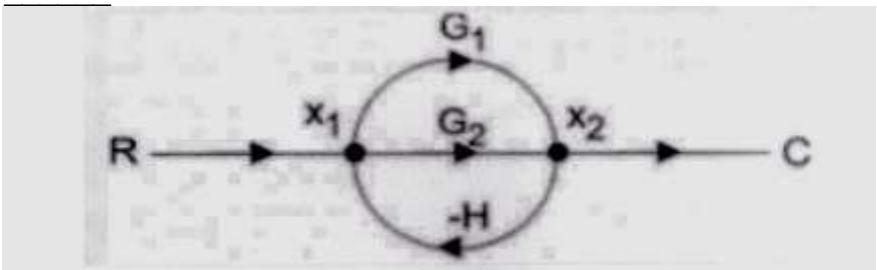
5) Consider the assertions related to the block diagram. Which among them represents the precise condition?

A) Block diagram is used for analysis & design of the control system.

B) Block diagram also provides information regarding the physical construction of the system.

a) A is true, B is false
b) A is false, B is true
c) Both A & B are true
d) Both A & B are false

6) Use mason's gain formula to calculate the transfer function of the given figure: _____.



a) $G_1 + G_2$
b) $\frac{G_1 + G_2}{1 + G_1H + G_2H}$
c) $\frac{G_1 + G_2}{1 - G_1H + G_2H}$
d) $\frac{G_1 + G_2}{1 - G_1H - G_2H}$

7) The output signal is fed back at the input side from the _____ point.

a) Summing
b) Differential
c) Take-off
d) All of the above

8) Integral error compensation in a control system _____.

a) minimizes steady state
b) increases steady-state error
c) does not have any effect on steady state error
d) none

9) A type I system under steady state will have position error when there is _____.

a) Step displacement input
b) ramp input
c) either of (a) or (b)above
d) None of the above

10) If overshoot is excessive, then the damping ratio is _____.

a) Equal to 0.4
b) Less than 0.4
c) More than 0.4
d) Infinity

11) The system with characteristics equation $s^4 + 3s^3 + 6s^2 + 9s + 12 = 0$

a) stable
b) unstable
c) marginally stable
d) none of the above

12) Routh Hurwitz criterion gives _____.

a) roots in right half of s-plane
b) roots in the left half of s-plane
c) roots in right half of s-plane and/ or roots on imaginary axes
d) roots in the left half of the s-plane and/or roots on the imaginary axis

13) In a root locus plot, the increase in K will _____.

a) Increase damping ratio
b) Decrease damping ratio
c) Not change damping ratio
d) None of these

14) The octave frequency range is specified by _____.

a) $\frac{w_2}{w_1} = 1$

b) $\frac{w_2}{w_1} = 2$

c) $\frac{w_2}{w_1} = 6$

d) $\frac{w_2}{w_1} = 8$

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Linear Control System (BTN07502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Draw neat diagrams wherever necessary.

Section – I

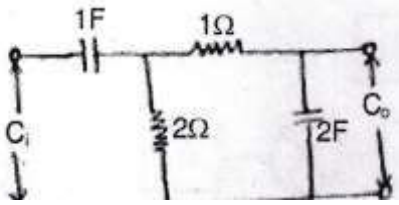
Q.2 Attempt any four of the following: **16**

a) Derive the transfer function of the closed-loop system.

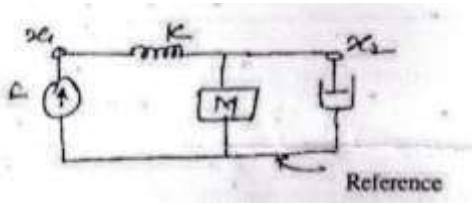
b) Explain any four rules of block diagram reduction techniques.

c) Derive and explain the effect of feedback on system parameter variation in control systems.

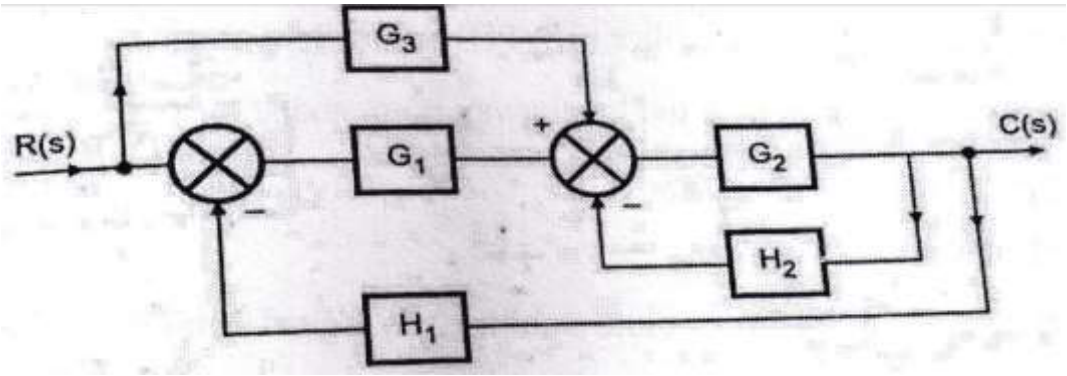
d) Determine the transfer function for the electric network given below.



e) Derive the transfer function of the system shown below if x2 is the output and f(t) is the input.



f) Find C/R for the system shown below using the block diagram reduction technique.

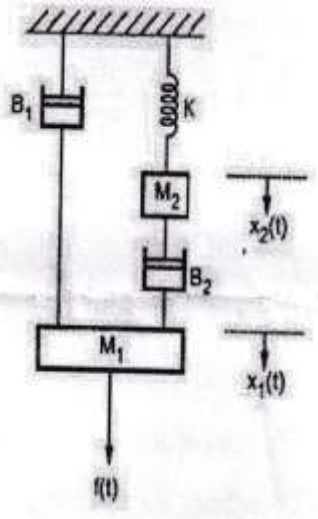


Q.3 Attempt any two of the following: **12**

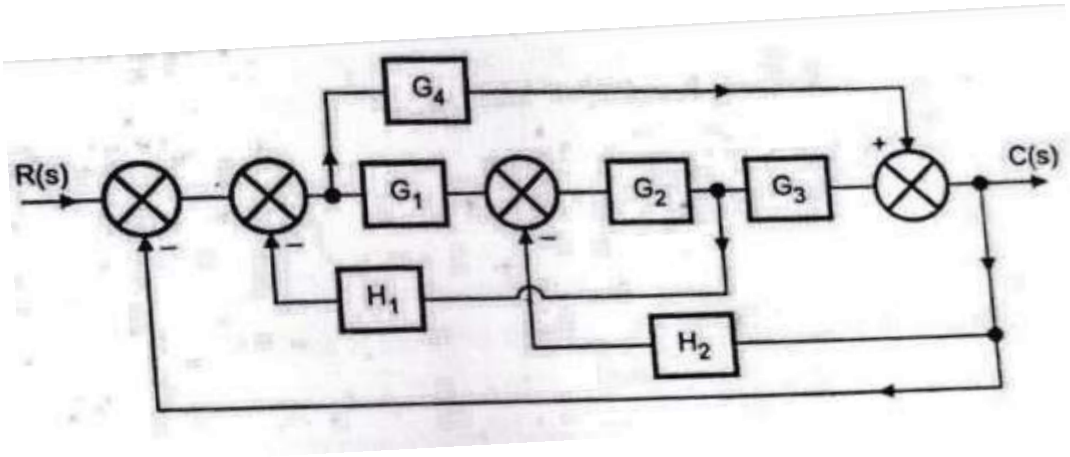
a) Derive the transfer function of AC servomotors.

b) Draw the equivalent mechanical system of the given system. Hence write the set of equilibrium equations for it and obtain an electrical analogous circuit using the

1) F-V and
2) F-I analogy



c) Convert the block diagram to the signal flow graph and determine the closed-loop transfer function by Mason's gain formula.



Section – II

Q.4 Attempt any four of the following: **16**

a) Explain the time domain specification with a neat diagram.

b) With the help of neat sketches and mathematical expressions explain:
1) PI controller
2) PD controller
3) PID controller

c) Explain with an example how the breakaway point and angle of departure are calculated while constructing the root locus.

d) Explain the following terms.
1) Conditional stability
2) Absolute stability
3) Marginal stability
4) Relative stability

e) Derive an expression for bandwidth of a second-order system in terms of damping factor.

f) The characteristic equation of a feedback control system is
$s^4 + 4s^3 + 13s^2 + 36s + k = 0$,
determine the range of k for the system to be stable.

Q.5 Attempt any two of the following. **12**

a) For a unity feedback control system, the open loop transfer function

$$G(s) = \frac{10(s+1)}{s^2(s+2)(s+10)}$$

Determine:
1) type of system
2) all error constants
3) Steady state error for input as $1 + 4t + t^2/2$

b) What are the difficulties arising while solving by Routh's criterion? Explain all cases with examples to solve the difficulties in detail.

c) Construct the BODE plot for the system below whose open loop transfer function is

$$G(s)H(s) = \frac{80}{s(s+2)(s+20)}$$

Determine the:
1) Gain margin
2) Phase margin
3) wgc & wpc
4) Comment on the stability

SLR-GF-426

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Linear Control System (BTN07502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Integral error compensation in a control system _____.
a) minimizes steady state
b) increases steady-state error
c) does not have any effect on steady state error
d) none

2) A type I system under steady state will have position error when there is _____.
a) Step displacement input b) ramp input
c) either of (a) or (b)above d) None of the above

3) If overshoot is excessive, then the damping ratio is _____.
a) Equal to 0.4 b) Less than 0.4
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4) The system with characteristics equation $s^4 + 3s^3 + 6s^2 + 9s + 12 = 0$
a) stable b) unstable
c) marginally stable d) none of the above

5) Routh Hurwitz criterion gives _____.
a) roots in right half of s-plane
b) roots in the left half of s-plane
c) roots in right half of s-plane and/ or roots on imaginary axes
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6) In a root locus plot, the increase in K will _____.
a) Increase damping ratio b) Decrease damping ratio
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7) The octave frequency range is specified by _____.
a) $\frac{w_2}{w_1} = 1$ b) $\frac{w_2}{w_1} = 2$
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8) Which of the following statements is not necessarily correct for the open loop control system?

a) Less expensive
b) Generally free from problems of non-linearities
c) Input command is the sole factor responsible for providing the control action
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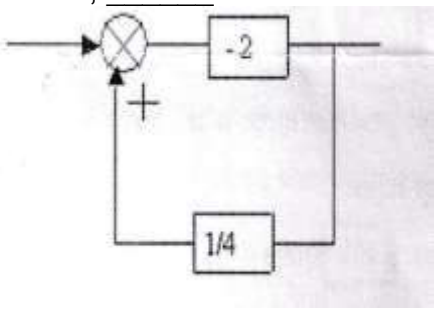
9) The gain of the given system is, _____.



a) -8/3 b) 8/3
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11) AC servomotor is basically a _____.

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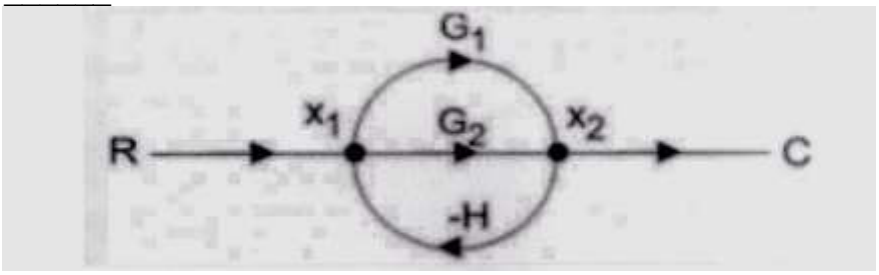
12) Consider the assertions related to the block diagram. Which among them represents the precise condition?

A) Block diagram is used for analysis & design of the control system.
B) Block diagram also provides information regarding the physical construction of the system.

a) A is true, B is false b) A is false, B is true
c) Both A & B are true d) Both A & B are false

13) Use mason's gain formula to calculate the transfer function of the given figure: _____.



a) $G_1 + G_2$ b) $\dfrac{G_1 + G_2}{1 + G_1H + G_2H}$

c) $\dfrac{G_1 + G_2}{1 - G_1H + G_2H}$ d) $\dfrac{G_1 + G_2}{1 - G_1H - G_2H}$

14) The output signal is fed back at the input side from the _____ point.

a) Summing
b) Differential
c) Take-off
d) All of the above

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Linear Control System (BTN07502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt any four of the following: **16**

a) Derive the transfer function of the closed-loop system.

b) Explain any four rules of block diagram reduction techniques.

c) Derive and explain the effect of feedback on system parameter variation in control systems.

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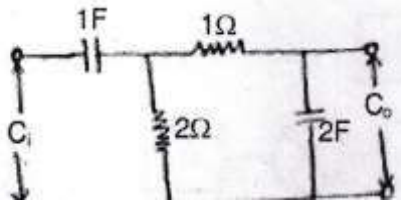
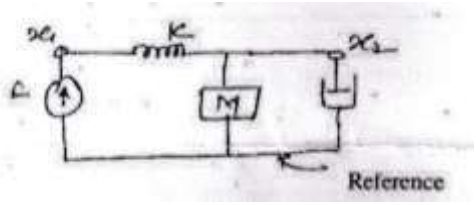
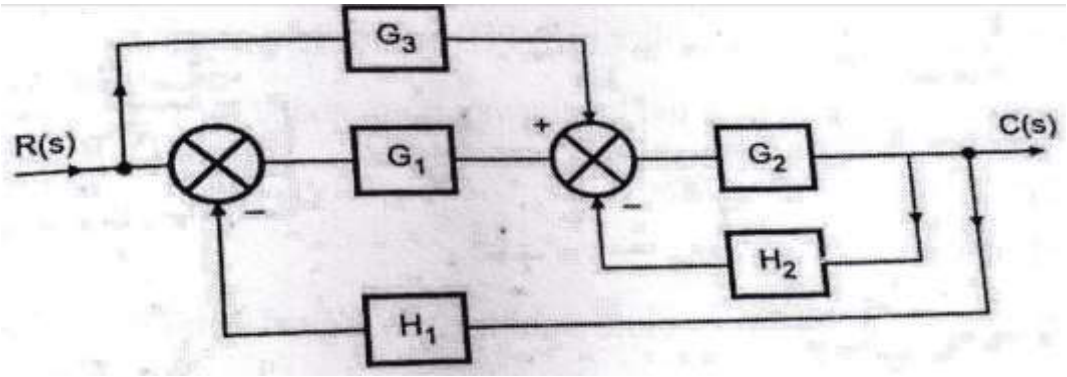


e) Derive the transfer function of the system shown below if x2 is the output and f(t) is the input.



f) Find C/R for the system shown below using the block diagram reduction technique.

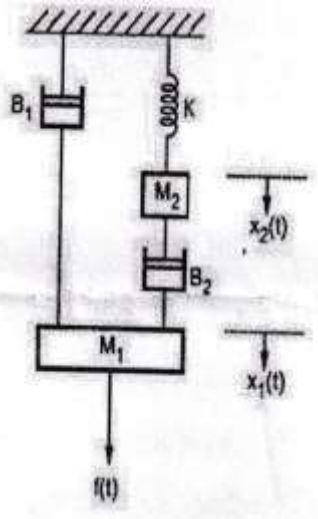


Q.3 Attempt any two of the following: **12**

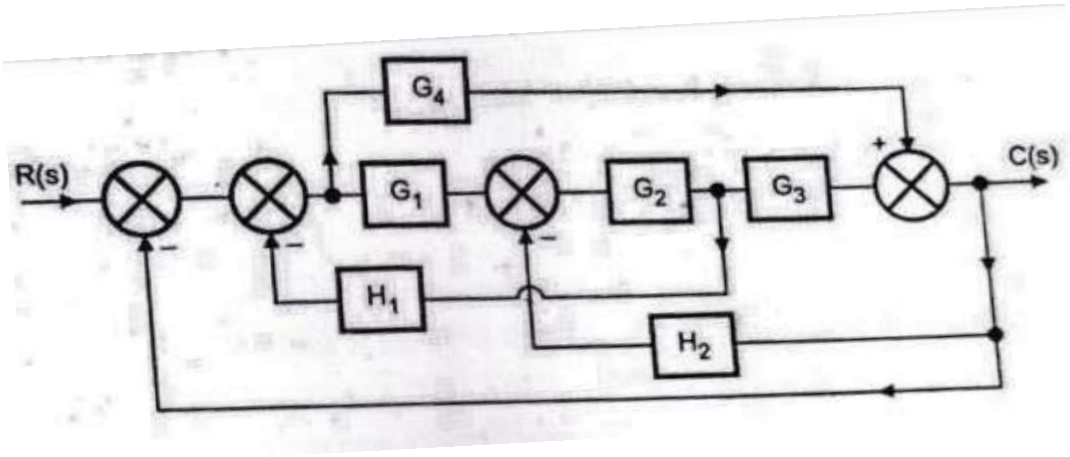
a) Derive the transfer function of AC servomotors.

b) Draw the equivalent mechanical system of the given system. Hence write the set of equilibrium equations for it and obtain an electrical analogous circuit using the

1) F-V and
2) F-I analogy



c) Convert the block diagram to the signal flow graph and determine the closed-loop transfer function by Mason's gain formula.



Section – II

Q.4 Attempt any four of the following: **16**

a) Explain the time domain specification with a neat diagram.

b) With the help of neat sketches and mathematical expressions explain:
1) PI controller
2) PD controller
3) PID controller

c) Explain with an example how the breakaway point and angle of departure are calculated while constructing the root locus.

d) Explain the following terms.
1) Conditional stability
2) Absolute stability
3) Marginal stability
4) Relative stability

e) Derive an expression for bandwidth of a second-order system in terms of damping factor.

f) The characteristic equation of a feedback control system is $s^4 + 4s^3 + 13s^2 + 36s + k = 0$,
determine the range of k for the system to be stable.

Q.5 Attempt any two of the following. **12**

a) For a unity feedback control system, the open loop transfer function

$$G(s) = \frac{10(s+1)}{s^2(s+2)(s+10)}$$

Determine:
1) type of system
2) all error constants
3) Steady state error for input as $1 + 4t + t^2/2$

b) What are the difficulties arising while solving by Routh's criterion? Explain all cases with examples to solve the difficulties in detail.

c) Construct the BODE plot for the system below whose open loop transfer function is

$$G(s)H(s) = \frac{80}{s(s+2)(s+20)}$$

Determine the:
1) Gain margin
2) Phase margin
3) wgc & wpc
4) Comment on the stability

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Linear Control System (BTN07502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The system with characteristics equation $s^4 + 3s^3 + 6s^2 + 9s + 12 = 0$
a) stable b) unstable
c) marginally stable d) none of the above

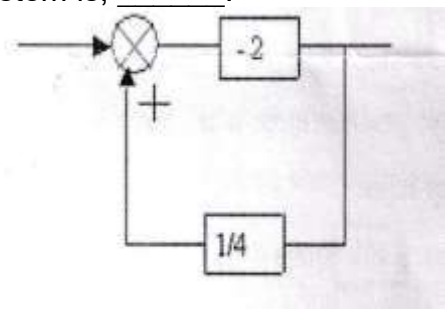
2) Routh Hurwitz criterion gives _____.
a) roots in right half of s-plane
b) roots in the left half of s-plane
c) roots in right half of s-plane and/ or roots on imaginary axes
d) roots in the left half of the s-plane and/or roots on the imaginary axis

3) In a root locus plot, the increase in K will _____.
a) Increase damping ratio b) Decrease damping ratio
c) Not change damping ratio d) None of these

4) The octave frequency range is specified by _____.
a) $\frac{w_2}{w_1} = 1$ b) $\frac{w_2}{w_1} = 2$
c) $\frac{w_2}{w_1} = 6$ d) $\frac{w_2}{w_1} = 8$

5) Which of the following statements is not necessarily correct for the open loop control system?
a) Less expensive
b) Generally free from problems of non-linearities
c) Input command is the sole factor responsible for providing the control action
d) The presence of non-linearities causes malfunctioning

6) The gain of the given system is, _____.



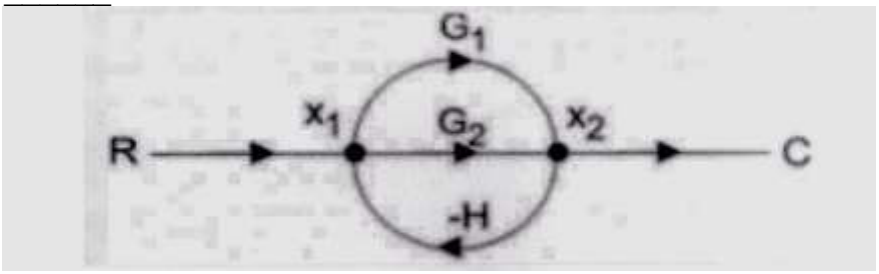
a) -8/3 b) 8/3
c) -4/3 d) 2/3

7) Under the force-voltage analogy, the reciprocal of capacitance is analogous to _____.
a) Spring stiffness
b) Coefficient of friction
c) Rate of change of velocity
d) Rate of change of displacement

8) AC servomotor is basically a _____.
a) single phase induction motor b) universal motor
c) two-phase induction motor d) three phase induction motor

9) Consider the assertions related to the block diagram. Which among them represents the precise condition?
A) Block diagram is used for analysis & design of the control system.
B) Block diagram also provides information regarding the physical construction of the system.
a) A is true, B is false b) A is false, B is true
c) Both A & B are true d) Both A & B are false

10) Use mason's gain formula to calculate the transfer function of the given figure: _____.



a) $G_1 + G_2$ b) $\dfrac{G_1 + G_2}{1 + G_1H + G_2H}$
c) $\dfrac{G_1 + G_2}{1 - G_1H + G_2H}$ d) $\dfrac{G_1 + G_2}{1 - G_1H - G_2H}$

11) The output signal is fed back at the input side from the _____ point.
a) Summing b) Differential
c) Take-off d) All of the above

12) Integral error compensation in a control system _____.
a) minimizes steady state
b) increases steady-state error
c) does not have any effect on steady state error
d) none

13) A type I system under steady state will have position error when there is _____.

a) Step displacement input b) ramp input

c) either of (a) or (b)above d) None of the above

14) If overshoot is excessive, then the damping ratio is _____.

a) Equal to 0.4 b) Less than 0.4

c) More than 0.4 d) Infinity

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Linear Control System (BTN07502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Draw neat diagrams wherever necessary.

Section – I

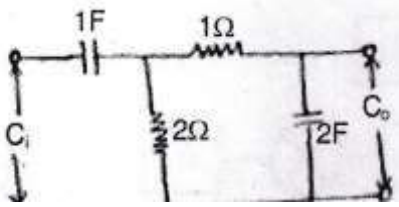
Q.2 Attempt any four of the following: **16**

a) Derive the transfer function of the closed-loop system.

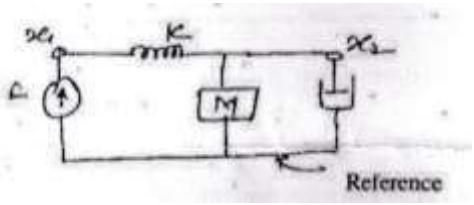
b) Explain any four rules of block diagram reduction techniques.

c) Derive and explain the effect of feedback on system parameter variation in control systems.

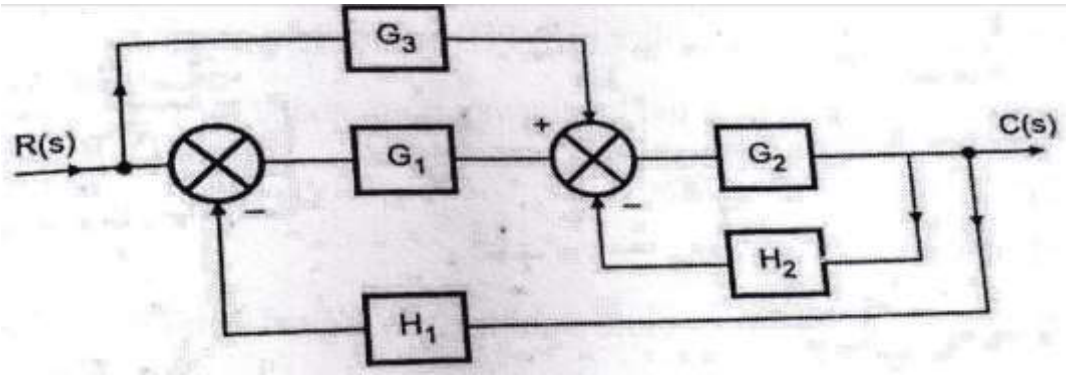
d) Determine the transfer function for the electric network given below.



e) Derive the transfer function of the system shown below if x2 is the output and f(t) is the input.



f) Find C/R for the system shown below using the block diagram reduction technique.



Q.3 Attempt any two of the following: **12**

a) Derive the transfer function of AC servomotors.

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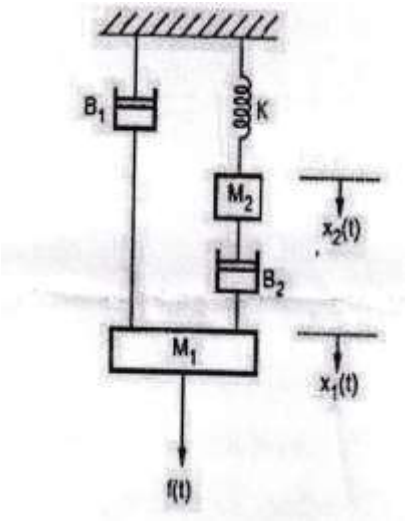
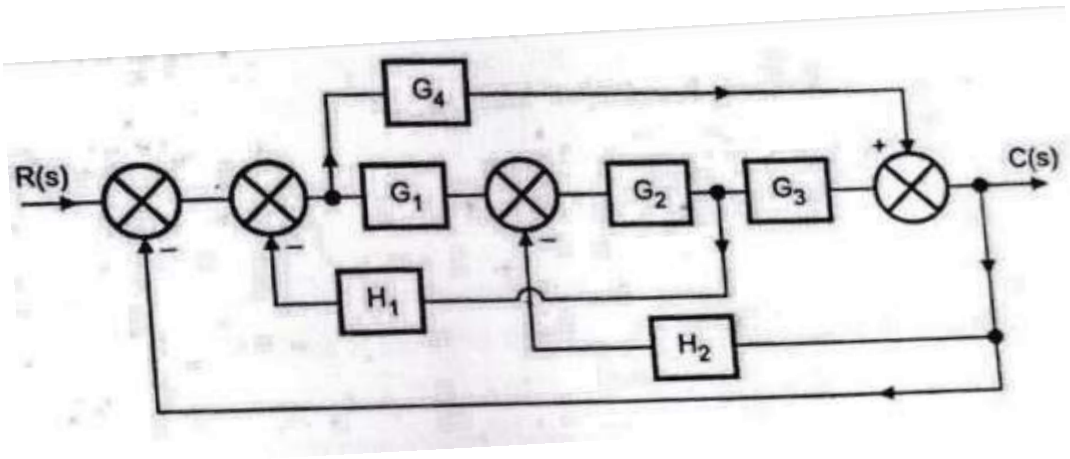


c) Convert the block diagram to the signal flow graph and determine the closed-loop transfer function by Mason's gain formula.



Section – II

Q.4 Attempt any four of the following: **16**

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b) With the help of neat sketches and mathematical expressions explain:
1) PI controller
2) PD controller
3) PID controller

c) Explain with an example how the breakaway point and angle of departure are calculated while constructing the root locus.

d) Explain the following terms.
1) Conditional stability
2) Absolute stability
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e) Derive an expression for bandwidth of a second-order system in terms of damping factor.

f) The characteristic equation of a feedback control system is
$s^4 + 4s^3 + 13s^2 + 36s + k = 0$,
determine the range of k for the system to be stable.

Q.5 Attempt any two of the following. **12**

a) For a unity feedback control system, the open loop transfer function

$$G(s) = \frac{10(s+1)}{s^2(s+2)(s+10)}$$

Determine:
1) type of system
2) all error constants
3) Steady state error for input as $1 + 4t + t^2/2$

b) What are the difficulties arising while solving by Routh's criterion? Explain all cases with examples to solve the difficulties in detail.

c) Construct the BODE plot for the system below whose open loop transfer function is

$$G(s)H(s) = \frac{80}{s(s+2)(s+20)}$$

Determine the:
1) Gain margin
2) Phase margin
3) wgc & wpc
4) Comment on the stability

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Linear Control System (BTN07502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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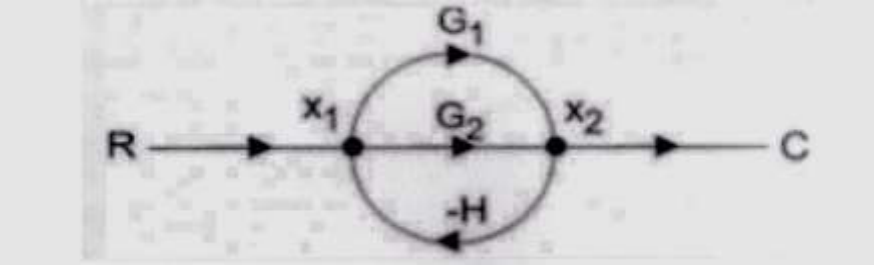
MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Use mason's gain formula to calculate the transfer function of the given figure: _____.



a) $G_1 + G_2$

b) $\dfrac{G_1 + G_2}{1 + G_1H + G_2H}$

c) $\dfrac{G_1 + G_2}{1 - G_1H + G_2H}$

d) $\dfrac{G_1 + G_2}{1 - G_1H - G_2H}$

2) The output signal is fed back at the input side from the _____ point.
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c) Take-off d) All of the above

3) Integral error compensation in a control system _____.
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4) A type I system under steady state will have position error when there is _____.
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6) The system with characteristics equation $s^4 + 3s^3 + 6s^2 + 9s + 12 = 0$

a) stable
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7) Routh Hurwitz criterion gives _____.

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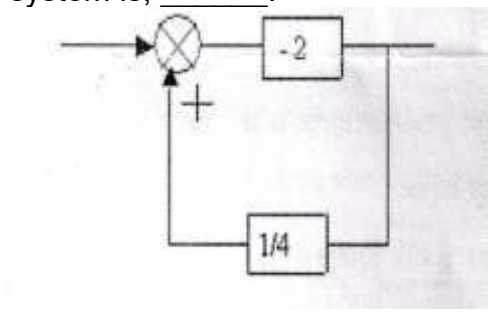

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a) Spring stiffness
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13) AC servomotor is basically a _____.

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14) Consider the assertions related to the block diagram. Which among them represents the precise condition?

A) Block diagram is used for analysis & design of the control system.

B) Block diagram also provides information regarding the physical construction of the system.

a) A is true, B is false

b) A is false, B is true

c) Both A & B are true

d) Both A & B are false

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Linear Control System (BTN07502)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

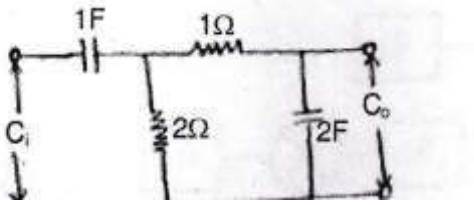
Q.2 Attempt any four of the following: **16**

a) Derive the transfer function of the closed-loop system.

b) Explain any four rules of block diagram reduction techniques.

c) Derive and explain the effect of feedback on system parameter variation in control systems.

d) Determine the transfer function for the electric network given below.



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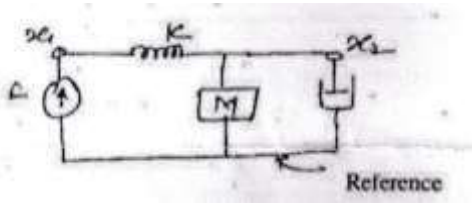
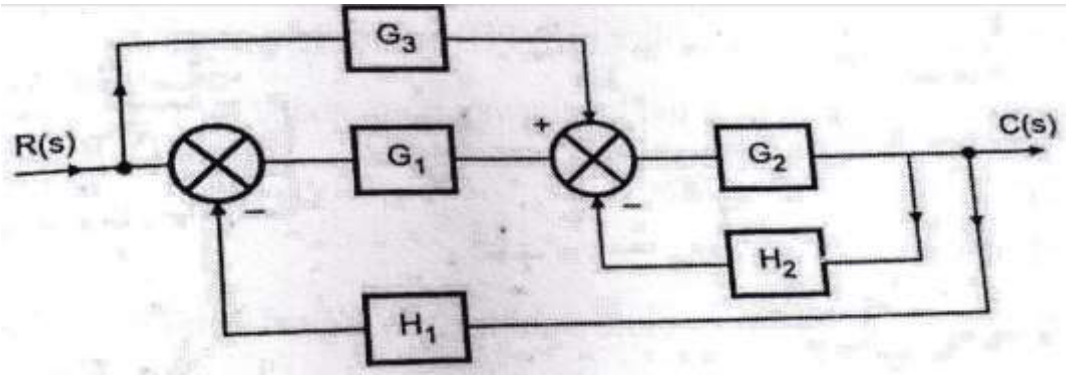


f) Find C/R for the system shown below using the block diagram reduction technique.



Q.3 Attempt any two of the following: **12**

a) Derive the transfer function of AC servomotors.

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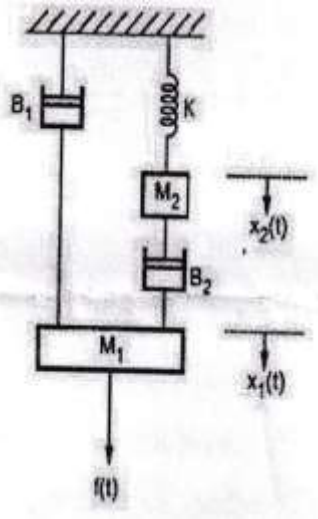
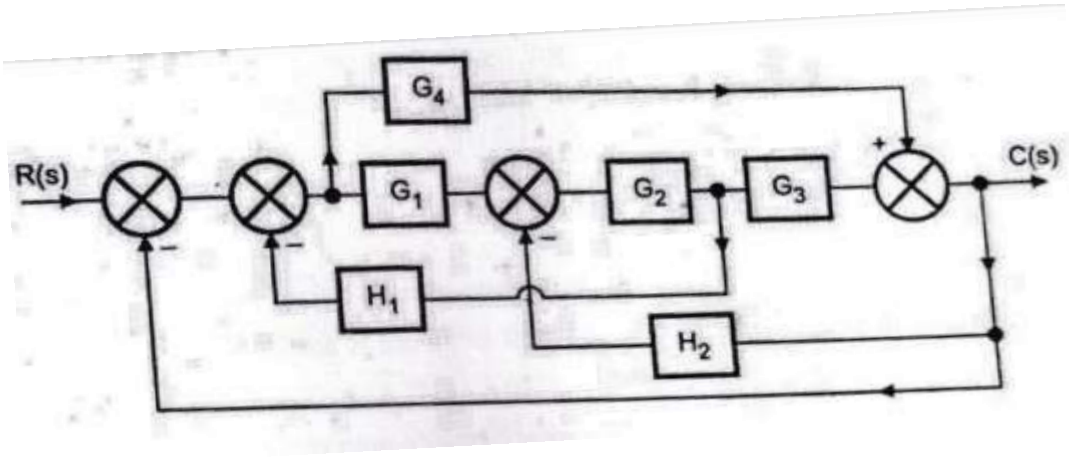


c) Convert the block diagram to the signal flow graph and determine the closed-loop transfer function by Mason's gain formula.



Section – II

Q.4 Attempt any four of the following: **16**

a) Explain the time domain specification with a neat diagram.

b) With the help of neat sketches and mathematical expressions explain:
1) PI controller
2) PD controller
3) PID controller

c) Explain with an example how the breakaway point and angle of departure are calculated while constructing the root locus.

d) Explain the following terms.
1) Conditional stability
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e) Derive an expression for bandwidth of a second-order system in terms of damping factor.

f) The characteristic equation of a feedback control system is
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Q.5 Attempt any two of the following. **12**

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$$G(s) = \frac{10(s+1)}{s^2(s+2)(s+10)}$$

Determine:
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b) What are the difficulties arising while solving by Routh's criterion? Explain all cases with examples to solve the difficulties in detail.

c) Construct the BODE plot for the system below whose open loop transfer function is

$$G(s)H(s) = \frac{80}{s(s+2)(s+20)}$$

Determine the:
1) Gain margin
2) Phase margin
3) wgc & wpc
4) Comment on the stability

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) On reset stack pointer in 8051 microcontroller is initialized to _____
a) 8H b) 9H
c) 7H d) 5H

2) Timer0 overflow flag is available on _____ SFR of 8051 microcontroller.
a) SBUF b) TCON
c) SCON d) TMOD

3) An alternate function of port pin P3.4 in 8051 microcontroller is _____.
a) Timer 0 b) Timer 1
c) Interrupt 0 d) Interrupt 1

4) Which pin of the LCD is used for adjusting its contrast?
a) pin no 1 b) pin no 2
c) pin no 3 d) pin no

5) If Memory size is 4KB and starting address is 2000H, then ending address is _____.
a) 1FFFH b) 2FFFH
c) 3FFFH d) 4FFFH

6) How many Timers are available in 8051 microcontroller?
a) Two 8-Bit b) Two 16-Bit
c) One 16-Bit d) One 8-Bit and One 16-Bit

7) ISR ends with _____.
a) IE b) RET
c) RI, TI d) None

8) Number of steps to rotate stepper motor for 360 degree at a step angle of 1.8 degree is _____.
a) 200 b) 400
c) 100 d) 300

9) JZ, JNZ, instructions checked content of _____ register.
a) DPTR b) B
c) A d) PSW

10) In PIC 16F877 Port A and D are _____ & _____ bits wide respectively.
a) 6, 3 b) 3, 8
c) 8, 8 d) 6, 8

11) How many data lines are there in a 16*2 alphanumeric LCD?
a) 16 b) 8
c) 1 d) 0

12) What is the standard form of ARM?
a) Advanced RISC Machine b) Automatic RISC Machine
c) Automatic RISC Motor d) None of the above

13) PIC 16F877 A consists of _____ channel _____ bit of ADC.
a) 8, 8 b) 8, 10
c) 10, 8 d) None of these

14) LM35 has how many pins?
a) 2 b) 1
c) 3 d) 4

Seat No.	

Set | P

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any four **16**

a) Explain features of 8051 microcontroller.
b) Compare between RISC and CISC machines.
c) Draw and explain PSW Register of 8051 microcontroller.
d) Explain with example the various addressing modes of 8051 microcontroller.
e) Write an ALP to perform addition of two 8-bit numbers stored at 50H and 51H memory location. Store result at 60H memory location.

Q.3 Solve any two **12**

a) Explain in detail the architecture of 8051 microcontroller.
b) Explain in detail the memory organization in 8051 microcontroller.
c) Explain with examples the operation performed by the following instructions.
1) SWAP A
2) MOVC A, @A+DPTR
3) DA A
4) DIV AB

Section – II

Q.4 Solve any four **16**

a) Explain the port structure of PIC16f877.
b) Explain the architecture of ARM Processor.
c) Draw the interfacing diagram of LM35 with 8051 Microcontroller.
d) Draw and explain Status Register of PIC 16F877A.
e) Explain following pins of ADC 0809
1) SOC
2) EOC
3) ALE
4) OE

Q.5 Solve any two **12**

a) Draw the interfacing diagram of 4KB data RAM with 8051 microcontroller also mention starting and ending addresses of interfaces memory.
b) Draw the interfacing diagram for 16x2 LCD display with 8051 microcontroller and write an ALP to display “INDIA “on LCD display.
c) Draw the interfacing diagram of stepper motor with 8051. Write an ALP to rotate the stepper motor one revolution in clockwise direction and then stop.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Number of steps to rotate stepper motor for 360 degree at a step angle of 1.8 degree is _____.
a) 200 b) 400
c) 100 d) 300

2) JZ, JNZ, instructions checked content of _____ register.
a) DPTR b) B
c) A d) PSW

3) In PIC 16F877 Port A and D are _____ & _____ bits wide respectively.
a) 6, 3 b) 3, 8
c) 8, 8 d) 6, 8

4) How many data lines are there in a 16*2 alphanumeric LCD?
a) 16 b) 8
c) 1 d) 0

5) What is the standard form of ARM?
a) Advanced RISC Machine b) Automatic RISC Machine
c) Automatic RISC Motor d) None of the above

6) PIC 16F877 A consists of _____ channel _____ bit of ADC.
a) 8, 8 b) 8, 10
c) 10, 8 d) None of these

7) LM35 has how many pins?
a) 2 b) 1
c) 3 d) 4

8) On reset stack pointer in 8051 microcontroller is initialized to _____
a) 8H b) 9H
c) 7H d) 5H

9) Timer0 overflow flag is available on _____ SFR of 8051 microcontroller.
a) SBUF b) TCON
c) SCON d) TMOD

10) An alternate function of port pin P3.4 in 8051 microcontroller is _____.

a) Timer 0 b) Timer 1
c) Interrupt 0 d) Interrupt 1

11) Which pin of the LCD is used for adjusting its contrast?

a) pin no 1 b) pin no 2
c) pin no 3 d) pin no

12) If Memory size is 4KB and starting address is 2000H, then ending address is _____.

a) 1FFFH b) 2FFFH
c) 3FFFH d) 4FFFH

13) How many Timers are available in 8051 microcontroller?

a) Two 8-Bit b) Two 16-Bit
c) One 16-Bit d) One 8-Bit and One 16-Bit

14) ISR ends with _____.

a) IE b) RET
c) RI, TI d) None

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Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any four **16**

a) Explain features of 8051 microcontroller.
b) Compare between RISC and CISC machines.
c) Draw and explain PSW Register of 8051 microcontroller.
d) Explain with example the various addressing modes of 8051 microcontroller.
e) Write an ALP to perform addition of two 8-bit numbers stored at 50H and 51H memory location. Store result at 60H memory location.

Q.3 Solve any two **12**

a) Explain in detail the architecture of 8051 microcontroller.
b) Explain in detail the memory organization in 8051 microcontroller.
c) Explain with examples the operation performed by the following instructions.
1) SWAP A
2) MOVC A, @A+DPTR
3) DA A
4) DIV AB

Section – II

Q.4 Solve any four **16**

a) Explain the port structure of PIC16f877.
b) Explain the architecture of ARM Processor.
c) Draw the interfacing diagram of LM35 with 8051 Microcontroller.
d) Draw and explain Status Register of PIC 16F877A.
e) Explain following pins of ADC 0809
1) SOC
2) EOC
3) ALE
4) OE

Q.5 Solve any two **12**

a) Draw the interfacing diagram of 4KB data RAM with 8051 microcontroller also mention starting and ending addresses of interfaces memory.
b) Draw the interfacing diagram for 16x2 LCD display with 8051 microcontroller and write an ALP to display “INDIA “on LCD display.
c) Draw the interfacing diagram of stepper motor with 8051. Write an ALP to rotate the stepper motor one revolution in clockwise direction and then stop.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) How many data lines are there in a 16*2 alphanumeric LCD?
a) 16 b) 8
c) 1 d) 0

2) What is the standard form of ARM?
a) Advanced RISC Machine b) Automatic RISC Machine
c) Automatic RISC Motor d) None of the above

3) PIC 16F877 A consists of _____ channel _____ bit of ADC.
a) 8, 8 b) 8, 10
c) 10, 8 d) None of these

4) LM35 has how many pins?
a) 2 b) 1
c) 3 d) 4

5) On reset stack pointer in 8051 microcontroller is initialized to _____
a) 8H b) 9H
c) 7H d) 5H

6) Timer0 overflow flag is available on _____ SFR of 8051 microcontroller.
a) SBUF b) TCON
c) SCON d) TMOD

7) An alternate function of port pin P3.4 in 8051 microcontroller is _____.
a) Timer 0 b) Timer 1
c) Interrupt 0 d) Interrupt 1

8) Which pin of the LCD is used for adjusting its contrast?
a) pin no 1 b) pin no 2
c) pin no 3 d) pin no

9) If Memory size is 4KB and starting address is 2000H, then ending address is _____.
a) 1FFFH b) 2FFFH
c) 3FFFH d) 4FFFH

10) How many Timers are available in 8051 microcontroller?
a) Two 8-Bit
b) Two 16-Bit
c) One 16-Bit
d) One 8-Bit and One 16-Bit

11) ISR ends with _____.
a) IE
b) RET
c) RI, TI
d) None

12) Number of steps to rotate stepper motor for 360 degree at a step angle of 1.8 degree is _____.
a) 200
b) 400
c) 100
d) 300

13) JZ, JNZ, instructions checked content of _____ register.
a) DPTR
b) B
c) A
d) PSW

14) In PIC 16F877 Port A and D are _____ & _____ bits wide respectively.
a) 6, 3
b) 3, 8
c) 8, 8
d) 6, 8

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any four **16**

a) Explain features of 8051 microcontroller.
b) Compare between RISC and CISC machines.
c) Draw and explain PSW Register of 8051 microcontroller.
d) Explain with example the various addressing modes of 8051 microcontroller.
e) Write an ALP to perform addition of two 8-bit numbers stored at 50H and 51H memory location. Store result at 60H memory location.

Q.3 Solve any two **12**

a) Explain in detail the architecture of 8051 microcontroller.
b) Explain in detail the memory organization in 8051 microcontroller.
c) Explain with examples the operation performed by the following instructions.
1) SWAP A
2) MOVC A, @A+DPTR
3) DA A
4) DIV AB

Section – II

Q.4 Solve any four **16**

a) Explain the port structure of PIC16f877.
b) Explain the architecture of ARM Processor.
c) Draw the interfacing diagram of LM35 with 8051 Microcontroller.
d) Draw and explain Status Register of PIC 16F877A.
e) Explain following pins of ADC 0809
1) SOC
2) EOC
3) ALE
4) OE

Q.5 Solve any two **12**

a) Draw the interfacing diagram of 4KB data RAM with 8051 microcontroller also mention starting and ending addresses of interfaces memory.
b) Draw the interfacing diagram for 16x2 LCD display with 8051 microcontroller and write an ALP to display “INDIA “on LCD display.
c) Draw the interfacing diagram of stepper motor with 8051. Write an ALP to rotate the stepper motor one revolution in clockwise direction and then stop.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) How many Timers are available in 8051 microcontroller?
a) Two 8-Bit b) Two 16-Bit
c) One 16-Bit d) One 8-Bit and One 16-Bit

2) ISR ends with _____.
a) IE b) RET
c) RI, TI d) None

3) Number of steps to rotate stepper motor for 360 degree at a step angle of 1.8 degree is _____.
a) 200 b) 400
c) 100 d) 300

4) JZ, JNZ, instructions checked content of _____ register.
a) DPTR b) B
c) A d) PSW

5) In PIC 16F877 Port A and D are _____ & _____ bits wide respectively.
a) 6, 3 b) 3, 8
c) 8, 8 d) 6, 8

6) How many data lines are there in a 16*2 alphanumeric LCD?
a) 16 b) 8
c) 1 d) 0

7) What is the standard form of ARM?
a) Advanced RISC Machine b) Automatic RISC Machine
c) Automatic RISC Motor d) None of the above

8) PIC 16F877 A consists of _____ channel _____ bit of ADC.
a) 8, 8 b) 8, 10
c) 10, 8 d) None of these

9) LM35 has how many pins?
a) 2 b) 1
c) 3 d) 4

10) On reset stack pointer in 8051 microcontroller is initialized to _____
a) 8H b) 9H
c) 7H d) 5H

11) Timer0 overflow flag is available on _____ SFR of 8051 microcontroller.
a) SBUF b) TCON
c) SCON d) TMOD

12) An alternate function of port pin P3.4 in 8051 microcontroller is _____.
a) Timer 0 b) Timer 1
c) Interrupt 0 d) Interrupt 1

13) Which pin of the LCD is used for adjusting its contrast?
a) pin no 1 b) pin no 2
c) pin no 3 d) pin no

14) If Memory size is 4KB and starting address is 2000H, then ending address is _____.
a) 1FFFH b) 2FFFH
c) 3FFFH d) 4FFFH

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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Microcontroller System (BTN07503)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any four **16**

a) Explain features of 8051 microcontroller.
b) Compare between RISC and CISC machines.
c) Draw and explain PSW Register of 8051 microcontroller.
d) Explain with example the various addressing modes of 8051 microcontroller.
e) Write an ALP to perform addition of two 8-bit numbers stored at 50H and 51H memory location. Store result at 60H memory location.

Q.3 Solve any two **12**

a) Explain in detail the architecture of 8051 microcontroller.
b) Explain in detail the memory organization in 8051 microcontroller.
c) Explain with examples the operation performed by the following instructions.
1) SWAP A
2) MOVC A, @A+DPTR
3) DA A
4) DIV AB

Section – II

Q.4 Solve any four **16**

a) Explain the port structure of PIC16f877.
b) Explain the architecture of ARM Processor.
c) Draw the interfacing diagram of LM35 with 8051 Microcontroller.
d) Draw and explain Status Register of PIC 16F877A.
e) Explain following pins of ADC 0809
1) SOC
2) EOC
3) ALE
4) OE

Q.5 Solve any two **12**

a) Draw the interfacing diagram of 4KB data RAM with 8051 microcontroller also mention starting and ending addresses of interfaces memory.
b) Draw the interfacing diagram for 16x2 LCD display with 8051 microcontroller and write an ALP to display “INDIA “on LCD display.
c) Draw the interfacing diagram of stepper motor with 8051. Write an ALP to rotate the stepper motor one revolution in clockwise direction and then stop.

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electromagnetic Engineering (BTN07504)

Day & Date: Monday,01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Two charges of equal magnitude are separated by some distance. If the charges are increased by 10%, to get same force between them, their separation must be _____.
a) increased by 21% b) increased by 10%
c) decreased by 10% d) None of the above

2) A capacitor stores 0.24 coulombs at 10 volts. Its capacitor is _____.
a) 0.024 F b) 0.12 F
c) 0.6 F d) 0.8 F

3) Lorentz force equation is _____.
a) $\mathrm{F} = \mathrm{Q} \times [\mathrm{E} + \mathrm{V} \times \mathrm{B}]$ b) $\mathrm{F} = \mathrm{Q}[\mathrm{E} + \mathrm{V} \times \mathrm{B}]$
c) $\mathrm{F} = \mathrm{Q}[\mathrm{V} + \mathrm{E} \times \mathrm{B}]$ d) $\mathrm{F} = \mathrm{Q}[\mathrm{B} + \mathrm{V} \times \mathrm{E}]$

4) The flux density due to infine surface charge is _____.
a) $(\varrho_s/\in_o 2\,)au$ b) $(\varrho_s/2)au$
c) $(\varrho_s/2)$ d) $(\varrho_s \in_o/2)$

5) _____ is the quantity which has only magnitude.
a) Vector b) Scalar
c) Chemical d) None of these

6) In the field theory point form of Ohm's law can be expressed as _____.
a) $\mathrm{V} = \mathrm{J}.\mathrm{R}$ b) $\mathrm{J} = \sigma/\mathrm{E}$
c) $\mathrm{J} = \sigma\mathrm{E}$ d) None of these

7) Biot - Savart's Law is utilized to _____.
a) calculate magnetic field produced due to a current carrying segment
b) calculate both electrical and magnetic field
c) calculate electric field produced due to a current carrying segment
d) None of these

8) The spherical coordinate ϕ can be derived from Cartesian co-ordinate system as _____.
a) $x^2 + y^2$ b) $(x^2 + y^2)^{0.5}$
c) $\tan^{-1}(x/y)$ d) $\tan^{-1}(y/x)$

9) The relative permeability of a metal is given by _____.

a) less than zero
b) zero
c) one
d) infinite

10) Calculate the divergence of the vector $xi + yj + zk$

a) 0
b) 1
c) 2
d) 3

11) Find the electric field if the surface density at the boundary of air is 10^{-9}

a) $12\ \pi$
b) $24\ \pi$
c) $36\ \pi$
d) $48\ \pi$

12) Which of the following is anti-ferromagnetic materials?

a) Iron, Cobalt, Nickel etc.
b) Manganese oxide, Chromium oxide and Ferrous oxide
c) Zinc, Bismuth, Silver, Gold etc.
d) None of these

13) Energy density of a magnetic field is _____.

a) $\frac{1}{2}\ \mu H^2$
b) μH^2
c) $2\ \mu H$
d) $\frac{1}{2}\ \mu^2 H$

14) The differential volume (dv) in cylindrical co-ordinate system is given by _____.

a) $drd\emptyset dz$
b) $rdrd\emptyset dz$
c) $rdrd\emptyset$
d) $rd\emptyset dz$

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electromagnetic Engineering (BTN07504)

Day & Date: Monday,01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the suitable data whenever necessary.

Section – I

Q.2 Solve any four. **16**

a) Define electric field intensity and electric flux density.

b) Given the electric field $\bar{E} = 2x\hat{a}x - 4y\hat{d}y \text{ v/m}$. Find work done in moving a point charge +2c from (2, 0, 0) to (0, 0, 0) and form (0, 0, 0) to (0, 2, 0)

c) Derive expression for Gauss's Law and state it's two applications.

d) Derive Maxwell's first equation in electrostatic.

c) Given $E = 3\hat{y} + 4\hat{z}$ and
$F = 4\hat{x} - 10\hat{y} + 5\hat{z}$ determined
1) vector component of E in the direction of F
2) A unit vector perpendicular to both E & F

Q.3 Solve any two. **12**

a) Derive the expression for equation of continuity.

b) State and explain uniqueness theorem.

c) Evaluate both sides of divergence theorem if $D = \frac{5r^2}{4}\ ar \text{ c/m}^2$ in a spherical co-ordinate for the volume enclosed between $r = 1\text{m}$ and $r = 2\text{m}$.

Section – II

Q.4 Solve any four. **16**

a) State ampere's circuital law and explain any one application of it.

b) Briefly explain potential energy and forces on magnetic material.

c) A finite current filament through which current $\text{I} = 1\text{A}$ is passed from $y = 0$ to $y = 2$ field $\bar{H}$ at $P(1,1)$

d) Consider an infinitely long straight conductor carrying current I. Calculate the magnitude of magnetic flux density at a distance r from the conductor assuming the permeability of the medium to be equal to μ.

e) By using Gauss's Law, derive Maxwell's equation in point form for static electric field.

Q.5 Solve any two. **12**

a) A circular loop located on $x^2 + y^2 = 9,\ z = 0$, carries a direct current of 10A along $a\emptyset$. Determine the magnetic field intensity, H at (0,0,4)

b) Derive expression for boundary conditions in magnetic field.

c) Derive an expression for the magnetic force between two differential current elements.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electromagnetic Engineering (BTN07504)

Day & Date: Monday,01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The spherical coordinate ϕ can be derived from Cartesian co-ordinate system as _____.
a) $x^2 + y^2$ b) $(x^2 + y^2)^{0.5}$
c) $\tan^{-1}(x/y)$ d) $\tan^{-1}(y/x)$

2) The relative permeability of a metal is given by _____.
a) less than zero b) zero
c) one d) infinite

3) Calculate the divergence of the vector $xi + yj + zk$
a) 0 b) 1
c) 2 d) 3

4) Find the electric field if the surface density at the boundary of air is 10^{-9}
a) $12\ \pi$ b) $24\ \pi$
c) $36\ \pi$ d) $48\ \pi$

5) Which of the following is anti-ferromagnetic materials?
a) Iron, Cobalt, Nickel etc.
b) Manganese oxide, Chromium oxide and Ferrous oxide
c) Zinc, Bismuth, Silver, Gold etc.
d) None of these

6) Energy density of a magnetic field is _____.
a) $\frac{1}{2}\ \mu H^2$ b) μH^2
c) $2\ \mu H$ d) $\frac{1}{2}\ \mu^2 H$

7) The differential volume (dv) in cylindrical co-ordinate system is given by _____.
a) $drd\emptyset dz$ b) $rdrd\emptyset dz$
c) $rdrd\emptyset$ d) $rd\emptyset dz$

8) Two charges of equal magnitude are separated by some distance. If the charges are increased by 10%, to get same force between them, their separation must be _____.

a) increased by 21% b) increased by 10%
c) decreased by 10% d) None of the above

9) A capacitor stores 0.24 coulombs at 10 volts. Its capacitor is _____.

a) 0.024 F b) 0.12 F
c) 0.6 F d) 0.8 F

10) Lorentz force equation is _____.

a) $\mathrm{F} = \mathrm{Q} \times [\mathrm{E} + \mathrm{V} \times \mathrm{B}]$ b) $\mathrm{F} = \mathrm{Q}[\mathrm{E} + \mathrm{V} \times \mathrm{B}]$
c) $\mathrm{F} = \mathrm{Q}[\mathrm{V} + \mathrm{E} \times \mathrm{B}]$ d) $\mathrm{F} = \mathrm{Q}[\mathrm{B} + \mathrm{V} \times \mathrm{E}]$

11) The flux density due to infine surface charge is _____.

a) $(\varrho_s/\in_o 2\,)au$ b) $(\varrho_s/2)au$
c) $(\varrho_s/2)$ d) $(\varrho_s \in_o/2)$

12) _____ is the quantity which has only magnitude.

a) Vector b) Scalar
c) Chemical d) None of these

13) In the field theory point form of Ohm's law can be expressed as _____.

a) $\mathrm{V} = \mathrm{J}.\mathrm{R}$ b) $\mathrm{J} = \sigma/\mathrm{E}$
c) $\mathrm{J} = \sigma\mathrm{E}$ d) None of these

14) Biot - Savart's Law is utilized to _____.

a) calculate magnetic field produced due to a current carrying segment
b) calculate both electrical and magnetic field
c) calculate electric field produced due to a current carrying segment
d) None of these

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electromagnetic Engineering (BTN07504)

Day & Date: Monday,01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the suitable data whenever necessary.

Section – I

Q.2 Solve any four. **16**

a) Define electric field intensity and electric flux density.
b) Given the electric field $\bar{E} = 2x\hat{a}x - 4y\hat{d}y$ v/m. Find work done in moving a point charge +2c from (2, 0, 0) to (0, 0, 0) and form (0, 0, 0) to (0, 2, 0)
c) Derive expression for Gauss's Law and state it's two applications.
d) Derive Maxwell's first equation in electrostatic.
c) Given $E = 3\hat{y} + 4\hat{z}$ and
$F = 4\hat{x} - 10\hat{y} + 5\hat{z}$ determined
1) vector component of E in the direction of F
2) A unit vector perpendicular to both E & F

Q.3 Solve any two. **12**

a) Derive the expression for equation of continuity.
b) State and explain uniqueness theorem.
c) Evaluate both sides of divergence theorem if $D = \frac{5r^2}{4}\ ar$ c/m^2 in a spherical co-ordinate for the volume enclosed between $r = 1$m and $r = 2$m.

Section – II

Q.4 Solve any four. **16**

a) State ampere's circuital law and explain any one application of it.
b) Briefly explain potential energy and forces on magnetic material.
c) A finite current filament through which current $\mathrm{I} = 1$A is passed from $y = 0$ to $y = 2$ field $\bar{H}$ at $P(1,1)$
d) Consider an infinitely long straight conductor carrying current I. Calculate the magnitude of magnetic flux density at a distance r from the conductor assuming the permeability of the medium to be equal to μ.
e) By using Gauss's Law, derive Maxwell's equation in point form for static electric field.

Q.5 Solve any two. **12**

a) A circular loop located on $x^2 + y^2 = 9,\ z = 0$, carries a direct current of 10A along $a\emptyset$. Determine the magnetic field intensity, H at (0,0,4)
b) Derive expression for boundary conditions in magnetic field.
c) Derive an expression for the magnetic force between two differential current elements.

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electromagnetic Engineering (BTN07504)

Day & Date: Monday,01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Find the electric field if the surface density at the boundary of air is 10^{-9}
a) $12\,\pi$ b) $24\,\pi$
c) $36\,\pi$ d) $48\,\pi$

2) Which of the following is anti-ferromagnetic materials?
a) Iron, Cobalt, Nickel etc.
b) Manganese oxide, Chromium oxide and Ferrous oxide
c) Zinc, Bismuth, Silver, Gold etc.
d) None of these

3) Energy density of a magnetic field is _____.
a) $\frac{1}{2}\,\mu H^2$ b) μH^2
c) $2\,\mu H$ d) $\frac{1}{2}\,\mu^2 H$

4) The differential volume (dv) in cylindrical co-ordinate system is given by _____.
a) $drd\emptyset dz$ b) $rdrd\emptyset dz$
c) $rdrd\emptyset$ d) $rd\emptyset dz$

5) Two charges of equal magnitude are separated by some distance. If the charges are increased by 10%, to get same force between them, their separation must be _____.
a) increased by 21% b) increased by 10%
c) decreased by 10% d) None of the above

6) A capacitor stores 0.24 coulombs at 10 volts. Its capacitor is _____.
a) 0.024 F b) 0.12 F
c) 0.6 F d) 0.8 F

7) Lorentz force equation is _____.
a) $F = Q \times [E + V \times B]$ b) $F = Q[E + V \times B]$
c) $F = Q[V + E \times B]$ d) $F = Q[B + V \times E]$

8) The flux density due to infine surface charge is _____.
a) $(\varrho_s/\in_o 2)au$ b) $(\varrho_s/2)au$
c) $(\varrho_s/2)$ d) $(\varrho_s \in_o/2)$

9) _____ is the quantity which has only magnitude.

a) Vector b) Scalar
c) Chemical d) None of these

10) In the field theory point form of Ohm's law can be expressed as _____.

a) $\mathrm{V} = \mathrm{J}.\mathrm{R}$ b) $\mathrm{J} = \sigma/\mathrm{E}$
c) $\mathrm{J} = \sigma\mathrm{E}$ d) None of these

11) Biot - Savart's Law is utilized to _____.

a) calculate magnetic field produced due to a current carrying segment
b) calculate both electrical and magnetic field
c) calculate electric field produced due to a current carrying segment
d) None of these

12) The spherical coordinate ϕ can be derived from Cartesian co-ordinate system as _____.

a) $x^2 + y^2$ b) $(x^2 + y^2)^{0.5}$
c) $\tan^{-1}(x/y)$ d) $\tan^{-1}(y/x)$

13) The relative permeability of a metal is given by _____.

a) less than zero b) zero
c) one d) infinite

14) Calculate the divergence of the vector $xi + yj + zk$

a) 0 b) 1
c) 2 d) 3

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electromagnetic Engineering (BTN07504)

Day & Date: Monday,01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the suitable data whenever necessary.

Section – I

Q.2 Solve any four. **16**

a) Define electric field intensity and electric flux density.

b) Given the electric field $\bar{E} = 2x\hat{a}x - 4y\hat{d}y \text{ v/m}$. Find work done in moving a point charge +2c from (2, 0, 0) to (0, 0, 0) and form (0, 0, 0) to (0, 2, 0)

c) Derive expression for Gauss's Law and state it's two applications.

d) Derive Maxwell's first equation in electrostatic.

c) Given $E = 3\hat{y} + 4\hat{z}$ and
$F = 4\hat{x} - 10\hat{y} + 5\hat{z}$ determined
1) vector component of E in the direction of F
2) A unit vector perpendicular to both E & F

Q.3 Solve any two. **12**

a) Derive the expression for equation of continuity.

b) State and explain uniqueness theorem.

c) Evaluate both sides of divergence theorem if $D = \frac{5r^2}{4}\ ar \text{ c/m}^2$ in a spherical co-ordinate for the volume enclosed between $r = 1\text{m}$ and $r = 2\text{m}$.

Section – II

Q.4 Solve any four. **16**

a) State ampere's circuital law and explain any one application of it.

b) Briefly explain potential energy and forces on magnetic material.

c) A finite current filament through which current $\text{I} = 1\text{A}$ is passed from $y = 0$ to $y = 2$ field $\bar{H}$ at $P(1,1)$

d) Consider an infinitely long straight conductor carrying current I. Calculate the magnitude of magnetic flux density at a distance r from the conductor assuming the permeability of the medium to be equal to μ.

e) By using Gauss's Law, derive Maxwell's equation in point form for static electric field.

Q.5 Solve any two. **12**

a) A circular loop located on $x^2 + y^2 = 9,\ z = 0$, carries a direct current of 10A along $a\emptyset$. Determine the magnetic field intensity, H at (0,0,4)

b) Derive expression for boundary conditions in magnetic field.

c) Derive an expression for the magnetic force between two differential current elements.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electromagnetic Engineering (BTN07504)

Day & Date: Monday,01-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In the field theory point form of Ohm's law can be expressed as _____.
a) $V = J.R$ b) $J = \sigma/E$
c) $J = \sigma E$ d) None of these

2) Biot - Savart's Law is utilized to _____.
a) calculate magnetic field produced due to a current carrying segment
b) calculate both electrical and magnetic field
c) calculate electric field produced due to a current carrying segment
d) None of these

3) The spherical coordinate ϕ can be derived from Cartesian co-ordinate system as _____.
a) $x^2 + y^2$ b) $(x^2 + y^2)^{0.5}$
c) $\tan^{-1}(x/y)$ d) $\tan^{-1}(y/x)$

4) The relative permeability of a metal is given by _____.
a) less than zero b) zero
c) one d) infinite

5) Calculate the divergence of the vector $xi + yj + zk$
a) 0 b) 1
c) 2 d) 3

6) Find the electric field if the surface density at the boundary of air is 10^{-9}
a) $12\,\pi$ b) $24\,\pi$
c) $36\,\pi$ d) $48\,\pi$

7) Which of the following is anti-ferromagnetic materials?
a) Iron, Cobalt, Nickel etc.
b) Manganese oxide, Chromium oxide and Ferrous oxide
c) Zinc, Bismuth, Silver, Gold etc.
d) None of these

8) Energy density of a magnetic field is _____.

a) $\frac{1}{2}\ \mu H^2$ b) μH^2

c) $2\ \mu H$ d) $\frac{1}{2}\ \mu^2 H$

9) The differential volume (dv) in cylindrical co-ordinate system is given by _____.

a) $drd\emptyset dz$ b) $rdrd\emptyset dz$

c) $rdrd\emptyset$ d) $rd\emptyset dz$

10) Two charges of equal magnitude are separated by some distance. If the charges are increased by 10%, to get same force between them, their separation must be _____.

a) increased by 21% b) increased by 10%

c) decreased by 10% d) None of the above

11) A capacitor stores 0.24 coulombs at 10 volts. Its capacitor is _____.

a) 0.024 F b) 0.12 F

c) 0.6 F d) 0.8 F

12) Lorentz force equation is _____.

a) $F = Q \times [E + V \times B]$ b) $F = Q[E + V \times B]$

c) $F = Q[V + E \times B]$ d) $F = Q[B + V \times E]$

13) The flux density due to infine surface charge is _____.

a) $(\varrho_s/\in_o 2\ )au$ b) $(\varrho_s/2)au$

c) $(\varrho_s/2)$ d) $(\varrho_s \in_o/2)$

14) _____ is the quantity which has only magnitude.

a) Vector b) Scalar

c) Chemical d) None of these

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Seat No.		Set	S

T.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electromagnetic Engineering (BTN07504)

Day & Date: Monday,01-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the suitable data whenever necessary.

Section – I

Q.2 Solve any four. **16**

a) Define electric field intensity and electric flux density.
b) Given the electric field $\bar{E} = 2x\hat{a}x - 4y\hat{d}y \text{ v/m}$. Find work done in moving a point charge +2c from (2, 0, 0) to (0, 0, 0) and form (0, 0, 0) to (0, 2, 0)
c) Derive expression for Gauss's Law and state it's two applications.
d) Derive Maxwell's first equation in electrostatic.
c) Given $E = 3\hat{y} + 4\hat{z}$ and
$F = 4\hat{x} - 10\hat{y} + 5\hat{z}$ determined
1) vector component of E in the direction of F
2) A unit vector perpendicular to both E & F

Q.3 Solve any two. **12**

a) Derive the expression for equation of continuity.
b) State and explain uniqueness theorem.
c) Evaluate both sides of divergence theorem if $D = \frac{5r^2}{4}\ ar \text{ c/m}^2$ in a spherical co-ordinate for the volume enclosed between $r = 1\text{m}$ and $r = 2\text{m}$.

Section – II

Q.4 Solve any four. **16**

a) State ampere's circuital law and explain any one application of it.
b) Briefly explain potential energy and forces on magnetic material.
c) A finite current filament through which current $\text{I} = 1\text{A}$ is passed from $y = 0$ to $y = 2$ field $\bar{H}$ at $P(1,1)$
d) Consider an infinitely long straight conductor carrying current I. Calculate the magnitude of magnetic flux density at a distance r from the conductor assuming the permeability of the medium to be equal to μ.
e) By using Gauss's Law, derive Maxwell's equation in point form for static electric field.

Q.5 Solve any two. **12**

a) A circular loop located on $x^2 + y^2 = 9,\ z = 0$, carries a direct current of 10A along $a\emptyset$. Determine the magnetic field intensity, H at (0,0,4)
b) Derive expression for boundary conditions in magnetic field.
c) Derive an expression for the magnetic force between two differential current elements.

SLR-GF-431

Seat No.	

Set P

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) The hand-of-government refers to the _____.
a) ability of the government to interfere in business negotiations
b) role of corporations to be profitable within the law
c) effect of national politics on business decisions
d) impact of changing government regulations

2) Which of the following relating to CSR theories is correct?
a) Institutional theory is based on the shareholder concept.
b) Social contract is the key concept of legitimacy theory.
c) The key concept of enlightened self-interest is stakeholder relations.
d) Stakeholder theory requires organizations to manage community perceptions to survive.

3) Who are organizational stakeholders?
a) Government b) Employees
c) Customers d) All of the above

4) Which of the following does the term Corporate Social Responsibility relate to?
a) Ethical conduct b) Environmental practice
c) Community investment d) All of the above

5) Which of the following is not one the underlying principles of the corporate governance Combined Code of Practice?
a) Integrity b) Accountability
c) Openness d) Acceptability

6) Which of the following would most effectively act as the primary objective of a business organization?
a) To make a profit
b) To procure resources
c) To communicate with shareholders
d) To mediate between the organization and the environment

7) The system that is used by firms to control and direct their operations and the operations of their employees is called:
a) Corporate Compliance. b) Corporate Governance.
c) Corporate Control. d) Corporate Directive.

8) Which is not one of the natures of ethics?
a) Focus on human values b) Social work
c) Branch of philosophy d) Applies moral principles

9) What is Ethics to do with?
a) The wider community b) Business
c) Right and wrong d) Nothing

10) Which one of the following is not principle business ethics?
a) Principle of universality b) Principle of humanity
c) Principle of autonomy d) Principle of dissatisfaction

11) Which legislation relates to the concept of business ethics?
a) Freedom of Information Act b) Food Act
c) Building regulations d) All of these

12) What is meant by the phrase CSR?
a) Corporate Social Responsibility
b) Company Social Responsibility
c) Corporate Society Responsibility
d) Company Society Responsibility

13) Ethics should guide the technology towards _____.
a) Political justice b) Cultural justice
c) Social justice d) None of the Above

14) A _____ sets out the purpose and general direction for the organization?
a) Mission statement b) Purpose statement
c) Vision d) Profit statement

SLR-GF-431

Seat No.	

Set P

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) What is Business Ethics? Explain the benefits and importance of Business Ethics.
b) Explain 'Normative Ethics' in management.
c) What are the ethical theories and approaches for decision making?
d) How are the ethical decisions made? Which factors involved in decision making?
e) Explain the concept of corporate social responsibility (CSR).
f) Explain Principles of CSR.

Q.3 Solve any two. **12**

a) Explain the steps for setting standards of ethical behavior.
b) Discuss various principles of ethics and its implications in the modern business world.
c) Explain the objectives and importance of CSR.

Section – II

Q.4 Solve any four. **16**

a) Describe ethical issues in the relation between business and government.
b) What are the ethical issues arising in Information technology?
c) Explain in detail relation between business ethics and environmental values.
d) State and Explain the important parameters of environmental ethics.
e) Explain the main environmental issues facing India and the world.
f) Explain moral significance of information technology to business

Q.5 Solve any two. **12**

a) Explain the role of government in business ethics.
b) Explain ethical and social issues in marketing.
c) Discuss various approaches to environmental ethics.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Which is not one of the natures of ethics?
a) Focus on human values b) Social work
c) Branch of philosophy d) Applies moral principles

2) What is Ethics to do with?
a) The wider community b) Business
c) Right and wrong d) Nothing

3) Which one of the following is not principle business ethics?
a) Principle of universality b) Principle of humanity
c) Principle of autonomy d) Principle of dissatisfaction

4) Which legislation relates to the concept of business ethics?
a) Freedom of Information Act b) Food Act
c) Building regulations d) All of these

5) What is meant by the phrase CSR?
a) Corporate Social Responsibility
b) Company Social Responsibility
c) Corporate Society Responsibility
d) Company Society Responsibility

6) Ethics should guide the technology towards _____.
a) Political justice b) Cultural justice
c) Social justice d) None of the Above

7) A _____ sets out the purpose and general direction for the organization?
a) Mission statement b) Purpose statement
c) Vision d) Profit statement

8) The hand-of-government refers to the _____.
a) ability of the government to interfere in business negotiations
b) role of corporations to be profitable within the law
c) effect of national politics on business decisions
d) impact of changing government regulations

9) Which of the following relating to CSR theories is correct?
a) Institutional theory is based on the shareholder concept.
b) Social contract is the key concept of legitimacy theory.
c) The key concept of enlightened self-interest is stakeholder relations.
d) Stakeholder theory requires organizations to manage community perceptions to survive.

10) Who are organizational stakeholders?
a) Government b) Employees
c) Customers d) All of the above

11) Which of the following does the term Corporate Social Responsibility relate to?
a) Ethical conduct b) Environmental practice
c) Community investment d) All of the above

12) Which of the following is not one the underlying principles of the corporate governance Combined Code of Practice?
a) Integrity b) Accountability
c) Openness d) Acceptability

13) Which of the following would most effectively act as the primary objective of a business organization?
a) To make a profit
b) To procure resources
c) To communicate with shareholders
d) To mediate between the organization and the environment

14) The system that is used by firms to control and direct their operations and the operations of their employees is called:
a) Corporate Compliance. b) Corporate Governance.
c) Corporate Control. d) Corporate Directive.

SLR-GF-431

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) What is Business Ethics? Explain the benefits and importance of Business Ethics.
b) Explain 'Normative Ethics' in management.
c) What are the ethical theories and approaches for decision making?
d) How are the ethical decisions made? Which factors involved in decision making?
e) Explain the concept of corporate social responsibility (CSR).
f) Explain Principles of CSR.

Q.3 Solve any two. **12**

a) Explain the steps for setting standards of ethical behavior.
b) Discuss various principles of ethics and its implications in the modern business world.
c) Explain the objectives and importance of CSR.

Section – II

Q.4 Solve any four. **16**

a) Describe ethical issues in the relation between business and government.
b) What are the ethical issues arising in Information technology?
c) Explain in detail relation between business ethics and environmental values.
d) State and Explain the important parameters of environmental ethics.
e) Explain the main environmental issues facing India and the world.
f) Explain moral significance of information technology to business

Q.5 Solve any two. **12**

a) Explain the role of government in business ethics.
b) Explain ethical and social issues in marketing.
c) Discuss various approaches to environmental ethics.

Seat No.	

Set | R

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Which legislation relates to the concept of business ethics?
a) Freedom of Information Act b) Food Act
c) Building regulations d) All of these

2) What is meant by the phrase CSR?
a) Corporate Social Responsibility
b) Company Social Responsibility
c) Corporate Society Responsibility
d) Company Society Responsibility

3) Ethics should guide the technology towards _____.
a) Political justice b) Cultural justice
c) Social justice d) None of the Above

4) A _____ sets out the purpose and general direction for the organization?
a) Mission statement b) Purpose statement
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10) Which of the following would most effectively act as the primary objective of a business organization?

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a) Corporate Compliance. b) Corporate Governance.
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12) Which is not one of the natures of ethics?

a) Focus on human values b) Social work
c) Branch of philosophy d) Applies moral principles

13) What is Ethics to do with?

a) The wider community b) Business
c) Right and wrong d) Nothing

14) Which one of the following is not principle business ethics?

a) Principle of universality b) Principle of humanity
c) Principle of autonomy d) Principle of dissatisfaction

SLR-GF-431

Seat No.	

Set R

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) What is Business Ethics? Explain the benefits and importance of Business Ethics.
b) Explain 'Normative Ethics' in management.
c) What are the ethical theories and approaches for decision making?
d) How are the ethical decisions made? Which factors involved in decision making?
e) Explain the concept of corporate social responsibility (CSR).
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Q.3 Solve any two. **12**

a) Explain the steps for setting standards of ethical behavior.
b) Discuss various principles of ethics and its implications in the modern business world.
c) Explain the objectives and importance of CSR.

Section – II

Q.4 Solve any four. **16**

a) Describe ethical issues in the relation between business and government.
b) What are the ethical issues arising in Information technology?
c) Explain in detail relation between business ethics and environmental values.
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e) Explain the main environmental issues facing India and the world.
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Q.5 Solve any two. **12**

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Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

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a) To make a profit
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13) Which of the following does the term Corporate Social Responsibility relate to?
a) Ethical conduct b) Environmental practice
c) Community investment d) All of the above

14) Which of the following is not one the underlying principles of the corporate governance Combined Code of Practice?
a) Integrity b) Accountability
c) Openness d) Acceptability

SLR-GF-431

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Business Ethics (BTN07514)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) What is Business Ethics? Explain the benefits and importance of Business Ethics.
b) Explain 'Normative Ethics' in management.
c) What are the ethical theories and approaches for decision making?
d) How are the ethical decisions made? Which factors involved in decision making?
e) Explain the concept of corporate social responsibility (CSR).
f) Explain Principles of CSR.

Q.3 Solve any two. **12**

a) Explain the steps for setting standards of ethical behavior.
b) Discuss various principles of ethics and its implications in the modern business world.
c) Explain the objectives and importance of CSR.

Section – II

Q.4 Solve any four. **16**

a) Describe ethical issues in the relation between business and government.
b) What are the ethical issues arising in Information technology?
c) Explain in detail relation between business ethics and environmental values.
d) State and Explain the important parameters of environmental ethics.
e) Explain the main environmental issues facing India and the world.
f) Explain moral significance of information technology to business

Q.5 Solve any two. **12**

a) Explain the role of government in business ethics.
b) Explain ethical and social issues in marketing.
c) Discuss various approaches to environmental ethics.

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Microeconomy deals with _____.
a) Whole economy b) Smaller unit of economy
c) Only public sector d) Only private sector

2) The study of inflation is part of: _____.
a) Normative economics b) Macroeconomics
c) Microeconomics d) Descriptive economics

3) Managerial economics generally refers to the integration of economic theory with business _____.
a) Ethics b) Management
c) Practice d) All of the above

4) A _____ is the legal minimum price.
a) Price ceiling b) Price floors
c) Market price d) None of the above

5) When we say demand increases, we mean that there is a _____.
a) movement to the right along a demand curve
b) movement to the left along a demand curve
c) leftward shift of the demand curve
d) rightward shift of the demand curve

6) A surplus occurs when the price is _____.
a) equal to the equilibrium price
b) greater than the equilibrium price
c) less than the equilibrium price
d) None of the above

7) The income elasticity of demand is high for ____.
a) shelter b) luxuries
c) clothing d) food

8) The price elasticity of demand equals _____.
a) the percentage change in the quantity demanded divided by the percentage change in the price
b) the change in the quantity demanded divided by the change in price
c) the percentage change in the price divided by the percentage change in the quantity demanded
d) the change in the price divided by the change in quantity demanded

9) Barometric methods are used to forecast _____.
a) seasonal variation b) secular trend
c) cyclical variation d) irregular variation

10) Econometric forecasts require _____.
a) accurate estimates of the coefficients of structural equations
b) forecasts of future values of exogenous variables
c) appropriate theoretical models
d) all of the above

11) The relation between physical output of a production process to physical inputs is known as: _____.
a) Consumption function b) Utilization function
c) Production function d) Sales function

12) If a firm's revenues just cover all its opportunity costs, then: _____
a) normal profit is zero.
b) economic profit is zero.
c) total revenues equal its explicit costs.
d) total revenues equal its implicit costs

13) Under which of the following forms of market structure does a firm has no control over the price of its product?
a) Monopoly b) Oligopoly
c) Monopolistic competition d) Perfect competition

14) Firms in a monopolistic market are price _____.
a) Takers b) Givers
c) Makers d) Acceptors

SLR-GF-433

Seat No.		Set	P

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Describe the concept of economics and managerial economics.
b) Explain importance of managerial economics for business decision.
c) Explain the following terms.
i) Demand
ii) Market demand
iii) Supply
iv) Market equilibrium
d) State the comparison between Cardinal and Ordinal Utility.
e) Explain advertisement or promotional elasticity of sales.
f) Explain elasticities for nonlinear demand functions.

Q.3 Solve any two. **12**

a) State the difference between Microeconomics and Macroeconomics.
b) Explain demand utility and consumer demand analysis.
c) Explain elasticity of supply. Also state the factors affecting the elasticity of supply.

Section – II

Q.4 Solve any four. **16**

a) Explain graphical method of trend projection demand forecasting.
b) Explain linear Regression method for demand forecasting.
c) Explain breakeven analysis. Also state the limitations of breakeven analysis.
d) Explain the impact of linear cost and revenue functions on breakeven analysis.
e) Describe demand side of market and supply side of market.
f) State and explain the characteristics of market structure.

Q.5 Solve any two. **12**

a) State and explain the applications of Linear Programming Techniques.
b) Explain various costs of Production in detail.
c) Explain the degree of competition in market in detail.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) The price elasticity of demand equals _____.
a) the percentage change in the quantity demanded divided by the percentage change in the price
b) the change in the quantity demanded divided by the change in price
c) the percentage change in the price divided by the percentage change in the quantity demanded
d) the change in the price divided by the change in quantity demanded

2) Barometric methods are used to forecast _____.
a) seasonal variation b) secular trend
c) cyclical variation d) irregular variation

3) Econometric forecasts require _____.
a) accurate estimates of the coefficients of structural equations
b) forecasts of future values of exogenous variables
c) appropriate theoretical models
d) all of the above

4) The relation between physical output of a production process to physical inputs is known as: _____.
a) Consumption function b) Utilization function
c) Production function d) Sales function

5) If a firm's revenues just cover all its opportunity costs, then: _____
a) normal profit is zero.
b) economic profit is zero.
c) total revenues equal its explicit costs.
d) total revenues equal its implicit costs

6) Under which of the following forms of market structure does a firm has no control over the price of its product?
a) Monopoly b) Oligopoly
c) Monopolistic competition d) Perfect competition

7) Firms in a monopolistic market are price _____.
a) Takers b) Givers
c) Makers d) Acceptors

8) Microeconomy deals with _____.
a) Whole economy
b) Smaller unit of economy
c) Only public sector
d) Only private sector

9) The study of inflation is part of: _____.
a) Normative economics
b) Macroeconomics
c) Microeconomics
d) Descriptive economics

10) Managerial economics generally refers to the integration of economic theory with business _____.
a) Ethics
b) Management
c) Practice
d) All of the above

11) A _____ is the legal minimum price.
a) Price ceiling
b) Price floors
c) Market price
d) None of the above

12) When we say demand increases, we mean that there is a _____.
a) movement to the right along a demand curve
b) movement to the left along a demand curve
c) leftward shift of the demand curve
d) rightward shift of the demand curve

13) A surplus occurs when the price is _____.
a) equal to the equilibrium price
b) greater than the equilibrium price
c) less than the equilibrium price
d) None of the above

14) The income elasticity of demand is high for ____.
a) shelter
b) luxuries
c) clothing
d) food

SLR-GF-433

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Describe the concept of economics and managerial economics.
b) Explain importance of managerial economics for business decision.
c) Explain the following terms.
i) Demand
ii) Market demand
iii) Supply
iv) Market equilibrium
d) State the comparison between Cardinal and Ordinal Utility.
e) Explain advertisement or promotional elasticity of sales.
f) Explain elasticities for nonlinear demand functions.

Q.3 Solve any two. **12**

a) State the difference between Microeconomics and Macroeconomics.
b) Explain demand utility and consumer demand analysis.
c) Explain elasticity of supply. Also state the factors affecting the elasticity of supply.

Section – II

Q.4 Solve any four. **16**

a) Explain graphical method of trend projection demand forecasting.
b) Explain linear Regression method for demand forecasting.
c) Explain breakeven analysis. Also state the limitations of breakeven analysis.
d) Explain the impact of linear cost and revenue functions on breakeven analysis.
e) Describe demand side of market and supply side of market.
f) State and explain the characteristics of market structure.

Q.5 Solve any two. **12**

a) State and explain the applications of Linear Programming Techniques.
b) Explain various costs of Production in detail.
c) Explain the degree of competition in market in detail.

Seat No.	

Set | R

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) The relation between physical output of a production process to physical inputs is known as: _____.
a) Consumption function b) Utilization function
c) Production function d) Sales function

2) If a firm's revenues just cover all its opportunity costs, then: _____
a) normal profit is zero.
b) economic profit is zero.
c) total revenues equal its explicit costs.
d) total revenues equal its implicit costs

3) Under which of the following forms of market structure does a firm has no control over the price of its product?
a) Monopoly b) Oligopoly
c) Monopolistic competition d) Perfect competition

4) Firms in a monopolistic market are price _____.
a) Takers b) Givers
c) Makers d) Acceptors

5) Microeconomy deals with _____.
a) Whole economy b) Smaller unit of economy
c) Only public sector d) Only private sector

6) The study of inflation is part of: _____.
a) Normative economics b) Macroeconomics
c) Microeconomics d) Descriptive economics

7) Managerial economics generally refers to the integration of economic theory with business _____.
a) Ethics b) Management
c) Practice d) All of the above

8) A _____ is the legal minimum price.
a) Price ceiling b) Price floors
c) Market price d) None of the above

9) When we say demand increases, we mean that there is a _____.
a) movement to the right along a demand curve
b) movement to the left along a demand curve
c) leftward shift of the demand curve
d) rightward shift of the demand curve

10) A surplus occurs when the price is _____.
a) equal to the equilibrium price
b) greater than the equilibrium price
c) less than the equilibrium price
d) None of the above

11) The income elasticity of demand is high for ____.
a) shelter
b) luxuries
c) clothing
d) food

12) The price elasticity of demand equals _____.
a) the percentage change in the quantity demanded divided by the percentage change in the price
b) the change in the quantity demanded divided by the change in price
c) the percentage change in the price divided by the percentage change in the quantity demanded
d) the change in the price divided by the change in quantity demanded

13) Barometric methods are used to forecast _____.
a) seasonal variation
b) secular trend
c) cyclical variation
d) irregular variation

14) Econometric forecasts require _____.
a) accurate estimates of the coefficients of structural equations
b) forecasts of future values of exogenous variables
c) appropriate theoretical models
d) all of the above

Seat No.		Set	R

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Describe the concept of economics and managerial economics.
b) Explain importance of managerial economics for business decision.
c) Explain the following terms.
i) Demand
ii) Market demand
iii) Supply
iv) Market equilibrium
d) State the comparison between Cardinal and Ordinal Utility.
e) Explain advertisement or promotional elasticity of sales.
f) Explain elasticities for nonlinear demand functions.

Q.3 Solve any two. **12**

a) State the difference between Microeconomics and Macroeconomics.
b) Explain demand utility and consumer demand analysis.
c) Explain elasticity of supply. Also state the factors affecting the elasticity of supply.

Section – II

Q.4 Solve any four. **16**

a) Explain graphical method of trend projection demand forecasting.
b) Explain linear Regression method for demand forecasting.
c) Explain breakeven analysis. Also state the limitations of breakeven analysis.
d) Explain the impact of linear cost and revenue functions on breakeven analysis.
e) Describe demand side of market and supply side of market.
f) State and explain the characteristics of market structure.

Q.5 Solve any two. **12**

a) State and explain the applications of Linear Programming Techniques.
b) Explain various costs of Production in detail.
c) Explain the degree of competition in market in detail.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) A surplus occurs when the price is _____.
a) equal to the equilibrium price
b) greater than the equilibrium price
c) less than the equilibrium price
d) None of the above

2) The income elasticity of demand is high for ____.
a) shelter b) luxuries
c) clothing d) food

3) The price elasticity of demand equals _____.
a) the percentage change in the quantity demanded divided by the percentage change in the price
b) the change in the quantity demanded divided by the change in price
c) the percentage change in the price divided by the percentage change in the quantity demanded
d) the change in the price divided by the change in quantity demanded

4) Barometric methods are used to forecast _____.
a) seasonal variation b) secular trend
c) cyclical variation d) irregular variation

5) Econometric forecasts require _____.
a) accurate estimates of the coefficients of structural equations
b) forecasts of future values of exogenous variables
c) appropriate theoretical models
d) all of the above

6) The relation between physical output of a production process to physical inputs is known as: _____.
a) Consumption function b) Utilization function
c) Production function d) Sales function

7) If a firm's revenues just cover all its opportunity costs, then: _____
a) normal profit is zero.
b) economic profit is zero.
c) total revenues equal its explicit costs.
d) total revenues equal its implicit costs

8) Under which of the following forms of market structure does a firm has no control over the price of its product?
a) Monopoly
b) Oligopoly
c) Monopolistic competition
d) Perfect competition

9) Firms in a monopolistic market are price _____.
a) Takers
b) Givers
c) Makers
d) Acceptors

10) Microeconomy deals with _____.
a) Whole economy
b) Smaller unit of economy
c) Only public sector
d) Only private sector

11) The study of inflation is part of: _____.
a) Normative economics
b) Macroeconomics
c) Microeconomics
d) Descriptive economics

12) Managerial economics generally refers to the integration of economic theory with business _____.
a) Ethics
b) Management
c) Practice
d) All of the above

13) A _____ is the legal minimum price.
a) Price ceiling
b) Price floors
c) Market price
d) None of the above

14) When we say demand increases, we mean that there is a _____.
a) movement to the right along a demand curve
b) movement to the left along a demand curve
c) leftward shift of the demand curve
d) rightward shift of the demand curve

SLR-GF-433

Seat No.		Set	S

T.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Managerial Economics (BTN07515)

Day & Date: Wednesday, 17-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Describe the concept of economics and managerial economics.
b) Explain importance of managerial economics for business decision.
c) Explain the following terms.
i) Demand
ii) Market demand
iii) Supply
iv) Market equilibrium
d) State the comparison between Cardinal and Ordinal Utility.
e) Explain advertisement or promotional elasticity of sales.
f) Explain elasticities for nonlinear demand functions.

Q.3 Solve any two. **12**

a) State the difference between Microeconomics and Macroeconomics.
b) Explain demand utility and consumer demand analysis.
c) Explain elasticity of supply. Also state the factors affecting the elasticity of supply.

Section – II

Q.4 Solve any four. **16**

a) Explain graphical method of trend projection demand forecasting.
b) Explain linear Regression method for demand forecasting.
c) Explain breakeven analysis. Also state the limitations of breakeven analysis.
d) Explain the impact of linear cost and revenue functions on breakeven analysis.
e) Describe demand side of market and supply side of market.
f) State and explain the characteristics of market structure.

Q.5 Solve any two. **12**

a) State and explain the applications of Linear Programming Techniques.
b) Explain various costs of Production in detail.
c) Explain the degree of competition in market in detail.

SLR-GF-434

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume the suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Smart Grid Technology comprises the following: _____.
a) AMI, PLM, OMS, Renewable Integration, Microgrid
b) DR/DSM, Distribution Automation, Energy Efficient Systems
c) All of the above
d) None of the above

2) AMI means _____.
a) Automated Metering Instrument
b) Alternate Metering Instrument
c) Advanced Metering Infrastructure
d) Advanced Metering Instrument

3) PLM means _____.
a) Peak Load Management
b) Plant Load Management
c) Power Leakage Management
d) Plant Leakage Management

4) OMS means _____.
a) Overall Maintenance System b) Overall Management System
c) Outage Management System d) Outage Maintenance System

5) The smart grid will help consumers manage their electricity bill _____.
a) True b) False
c) None of the above d) Other

6) Even with a smart meter, consumers still have to call electric company when they lose power.
a) True b) False
c) Other d) None of the above

7) The smart grid will help electric company minimize service disruptions.
a) True b) False
c) Other d) None of the above

8) The smart grid will help electric company restore power more quickly after an outage.
a) True b) False
c) Other d) None of the above

9) One of the largest returns on investment pertaining to the deployment of advanced sensing and measurement technologies is the reduction of energy theft.
a) True b) False
c) Other d) None of the above

10) Smart Grid goals include all but the following: _____.
a) Potentially reducing our carbon footprint
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures, all categories of consumers
d) Maintaining grid affordability

11) Electric vehicles plugged into the grid could potentially help stabilize grids during peak usage times.
a) True b) False
c) Other d) None of the above

12) "Making the grid smarter" may be achieved by replacing traditional analog components with digital ones and incorporating the computing, IT, sensors and other equipment in electric supply system.
a) True b) False
c) Other d) None of the above

13) Smart meter is an important element in building the smart grid. These advanced meters _____.
a) measure electricity usage in real time
b) can send data to and from electric companies and their customers
c) allows companies to give consumers more information about their electricity usage, and communicate current electricity prices
d) All of the above

14) Smart Grid technologies are aimed at improvement of _____.
a) Only Power Transmission System
b) Only Power Distribution system
c) Both Power Transmission & Distribution System
d) Neither Power Transmission nor Power Distribution system

SLR-GF-434

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the suitable data wherever necessary.

Section – I

Q.2 Solve any four **16**

a) Define Smart Grid and write the application on it.
b) List the smart appliances and describe an integration of smart appliances in to grid for home and building automation.
c) Explain how the automatic meter reading can make the system smarter.
d) Write DSM tools and their use.
e) Explain the data mining techniques used in smart grid system.

Q.3 Solve any two **12**

a) Describe substation and feeder automation.
b) Explain the grid Computing.
c) What is the importance of Demand Side Management?

Section – II

Q.4 Solve any four **16**

a) Explain monitoring control and protection application in distribution grid system.
b) Write a short note on PHEV.
c) Explain about smart storage batteries.
d) Why metering is important for industrial customers?
e) Explain IED application for monitoring and protection.

Q.5 Solve any two. **12**

a) Explain the concept of power quality in smart grid.
b) Discuss the Operation and control issues associated with intermittent generation.
c) Explain the Home Automation.

Seat No.		Set	Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume the suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The smart grid will help electric company restore power more quickly after an outage.
a) True b) False
c) Other d) None of the above

2) One of the largest returns on investment pertaining to the deployment of advanced sensing and measurement technologies is the reduction of energy theft.
a) True b) False
c) Other d) None of the above

3) Smart Grid goals include all but the following: _____.
a) Potentially reducing our carbon footprint
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures, all categories of consumers
d) Maintaining grid affordability

4) Electric vehicles plugged into the grid could potentially help stabilize grids during peak usage times.
a) True b) False
c) Other d) None of the above

5) "Making the grid smarter" may be achieved by replacing traditional analog components with digital ones and incorporating the computing, IT, sensors and other equipment in electric supply system.
a) True b) False
c) Other d) None of the above

6) Smart meter is an important element in building the smart grid. These advanced meters _____.
a) measure electricity usage in real time
b) can send data to and from electric companies and their customers
c) allows companies to give consumers more information about their electricity usage, and communicate current electricity prices
d) All of the above

7) Smart Grid technologies are aimed at improvement of _____.
a) Only Power Transmission System
b) Only Power Distribution system
c) Both Power Transmission & Distribution System
d) Neither Power Transmission nor Power Distribution system

8) Smart Grid Technology comprises the following: _____.
a) AMI, PLM, OMS, Renewable Integration, Microgrid
b) DR/DSM, Distribution Automation, Energy Efficient Systems
c) All of the above
d) None of the above

9) AMI means _____.
a) Automated Metering Instrument
b) Alternate Metering Instrument
c) Advanced Metering Infrastructure
d) Advanced Metering Instrument

10) PLM means _____.
a) Peak Load Management
b) Plant Load Management
c) Power Leakage Management
d) Plant Leakage Management

11) OMS means _____.
a) Overall Maintenance System b) Overall Management System
c) Outage Management System d) Outage Maintenance System

12) The smart grid will help consumers manage their electricity bill _____.
a) True b) False
c) None of the above d) Other

13) Even with a smart meter, consumers still have to call electric company when they lose power.
a) True b) False
c) Other d) None of the above

14) The smart grid will help electric company minimize service disruptions.
a) True b) False
c) Other d) None of the above

SLR-GF-434

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the suitable data wherever necessary.

Section – I

Q.2 Solve any four **16**

a) Define Smart Grid and write the application on it.
b) List the smart appliances and describe an integration of smart appliances in to grid for home and building automation.
c) Explain how the automatic meter reading can make the system smarter.
d) Write DSM tools and their use.
e) Explain the data mining techniques used in smart grid system.

Q.3 Solve any two **12**

a) Describe substation and feeder automation.
b) Explain the grid Computing.
c) What is the importance of Demand Side Management?

Section – II

Q.4 Solve any four **16**

a) Explain monitoring control and protection application in distribution grid system.
b) Write a short note on PHEV.
c) Explain about smart storage batteries.
d) Why metering is important for industrial customers?
e) Explain IED application for monitoring and protection.

Q.5 Solve any two. **12**

a) Explain the concept of power quality in smart grid.
b) Discuss the Operation and control issues associated with intermittent generation.
c) Explain the Home Automation.

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume the suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Electric vehicles plugged into the grid could potentially help stabilize grids during peak usage times.
a) True b) False
c) Other d) None of the above

2) "Making the grid smarter" may be achieved by replacing traditional analog components with digital ones and incorporating the computing, IT, sensors and other equipment in electric supply system.
a) True b) False
c) Other d) None of the above

3) Smart meter is an important element in building the smart grid. These advanced meters _____.
a) measure electricity usage in real time
b) can send data to and from electric companies and their customers
c) allows companies to give consumers more information about their electricity usage, and communicate current electricity prices
d) All of the above

4) Smart Grid technologies are aimed at improvement of _____.
a) Only Power Transmission System
b) Only Power Distribution system
c) Both Power Transmission & Distribution System
d) Neither Power Transmission nor Power Distribution system

5) Smart Grid Technology comprises the following: _____.
a) AMI, PLM, OMS, Renewable Integration, Microgrid
b) DR/DSM, Distribution Automation, Energy Efficient Systems
c) All of the above
d) None of the above

6) AMI means _____.
a) Automated Metering Instrument
b) Alternate Metering Instrument
c) Advanced Metering Infrastructure
d) Advanced Metering Instrument

7) PLM means _____.
a) Peak Load Management
b) Plant Load Management
c) Power Leakage Management
d) Plant Leakage Management

8) OMS means _____.
a) Overall Maintenance System b) Overall Management System
c) Outage Management System d) Outage Maintenance System

9) The smart grid will help consumers manage their electricity bill _____.
a) True b) False
c) None of the above d) Other

10) Even with a smart meter, consumers still have to call electric company when they lose power.
a) True b) False
c) Other d) None of the above

11) The smart grid will help electric company minimize service disruptions.
a) True b) False
c) Other d) None of the above

12) The smart grid will help electric company restore power more quickly after an outage.
a) True b) False
c) Other d) None of the above

13) One of the largest returns on investment pertaining to the deployment of advanced sensing and measurement technologies is the reduction of energy theft.
a) True b) False
c) Other d) None of the above

14) Smart Grid goals include all but the following: _____.
a) Potentially reducing our carbon footprint
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures, all categories of consumers
d) Maintaining grid affordability

SLR-GF-434

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the suitable data wherever necessary.

Section – I

Q.2 Solve any four **16**

a) Define Smart Grid and write the application on it.
b) List the smart appliances and describe an integration of smart appliances in to grid for home and building automation.
c) Explain how the automatic meter reading can make the system smarter.
d) Write DSM tools and their use.
e) Explain the data mining techniques used in smart grid system.

Q.3 Solve any two **12**

a) Describe substation and feeder automation.
b) Explain the grid Computing.
c) What is the importance of Demand Side Management?

Section – II

Q.4 Solve any four **16**

a) Explain monitoring control and protection application in distribution grid system.
b) Write a short note on PHEV.
c) Explain about smart storage batteries.
d) Why metering is important for industrial customers?
e) Explain IED application for monitoring and protection.

Q.5 Solve any two. **12**

a) Explain the concept of power quality in smart grid.
b) Discuss the Operation and control issues associated with intermittent generation.
c) Explain the Home Automation.

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Even with a smart meter, consumers still have to call electric company when they lose power.
a) True b) False
c) Other d) None of the above

2) The smart grid will help electric company minimize service disruptions.
a) True b) False
c) Other d) None of the above

3) The smart grid will help electric company restore power more quickly after an outage.
a) True b) False
c) Other d) None of the above

4) One of the largest returns on investment pertaining to the deployment of advanced sensing and measurement technologies is the reduction of energy theft.
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c) Assimilate all cultures, all categories of consumers
d) Maintaining grid affordability

6) Electric vehicles plugged into the grid could potentially help stabilize grids during peak usage times.
a) True b) False
c) Other d) None of the above

7) "Making the grid smarter" may be achieved by replacing traditional analog components with digital ones and incorporating the computing, IT, sensors and other equipment in electric supply system.
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c) Other d) None of the above

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   b) can send data to and from electric companies and their customers
   c) allows companies to give consumers more information about their electricity usage, and communicate current electricity prices
   d) All of the above

9) Smart Grid technologies are aimed at improvement of _____.
   a) Only Power Transmission System
   b) Only Power Distribution system
   c) Both Power Transmission & Distribution System
   d) Neither Power Transmission nor Power Distribution system

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   b) DR/DSM, Distribution Automation, Energy Efficient Systems
   c) All of the above
   d) None of the above

11) AMI means _____.
   a) Automated Metering Instrument
   b) Alternate Metering Instrument
   c) Advanced Metering Infrastructure
   d) Advanced Metering Instrument

12) PLM means _____.
   a) Peak Load Management
   b) Plant Load Management
   c) Power Leakage Management
   d) Plant Leakage Management

13) OMS means _____.
   a) Overall Maintenance System b) Overall Management System
   c) Outage Management System d) Outage Maintenance System

14) The smart grid will help consumers manage their electricity bill _____.
   a) True b) False
   c) None of the above d) Other

SLR-GF-434

Seat No.	

Set S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Energy Management System (BTN07516)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the suitable data wherever necessary.

Section – I

Q.2 Solve any four **16**

a) Define Smart Grid and write the application on it.
b) List the smart appliances and describe an integration of smart appliances in to grid for home and building automation.
c) Explain how the automatic meter reading can make the system smarter.
d) Write DSM tools and their use.
e) Explain the data mining techniques used in smart grid system.

Q.3 Solve any two **12**

a) Describe substation and feeder automation.
b) Explain the grid Computing.
c) What is the importance of Demand Side Management?

Section – II

Q.4 Solve any four **16**

a) Explain monitoring control and protection application in distribution grid system.
b) Write a short note on PHEV.
c) Explain about smart storage batteries.
d) Why metering is important for industrial customers?
e) Explain IED application for monitoring and protection.

Q.5 Solve any two. **12**

a) Explain the concept of power quality in smart grid.
b) Discuss the Operation and control issues associated with intermittent generation.
c) Explain the Home Automation.

SLR-GF-435

Seat No.		Set	P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The most suitable control-motor application is _____.
a) AC one-phase induction motor b) DC shunt motor
c) AC shunt motor d) DC separately motor

2) Which of these is the purpose of power-split device?
a) To split Electrical Energy into Mechanical Energy
b) To allow both the engine and Electric motor to propel the vehicle
c) To recharge the battery while braking
d) To recharge the brakes while driving

3) Which starting method is the best method in Induction motor?
a) Direct online starting b) Reactance starting
c) Star-Delta starting d) Autotransformer starting

4) The Field Oriented Control (FOC) enables the induction machine being controlled a like _____.
a) Separately excited DC Machine
b) Permanent magnet DC machine
c) Switched reluctance machine Option
d) Stepper motor

5) Electric motors are ideal for vehicular applications because of _____.
a) The torque speed characteristics
b) The V I characteristics
c) The Pd characteristics
d) The alpha delta characteristics

6) Stator voltage control for speed control of induction motors is suitable for ____.
a) Fan and pump drives b) Drive of a crane
c) Running it as generator d) Constant load drive

7) In V/F control of a 3-Phase Induction Motor, if voltage is increased by 10%, in order to keep air gap flux constant, what is the % increment or decrement in frequency?
a) Frequency is decreased by 10%
b) Frequency is decreased by 20%
c) Frequency is increased by 10%
d) Frequency is increased by 20%

8) Which of the following is used to build an electric drive?
a) Source
b) Motor
c) Control unit
d) All of the mentioned

9) Which of the following is/are components of an electric drive?
a) Control unit and Power Modulator
b) Electric Motor and Control System
c) Input Command
d) Sensing Device and Electric Motor

10) Which of the following exhibits linearly rising load torque characteristics?
a) Rolling Mills
b) Fan load
c) Separately excited dc generator connected to the resistive load
d) Sensed signal

11) Type-A chopper is used for obtaining which type of mode?
a) Reverse motoring mode
b) Motoring mode
c) Reverse regenerative braking mode
d) Regenerative braking mode

12) Which of the following exhibits linearly rising load torque characteristics?
a) Rolling Mills
b) Fan load
c) Separately excited dc generator connected to the resistive load
d) Elevators

13) Which of the following devices should be used as a switch for high power and high voltage application?
a) TRIAC
b) Thyristor
c) GTO
d) MOSFET

14) In a four-quadrant operation of an electric machine, the third operation is ____.
a) Forward motoring
b) Reverse braking
c) Forward braking
d) Reverse motoring

SLR-GF-435

Seat No.	

Set P

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Draw and explain the block diagram of switched reluctance motor drive system.
b) With neat diagram explain brushless DC Motor.
c) Explain the two-quadrant operation of chopper DC motor drive with suitable waveforms for electric vehicle
d) Explain the configuration of v/f-controlled induction motor drive with field-weakening mode and constant-torque mode.
e) Explain briefly the electrical and mechanical constraints to be considered while sizing an electrical machine for EV.

Q.3 Solve any two **12**

a) Explain the four-quadrant chopper control of dc motor.
b) What is the advantage of AC motor over DC motors for EV applications?
c) What is its typical value for Induction Motors used in HEV applications?

Section – II

Q.4 Solve any four **16**

a) Explain Field oriented control of induction machines theory using DC drive analogy.
b) Justify why induction motor mature technology among commutator less motor drives.
c) With a neat graph(s) discuss in detail about the power and torque characteristics of various motors suitable for EV application.
d) Explain various control strategy used in Electric Vehicle.
e) Discuss various electric drive train topologies.

Q.5 Solve any two **12**

a) Describe construction and working principle of separately excited DC motor its single phase and three phase converters with the performance parameter, characteristics, operational waveform and with freewheeling Diode scheme.
b) What is mean by time control ratio and frequency modulation system.
c) Comment on the suitability of DC and AC machines for electric vehicle applications.

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is used to build an electric drive?
a) Source b) Motor
c) Control unit d) All of the mentioned

2) Which of the following is/are components of an electric drive?
a) Control unit and Power Modulator
b) Electric Motor and Control System
c) Input Command
d) Sensing Device and Electric Motor

3) Which of the following exhibits linearly rising load torque characteristics?
a) Rolling Mills
b) Fan load
c) Separately excited dc generator connected to the resistive load
d) Sensed signal

4) Type-A chopper is used for obtaining which type of mode?
a) Reverse motoring mode
b) Motoring mode
c) Reverse regenerative braking mode
d) Regenerative braking mode

5) Which of the following exhibits linearly rising load torque characteristics?
a) Rolling Mills
b) Fan load
c) Separately excited dc generator connected to the resistive load
d) Elevators

6) Which of the following devices should be used as a switch for high power and high voltage application?
a) TRIAC b) Thyristor
c) GTO d) MOSFET

7) In a four-quadrant operation of an electric machine, the third operation is ____.
a) Forward motoring b) Reverse braking
c) Forward braking d) Reverse motoring

8) The most suitable control-motor application is _____.
a) AC one-phase induction motor b) DC shunt motor
c) AC shunt motor d) DC separately motor

9) Which of these is the purpose of power-split device?
a) To split Electrical Energy into Mechanical Energy
b) To allow both the engine and Electric motor to propel the vehicle
c) To recharge the battery while braking
d) To recharge the brakes while driving

10) Which starting method is the best method in Induction motor?
a) Direct online starting b) Reactance starting
c) Star-Delta starting d) Autotransformer starting

11) The Field Oriented Control (FOC) enables the induction machine being controlled a like _____.
a) Separately excited DC Machine
b) Permanent magnet DC machine
c) Switched reluctance machine Option
d) Stepper motor

12) Electric motors are ideal for vehicular applications because of _____.
a) The torque speed characteristics
b) The V I characteristics
c) The Pd characteristics
d) The alpha delta characteristics

13) Stator voltage control for speed control of induction motors is suitable for ____.
a) Fan and pump drives b) Drive of a crane
c) Running it as generator d) Constant load drive

14) In V/F control of a 3-Phase Induction Motor, if voltage is increased by 10%, in order to keep air gap flux constant, what is the % increment or decrement in frequency?
a) Frequency is decreased by 10%
b) Frequency is decreased by 20%
c) Frequency is increased by 10%
d) Frequency is increased by 20%

SLR-GF-435

Seat No.	

Set Q

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Draw and explain the block diagram of switched reluctance motor drive system.
b) With neat diagram explain brushless DC Motor.
c) Explain the two-quadrant operation of chopper DC motor drive with suitable waveforms for electric vehicle
d) Explain the configuration of v/f-controlled induction motor drive with field-weakening mode and constant-torque mode.
e) Explain briefly the electrical and mechanical constraints to be considered while sizing an electrical machine for EV.

Q.3 Solve any two **12**

a) Explain the four-quadrant chopper control of dc motor.
b) What is the advantage of AC motor over DC motors for EV applications?
c) What is its typical value for Induction Motors used in HEV applications?

Section – II

Q.4 Solve any four **16**

a) Explain Field oriented control of induction machines theory using DC drive analogy.
b) Justify why induction motor mature technology among commutator less motor drives.
c) With a neat graph(s) discuss in detail about the power and torque characteristics of various motors suitable for EV application.
d) Explain various control strategy used in Electric Vehicle.
e) Discuss various electric drive train topologies.

Q.5 Solve any two **12**

a) Describe construction and working principle of separately excited DC motor its single phase and three phase converters with the performance parameter, characteristics, operational waveform and with freewheeling Diode scheme.
b) What is mean by time control ratio and frequency modulation system.
c) Comment on the suitability of DC and AC machines for electric vehicle applications.

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Type-A chopper is used for obtaining which type of mode?
a) Reverse motoring mode
b) Motoring mode
c) Reverse regenerative braking mode
d) Regenerative braking mode

2) Which of the following exhibits linearly rising load torque characteristics?
a) Rolling Mills
b) Fan load
c) Separately excited dc generator connected to the resistive load
d) Elevators

3) Which of the following devices should be used as a switch for high power and high voltage application?
a) TRIAC b) Thyristor
c) GTO d) MOSFET

4) In a four-quadrant operation of an electric machine, the third operation is ____.
a) Forward motoring b) Reverse braking
c) Forward braking d) Reverse motoring

5) The most suitable control-motor application is _____.
a) AC one-phase induction motor b) DC shunt motor
c) AC shunt motor d) DC separately motor

6) Which of these is the purpose of power-split device?
a) To split Electrical Energy into Mechanical Energy
b) To allow both the engine and Electric motor to propel the vehicle
c) To recharge the battery while braking
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7) Which starting method is the best method in Induction motor?
a) Direct online starting b) Reactance starting
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8) The Field Oriented Control (FOC) enables the induction machine being controlled a like _____.
a) Separately excited DC Machine
b) Permanent magnet DC machine
c) Switched reluctance machine Option
d) Stepper motor

9) Electric motors are ideal for vehicular applications because of _____.
a) The torque speed characteristics
b) The V I characteristics
c) The Pd characteristics
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10) Stator voltage control for speed control of induction motors is suitable for ____.
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a) Frequency is decreased by 10%
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12) Which of the following is used to build an electric drive?
a) Source
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d) All of the mentioned

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SLR-GF-435

Seat No.	

Set R

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Draw and explain the block diagram of switched reluctance motor drive system.
b) With neat diagram explain brushless DC Motor.
c) Explain the two-quadrant operation of chopper DC motor drive with suitable waveforms for electric vehicle
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e) Explain briefly the electrical and mechanical constraints to be considered while sizing an electrical machine for EV.

Q.3 Solve any two **12**

a) Explain the four-quadrant chopper control of dc motor.
b) What is the advantage of AC motor over DC motors for EV applications?
c) What is its typical value for Induction Motors used in HEV applications?

Section – II

Q.4 Solve any four **16**

a) Explain Field oriented control of induction machines theory using DC drive analogy.
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Seat No.	

Set **S**

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday,05-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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c) Running it as generator d) Constant load drive

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d) Sensing Device and Electric Motor

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b) Thyristor
c) GTO
d) MOSFET

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c) Forward braking
d) Reverse motoring

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d) DC separately motor

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c) Star-Delta starting
d) Autotransformer starting

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b) Permanent magnet DC machine
c) Switched reluctance machine Option
d) Stepper motor

14) Electric motors are ideal for vehicular applications because of _____.
a) The torque speed characteristics
b) The V I characteristics
c) The Pd characteristics
d) The alpha delta characteristics

SLR-GF-435

Seat No.		Set	S

T.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Motors and Controls for Electric Vehicle (BTN07517)

Day & Date: Friday,05-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Draw and explain the block diagram of switched reluctance motor drive system.
b) With neat diagram explain brushless DC Motor.
c) Explain the two-quadrant operation of chopper DC motor drive with suitable waveforms for electric vehicle
d) Explain the configuration of v/f-controlled induction motor drive with field-weakening mode and constant-torque mode.
e) Explain briefly the electrical and mechanical constraints to be considered while sizing an electrical machine for EV.

Q.3 Solve any two **12**

a) Explain the four-quadrant chopper control of dc motor.
b) What is the advantage of AC motor over DC motors for EV applications?
c) What is its typical value for Induction Motors used in HEV applications?

Section – II

Q.4 Solve any four **16**

a) Explain Field oriented control of induction machines theory using DC drive analogy.
b) Justify why induction motor mature technology among commutator less motor drives.
c) With a neat graph(s) discuss in detail about the power and torque characteristics of various motors suitable for EV application.
d) Explain various control strategy used in Electric Vehicle.
e) Discuss various electric drive train topologies.

Q.5 Solve any two **12**

a) Describe construction and working principle of separately excited DC motor its single phase and three phase converters with the performance parameter, characteristics, operational waveform and with freewheeling Diode scheme.
b) What is mean by time control ratio and frequency modulation system.
c) Comment on the suitability of DC and AC machines for electric vehicle applications.

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

2) All things remain equal, if input prices increase _____.
a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

3) "Wealth of Nations" was written by _____.
a) Adam Smith b) Prof. J. M. Keynes
c) Prof. J. N. Keynes d) Alfred Marshall

4) During the period of inflation debtors benefit more than creditors because _____
a) They have to pay less amount
b) Real worth of debt increased
c) Real worth of debt decreases
d) They have to pay more amount

5) In a mixed economy which sector(s) is / are found _____
a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

6) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

7) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

8) Which of the following is international trade?

a) Trade between countries
b) Trade between regions
c) Trade between provinces
d) Both (b) and (c)

9) Who is the 'lender of the last resort' in the banking structure of India?

a) State Bank of India
b) Reserve Bank of India
c) EXIM Bank of India
d) Union Bank of India

10) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.

a) False
b) True
c) Partly true
d) Partly False

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Gross National Income – Depreciation =_____
a) Net National Income b) Disposable income
c) Net Domestic income d) Personal income

2) Fiscal policy is connected with _____
a) Issue of currency
b) Export and imports
c) Public revenue and expenditure
d) Controls of money supply

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a) State Bank of India b) Reserve Bank of India
c) EXIM Bank of India d) Union Bank of India

5) Micro and Macro are not two independent approaches to economic analysis but they are complementary to each other.
a) False b) True
c) Partly true d) Partly False

6) Law of demand must fail in case of _____.
a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

7) All things remain equal, if input prices increase _____.
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c) Real worth of debt decreases
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a) Private only
b) Public only
c) None
d) Bothe (a) public and (b) private

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Who is the 'lender of the last resort' in the banking structure of India?
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a) False b) True
c) Partly true d) Partly False

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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
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a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) "Wealth of Nations" was written by _____.
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a) Normal goods b) Giffen goods
c) Inferior goods d) None of these

10) All things remain equal, if input prices increase _____.

a) Demand will increase b) Supply will increase
c) Supply will decrease d) Demand will decrease

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct//Nov-2023
ELECTRICAL ENGINEERING
Economics (BTN07506)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 **Write short notes.** **10**
a) Micro and Macro Economics
b) Demand and Supply

Q.3 **Write short notes.** **10**
a) Consumption
b) Money

Q.4 What is economic problem? Discuss various basic economic problems. **10**

Q.5 Discuss price determination through demand and supply forces. **10**

Q.6 What is inflation? Describe the effects of inflation. **10**

Q.7 Define commercial banking, explain functions of commercial bank in India. **10**

SLR-GF-437

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) The term 'Intellectual Property Rights' covers _____.
a) Copyrights b) Know-how
c) Trade dress d) All of these

2) The following cannot be exploited by assigning or by licensing the rights to others _____.
a) Patents b) Designs
c) Trademark d) All of these

3) Intellectual Property Rights (IPR) protects the use of information and ideas that are of _____.
a) Ethical value b) Moral value
c) Social value d) Commercial value

4) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

5) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

6) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

7) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

8) What is the term of Patent?

a) 35 years b) 25 years

c) 20 years d) 15 years

9) Statutory requirement of “Abstract” is provided in _____ of Indian patents act,1970 and rules 2003.

a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)

c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

10) The following can be patented _____.

a) Machine b) Process

c) Composition of matter d) All of these

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

SLR-GF-437

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Who fills the invention disclosure form (IDF)?
a) Inventor b) Patent Attorney
c) Assignee d) Patent Searcher

2) What is copyright meant for?
a) Film work b) Books
c) Essay d) All of these

3) What is the term of Patent?
a) 35 years b) 25 years
c) 20 years d) 15 years

4) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

5) The following can be patented _____.
a) Machine b) Process
c) Composition of matter d) All of these

6) The term 'Intellectual Property Rights' covers _____.
a) Copyrights b) Know-how
c) Trade dress d) All of these

7) The following cannot be exploited by assigning or by licensing the rights to others _____.
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c) Social value d) Commercial value

9) Trade mark _____.
a) is represented graphically
b) is capable of distinguishing the goods or services of one person from those of others
c) may include shapes of goods or combination of colors
d) All of the above

10) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

1) Statutory requirement of "Abstract" is provided in _____ of Indian patents act,1970 and rules 2003.
a) Section 11(4) and Rule 18(7) b) Section 7(4) and Rule 9(7)
c) Section 21(4) and Rule 26 (7) d) Section 10(4) and Rule 13(7)

2) The following can be patented _____.
a) Machine b) Process
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3) The term 'Intellectual Property Rights' covers _____.
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6) Trade mark _____.
a) is represented graphically
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c) may include shapes of goods or combination of colors
d) All of the above

7) In India, the literary work is protected until _____.
a) Lifetime of author
b) 25 years after the death of author
c) 40 years after the death of author
d) 60 years after the death of author

8) Who fills the invention disclosure form (IDF)?

a) Inventor
b) Patent Attorney
c) Assignee
d) Patent Searcher

9) What is copyright meant for?

a) Film work
b) Books
c) Essay
d) All of these

10) What is the term of Patent?

a) 35 years
b) 25 years
c) 20 years
d) 15 years

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set | S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the given options. 10

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d) 60 years after the death of author

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9) The term 'Intellectual Property Rights' covers _____.

a) Copyrights b) Know-how
c) Trade dress d) All of these

10) The following cannot be exploited by assigning or by licensing the rights to others _____.

a) Patents b) Designs
c) Trademark d) All of these

SLR-GF-437

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Intellectual Property Rights for Technology Development and Management (BTN07507)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume additional data, if required and state it clearly.

Q.2 Attempt following questions (Any Two). **20**

a) Compare the Indian IPR system with International IPR frame works.
b) What is intellectual property? Write a short note on intellectual property rights coming out of research and intellectual works.
c) Discuss on shifting paradigms of R&D and their linkage to IPR.

Q.3 Write short notes (Any Four) **20**

a) Copy rights
b) TRIPS & Access to Medicines
c) Concepts of valuation of IP
d) Role of WTO in protecting IPR
e) Bio technology and intellectual property
f) IPR and Electronic Commerce

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The term sociology was coined by _____
a) Herbert Spencer b) August Comte
c) Karl Marx d) Max Weber

2) _____ and role are interrelated and inter-depended.
a) Position b) Status
c) Role d) Person

3) Rural society is _____.
a) Heterogeneous b) Homogeneous
c) Cultural d) Normative

4) Urban family is _____ unit.
a) Monogamous b) Polygamous
c) Mono-lateral d) Unilateral

5) Castes hierarchy is supposed to be _____.
a) Manual b) Formal
c) Divine d) Legal

6) The term Modernization was given by _____.
a) Ghurye b) Dr. Ambedkar
c) Shakespeare d) Srinivas

7) The two directions of social change are _____
a) uncertain - uncertain b) linear - cyclical
c) formal - informal d) negative - positive

8) _____ legalizes the sexual relation between man and woman
a) leaders b) Industry
c) Marriage d) Ideology

9) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

10) Environmental science is the study of _____.

a) nature
b) society
c) diversity
d) surroundings

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 **Write answer on any four of the following.** **16**

a) Explain the meaning and elements of social structure.
b) Discuss on the conventional feature of marriage in India.
c) Elucidate nature and types of social institutions.
d) Explain the nature and process of social change.
e) Give and account of nature and types of social movements.
f) What is social mobility?

Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The term Modernization was given by _____.
a) Ghurye b) Dr. Ambedkar
c) Shakespeare d) Srinivas

2) The two directions of social change are _____
a) uncertain - uncertain b) linear - cyclical
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c) Mono-lateral d) Unilateral

10) Castes hierarchy is supposed to be _____.

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c) Divine d) Legal

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

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e) Give and account of nature and types of social movements.
f) What is social mobility?

Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) The process of socialization is ____.
a) age bond b) time bond
c) continuous d) uncertain

2) Environmental science is the study of _____.
a) nature b) society
c) diversity d) surroundings

3) The term sociology was coined by _____
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4) _____ and role are interrelated and inter-depended.
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c) Marriage
d) Ideology

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 **Write answer on any four of the following.** **16**

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b) Discuss on the conventional feature of marriage in India.
c) Elucidate nature and types of social institutions.
d) Explain the nature and process of social change.
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OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Rural society is _____.
a) Heterogeneous b) Homogeneous
c) Cultural d) Normative

2) Urban family is _____ unit.
a) Monogamous b) Polygamous
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3) Castes hierarchy is supposed to be _____.
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8) Environmental science is the study of _____.
a) nature b) society
c) diversity d) surroundings

9) The term sociology was coined by _____
a) Herbert Spencer b) August Comte
c) Karl Marx d) Max Weber

10) _____ and role are interrelated and inter-depended.

a) Position
b) Status
c) Role
d) Person

SLR-GF-438

Seat No.	

Set S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Introduction to Sociology (BTN07508)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 **Write answer on any four of the following.** **16**

a) Explain the meaning and elements of social structure.
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c) Elucidate nature and types of social institutions.
d) Explain the nature and process of social change.
e) Give and account of nature and types of social movements.
f) What is social mobility?

Q.3 **a)** Explain the environmental changes and its consequences in Indian. **12**

OR

b) What are the significances of socialization?

Q.4 Explain the changes in caste system in India. **12**

SLR-GF-439

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

1) Which factors improve coping?
a) Social support b) Optimism
c) Perceived control d) All of the above

2) Which of the following statements is true?
a) Moodiness is a cognitive symptom of stress
b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
d) Agitation is cognitive symptom of stress

3) Which of the following statements is true?
a) The stress response is nonspecific
b) Different kinds of stressors produce exactly the same response
c) Different people respond to the same stressor differently
d) All of the above

4) When is a person more likely to have difficulty in coping with a stressful situation?
a) When he is over the age of fifty
b) When he expects a positive outcome
c) When he thinks he does not have control over the situation
d) When he has a good social support network

5) Aches, shallow breathing and sweating, frequent colds are _____.
a) Physical symptoms of stress
b) Behavioral symptoms of stress
c) Emotional symptoms of stress
d) Cognitive symptoms of stress

6) What thoughts come to the mind when you're under negative stress?
a) You think that you can cope with the situation
b) You think that you cannot cope with the situation
c) You think that everything will get fine eventually
d) You think that you will get help immediately

7) Which of the following are the physical symptoms of anxiety?

a) Racing heart
b) Sweaty palms
c) Flushed cheeks
d) All of the above

8) Which of the following is true about 'deep breathing relaxation technique'?

a) It can be self-taught
b) It releases tension from the body and clears your mind
c) You have to do this under-water
d) Only 'a' & 'b' are true

9) Which of the following are stress busters?

a) Trying to find something funny in a difficult situation
b) Developing a support network
c) Taking a mindful walk
d) All of the above

10) When danger or stress is perceived/experienced, this response occurs in the body _____.

a) Exhaustion
b) Adaption
c) Fight-or-flight
d) Resistance

SLR-GF-439

Seat No.	

Set P

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
2) Figures to the right indicate full marks.

Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

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a) When he is over the age of fifty
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10) Aches, shallow breathing and sweating, frequent colds are _____.
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SLR-GF-439

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
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Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

SLR-GF-439

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

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c) You have to do this under-water
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SLR-GF-439

Seat No.	

Set R

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
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Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
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Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

SLR-GF-439

Seat No.		Set	S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose amongst the alternatives. **10**

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9) Which factors improve coping?
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b) Optimism
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10) Which of the following statements is true?
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b) Moodiness is an emotional symptom of stress
c) Poor judgment is an emotional symptom of stress
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SLR-GF-439

Seat No.	

Set S

T. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Stress and Coping (BTN07509)

Day & Date: Tuesday 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) Attempt any 4 questions from Question no 2 to Question no 7.
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Q.2 Explain in detail the various personality sources of stress. Also explain the symptoms observed in this type of stress **10**

Q.3 What do you mean by Stress? Describe the current & Historical status of stress in India. **10**

Q.4 Comment on Medical & psychological consequences of stress in brief. **10**

Q.5 Explain various coping styles to deal with stress. **10**

Q.6 Describe positive and negative effects of stress with examples. **10**

Q.7 Explain the role of social support in mitigating stress with example. **10**

SLR-GF-440

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Professional Ethics & Human Value (BTN07510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

2) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

3) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

4) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

5) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

6) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

7) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

8) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

9) Human values are essential for _____.

a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

10) _____ is defined as the duty, obligation or even authority.

a) Work
b) Responsibility
c) Democracy
d) authority

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Professional Ethics & Human Value (BTN07510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Professional Ethics & Human Value (BTN07510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

2) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

3) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

4) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

5) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

6) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

7) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

8) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

9) What is Integrity?

a) Unity of thought
b) Word and deed
c) Open mindedness
d) All of these

10) Ethical issues that can affect an engineer's professional and personal life are termed as _____.

a) Macro ethics
b) Micro ethics
c) Morals
d) Rights

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Professional Ethics & Human Value (BTN07510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Professional Ethics & Human Value (BTN07510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. **10**

1) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

2) _____ is defined as the duty, obligation or even authority.
a) Work b) Responsibility
c) Democracy d) authority

3) Many complex social problems exist in the _____.
a) Industry/ Business b) Society
c) Home d) None of the above

4) Ethics is the word that refers to _____.
a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

5) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

6) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

7) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

8) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

9) Value and skills should go hand in hand _____.

a) True b) False
c) Cannot tell d) Wrong question

10) _____ are the basic Human aspirations.

a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Professional Ethics & Human Value (BTN07510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Professional Ethics & Human Value (BTN07510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options. 10

1) Work ethics is defined as a _____.
a) Motivation
b) Set of attitudes concerned with the value of work
c) Attitude
d) Values

2) What is Integrity?
a) Unity of thought b) Word and deed
c) Open mindedness d) All of these

3) Ethical issues that can affect an engineer's professional and personal life are termed as _____.
a) Macro ethics b) Micro ethics
c) Morals d) Rights

4) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

5) Value and skills should go hand in hand _____.
a) True b) False
c) Cannot tell d) Wrong question

6) _____ are the basic Human aspirations.
a) Money b) Relationship without money
c) Physical facility d) Continuous happiness

7) Human values are essential for _____.
a) living in harmony with self, each other and nature
b) making life easier and happy
c) living with family and friends
d) making money to fulfill desires

8) _____ is defined as the duty, obligation or even authority.

a) Work b) Responsibility
c) Democracy d) authority

9) Many complex social problems exist in the _____.

a) Industry/ Business b) Society
c) Home d) None of the above

10) Ethics is the word that refers to _____.

a) Human tendency b) Morals, values and beliefs
c) Only values d) Psychology

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Seat No.		Set	S

T. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Professional Ethics & Human Value (BTN07510)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required and state it clearly.

Q.2 What are the objectives of Engineering Ethics? **10**

OR

Discuss in detail the “Risk Benefit Analysis” and reducing risk.

Q.3 Explain the role of Engineers as Managers. **10**

OR

Give an overview of Engineering ethics.

Q.4 **Write short notes on any four.** **20**

a) Values
b) Virtues
c) Respect for others
d) Commitment
e) Spirituality
f) Honesty

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Monday,18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 MCQ/Objective Type Questions **14**

1) The major consideration to develop a good design is _____.
a) Durability
b) Cost
c) Compliance with performance criteria as laid down in specifications
d) All of the above

2) Ratio of net core area to Area of Circumscribing circle is, in square type transformer is _____.
a) 0.58 b) 0.45
c) 0.64 d) 0.51

3) Helical windings are employed in _____ transformers.
a) distribution b) power
c) shell type d) none of these

4) In D.C. machines the usual limit of slot pitch is _____.
a) between 5 to 10 mm b) between 10 to 15 mm
c) between 15 to 20 mm d) between 25 to 35 mm

5) DC machines provided with a large value of air gap length _____.
a) provides comparatively quiet operation
b) provides better ventilation
c) provides poor ventilation
d) both (a) and (b)

6) Limitation imposed on the design is/are _____.
a) Saturation of magnetic circuit b) Temperature rise
c) Commutation d) All of the above

7) Which types of slots are normally used in induction motor?
a) Open b) Semi closed
c) Closed d) Round

8) In case of induction motors, the ratio of length to pole pitch for good efficiency is taken as _____.

a) 1.0 b) 1.5
c) 2.0 d) 5.0

9) The value of specific electric loading of induction motor is in the range of ____.

a) 40 to 400 amps. Cond./m b) 400 to 4000 amp. Cond./m
c) 5000 to 45000 amp. Cond./m d) 30000 to 100,000 amp. Cond./m

10) A synchronous machine with a large length of air gap will have _____.

a) Lower limit of stability
b) Higher value of inherent regulation
c) Higher noise level
d) Smaller unbalanced magnetic pull

11) The effect of leakage flux in case of 3-phase induction motor is to _____.

a) Reduce the torque produced b) Increase the torque produced
c) Increase the power factor d) None of the above

12) The length of air gap to be provided in _____ is primarily determined by power factor consideration.

a) DC series motor b) DC shunt motor
c) Induction motor d) Synchronous motor

13) What is the maximum possible peripheral velocity which the rotor of a turbo-generator can tolerate?

a) 30 m/sec b) 50 m/sec
c) 120 m/sec d) 180 m/sec

14) The design of mechanical parts is particularly important in case of _____ Speed machines.

a) High b) Medium
c) Low d) All of these

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions:1) All questions are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Answer any four questions. **16**

a) Explain principles used in the Design of Electrical Machines.

b) Explain the factors those affect size of rotating electrical machines.

c) Distinguish between core transformer and shell transformer.

d) Determine the dimension of core and yoke for a 200 kVA, 50 Hz, 1 phase core type transformer. A cruciform core is used with distance between adjacent limbs equal to 1.6 times the width of core lamination. Assume voltage per turn 14 V, maximum flux density 1.1 Wb/m^2 window space factor = 0.32, current density 3A/mm^2 and stacking factor = 0.9. The net iron area is 0.56 d^2 in a cruciform core where 'd' is the diameter of circumscribing circle. Also the width of largest stamping is 0.85 d.

e) The diameter and length of 500kW, 500V, 445 r.p.m., 6 pole D.C generator are 84cm and 35cm respectively. If it is lap wound with 660 conductors, estimate the specific magnetic and electric loading.

Q.3 Answer any two questions. **12**

a) Design an adequate cooling arrangement for a 250 KVA 6600/400 V, 50Hz, 3 phase Delta/Star, oil immersed natural cool transformer with following data:
1) Winding temperature not to exceed 500c
2) Total loss at full load is 5.0 Kw.
3) Tank dimensions, height x length x width = (125x100x50) cm
Sketch the diagram to show the arrangement.

b) Derive the output equation of DC machine.

c) Find the suitable values diameter and length armature of the core for 100Kw, 250V, 6 pole, 750 r.p.m, D.C. generator having 90% efficiency. Assume an average flux density in the air of about 0.58 Wb/m^2 and amp. Conductor Per meter to be 28000. The ratio of core length to pole pitch is 0.67.

Section – II

Q.4 Attempt any four **16**

a) Derive the output equation of three phase induction motor.

b) Write short note on choice of Specific Magnetic & Electric loading for Synchronous Machine.

c) Find the current in the bar and end rings of a cage rotor of 6 poles, 3-ph, and induction motor having 72 stator slots with 15 conductors in each slot. If the stator current per phase is 20 amp and rotor slots are 55. Hence find the suitable size of the cage bars and end rings.

d) Determine the main dimension for a 2500 KVA, 50Hz, 3-ph, 187.5 rpm, and 3KV Salient pole generator. The specific magnetic loading is 0.6 wb/m^2 and specific electric loading is 34000 A/m. The ratio of core length to Pole pitch is 0.65 for circular poles. Specify the type of pole construction used if the synchronous speed is about 2 times the normal speed.

e) Determine the main dimension for a 1000 KVA, 50Hz, 3-ph, 375rpm alternator. The average air gap flux density is 0.55 Wb/m^2 and the ampere conductor per meter are 28000. Use rectangular pole and assume suitable value for ratio of core length to pole pitch in order that bolted on pole construction is used for which the maximum permissible peripheral speed is 50 m/s. the runaway speed is 1.8 times the synchronous speed.

Q.5 Attempt any Two **12**

a) Determine the main dimensions of 12 MVA, 13.8 kV, 50 Hz, 1500 rpm, 3-ph, star connected alternator. The following particulars are provided. Ave. gap density = 0.60 tesla, Ampere conductors per meter = 42000, Peripheral speed = 80 m/sec. Find also the maximum flux, the no. of stator slots if one conductor per slot is used, the no. of turns per phase.

b) In the design of a 30 HP, 3-ph, 440 V, 960 rpm, 50 Hz. Delta connected induction motor. Assume specific electric loading of 25000 ac/m and specific magnetic loading of 0.46 Wb/m^2 full load efficiency 86% and power factor 0.87. Estimate:

1) Diameter of stator bore
2) Length of stator core
3) Peripheral velocity
4) Turns per phase

c) 1250 kVA, 3phase, 50 Hz, 3300 V, 300 r.p.m., star connected syn. Generator, has the following design data:
Specific magnetic loading = 0.58 Wb/m^2, specific electric loading = 33000 ampere conductor per meter, winding = concentric, SCR = 1.2, field turns per pole = 60. The peripheral speed is not to exceed 30 m/s. Find the core length, bore diameter, turns per phase, air gap length. Assume the mmf required for air gap = 80% of no load field mmf.
Gap contraction factor = 1.15, field form factor = 0.67

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Monday,18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 MCQ/Objective Type Questions **14**

1) In case of induction motors, the ratio of length to pole pitch for good efficiency is taken as _____.
a) 1.0 b) 1.5
c) 2.0 d) 5.0

2) The value of specific electric loading of induction motor is in the range of ____.
a) 40 to 400 amps. Cond./m b) 400 to 4000 amp. Cond./m
c) 5000 to 45000 amp. Cond./m d) 30000 to 100,000 amp. Cond./m

3) A synchronous machine with a large length of air gap will have _____.
a) Lower limit of stability
b) Higher value of inherent regulation
c) Higher noise level
d) Smaller unbalanced magnetic pull

4) The effect of leakage flux in case of 3-phase induction motor is to _____.
a) Reduce the torque produced b) Increase the torque produced
c) Increase the power factor d) None of the above

5) The length of air gap to be provided in _____ is primarily determined by power factor consideration.
a) DC series motor b) DC shunt motor
c) Induction motor d) Synchronous motor

6) What is the maximum possible peripheral velocity which the rotor of a turbo-generator can tolerate?
a) 30 m/sec b) 50 m/sec
c) 120 m/sec d) 180 m/sec

7) The design of mechanical parts is particularly important in case of _____ Speed machines.
a) High b) Medium
c) Low d) All of these

8) The major consideration to develop a good design is _____.
a) Durability
b) Cost
c) Compliance with performance criteria as laid down in specifications
d) All of the above

9) Ratio of net core area to Area of Circumscribing circle is, in square type transformer is _____.
a) 0.58 b) 0.45
c) 0.64 d) 0.51

10) Helical windings are employed in _____ transformers.
a) distribution b) power
c) shell type d) none of these

11) In D.C. machines the usual limit of slot pitch is _____.
a) between 5 to 10 mm b) between 10 to 15 mm
c) between 15 to 20 mm d) between 25 to 35 mm

12) DC machines provided with a large value of air gap length _____.
a) provides comparatively quiet operation
b) provides better ventilation
c) provides poor ventilation
d) both (a) and (b)

13) Limitation imposed on the design is/are _____.
a) Saturation of magnetic circuit b) Temperature rise
c) Commutation d) All of the above

14) Which types of slots are normally used in induction motor?
a) Open b) Semi closed
c) Closed d) Round

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions:1) All questions are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Answer any four questions. **16**

a) Explain principles used in the Design of Electrical Machines.

b) Explain the factors those affect size of rotating electrical machines.

c) Distinguish between core transformer and shell transformer.

d) Determine the dimension of core and yoke for a 200 kVA, 50 Hz, 1 phase core type transformer. A cruciform core is used with distance between adjacent limbs equal to 1.6 times the width of core lamination. Assume voltage per turn 14 V, maximum flux density 1.1 Wb/m^2 window space factor = 0.32, current density 3A/mm^2 and stacking factor = 0.9. The net iron area is 0.56 d^2 in a cruciform core where 'd' is the diameter of circumscribing circle. Also the width of largest stamping is 0.85 d.

e) The diameter and length of 500kW, 500V, 445 r.p.m., 6 pole D.C generator are 84cm and 35cm respectively. If it is lap wound with 660 conductors, estimate the specific magnetic and electric loading.

Q.3 Answer any two questions. **12**

a) Design an adequate cooling arrangement for a 250 KVA 6600/400 V, 50Hz, 3 phase Delta/Star, oil immersed natural cool transformer with following data:
1) Winding temperature not to exceed 500c
2) Total loss at full load is 5.0 Kw.
3) Tank dimensions, height x length x width = (125x100x50) cm
Sketch the diagram to show the arrangement.

b) Derive the output equation of DC machine.

c) Find the suitable values diameter and length armature of the core for 100Kw, 250V, 6 pole, 750 r.p.m, D.C. generator having 90% efficiency. Assume an average flux density in the air of about 0.58 Wb/m^2 and amp. Conductor Per meter to be 28000. The ratio of core length to pole pitch is 0.67.

Section – II

Q.4 Attempt any four **16**

a) Derive the output equation of three phase induction motor.

b) Write short note on choice of Specific Magnetic & Electric loading for Synchronous Machine.

c) Find the current in the bar and end rings of a cage rotor of 6 poles, 3-ph, and induction motor having 72 stator slots with 15 conductors in each slot. If the stator current per phase is 20 amp and rotor slots are 55. Hence find the suitable size of the cage bars and end rings.

d) Determine the main dimension for a 2500 KVA, 50Hz, 3-ph, 187.5 rpm, and 3KV Salient pole generator. The specific magnetic loading is 0.6 wb/m^2 and specific electric loading is 34000 A/m. The ratio of core length to Pole pitch is 0.65 for circular poles. Specify the type of pole construction used if the synchronous speed is about 2 times the normal speed.

e) Determine the main dimension for a 1000 KVA, 50Hz, 3-ph, 375rpm alternator. The average air gap flux density is 0.55 Wb/m^2 and the ampere conductor per meter are 28000. Use rectangular pole and assume suitable value for ratio of core length to pole pitch in order that bolted on pole construction is used for which the maximum permissible peripheral speed is 50 m/s. the runaway speed is 1.8 times the synchronous speed.

Q.5 Attempt any Two **12**

a) Determine the main dimensions of 12 MVA, 13.8 kV, 50 Hz, 1500 rpm, 3-ph, star connected alternator. The following particulars are provided. Ave. gap density = 0.60 tesla, Ampere conductors per meter = 42000, Peripheral speed = 80 m/sec. Find also the maximum flux, the no. of stator slots if one conductor per slot is used, the no. of turns per phase.

b) In the design of a 30 HP, 3-ph, 440 V, 960 rpm, 50 Hz. Delta connected induction motor. Assume specific electric loading of 25000 ac/m and specific magnetic loading of 0.46 Wb/m^2 full load efficiency 86% and power factor 0.87. Estimate:

1) Diameter of stator bore
2) Length of stator core
3) Peripheral velocity
4) Turns per phase

c) 1250 kVA, 3phase, 50 Hz, 3300 V, 300 r.p.m., star connected syn. Generator, has the following design data:
Specific magnetic loading = 0.58 Wb/m^2, specific electric loading = 33000 ampere conductor per meter, winding = concentric, SCR = 1.2, field turns per pole = 60. The peripheral speed is not to exceed 30 m/s. Find the core length, bore diameter, turns per phase, air gap length. Assume the mmf required for air gap = 80% of no load field mmf.
Gap contraction factor = 1.15, field form factor = 0.67

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Monday,18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 MCQ/Objective Type Questions **14**

1) The effect of leakage flux in case of 3-phase induction motor is to _____.
a) Reduce the torque produced b) Increase the torque produced
c) Increase the power factor d) None of the above

2) The length of air gap to be provided in _____ is primarily determined by power factor consideration.
a) DC series motor b) DC shunt motor
c) Induction motor d) Synchronous motor

3) What is the maximum possible peripheral velocity which the rotor of a turbo-generator can tolerate?
a) 30 m/sec b) 50 m/sec
c) 120 m/sec d) 180 m/sec

4) The design of mechanical parts is particularly important in case of _____ Speed machines.
a) High b) Medium
c) Low d) All of these

5) The major consideration to develop a good design is _____.
a) Durability
b) Cost
c) Compliance with performance criteria as laid down in specifications
d) All of the above

6) Ratio of net core area to Area of Circumscribing circle is, in square type transformer is _____.
a) 0.58 b) 0.45
c) 0.64 d) 0.51

7) Helical windings are employed in _____ transformers.
a) distribution b) power
c) shell type d) none of these

8) In D.C. machines the usual limit of slot pitch is _____.
a) between 5 to 10 mm b) between 10 to 15 mm
c) between 15 to 20 mm d) between 25 to 35 mm

9) DC machines provided with a large value of air gap length _____.
a) provides comparatively quiet operation
b) provides better ventilation
c) provides poor ventilation
d) both (a) and (b)

10) Limitation imposed on the design is/are _____.
a) Saturation of magnetic circuit b) Temperature rise
c) Commutation d) All of the above

11) Which types of slots are normally used in induction motor?
a) Open b) Semi closed
c) Closed d) Round

12) In case of induction motors, the ratio of length to pole pitch for good efficiency is taken as _____.
a) 1.0 b) 1.5
c) 2.0 d) 5.0

13) The value of specific electric loading of induction motor is in the range of ____.
a) 40 to 400 amps. Cond./m b) 400 to 4000 amp. Cond./m
c) 5000 to 45000 amp. Cond./m d) 30000 to 100,000 amp. Cond./m

14) A synchronous machine with a large length of air gap will have _____.
a) Lower limit of stability
b) Higher value of inherent regulation
c) Higher noise level
d) Smaller unbalanced magnetic pull

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions:1) All questions are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Answer any four questions. **16**

a) Explain principles used in the Design of Electrical Machines.

b) Explain the factors those affect size of rotating electrical machines.

c) Distinguish between core transformer and shell transformer.

d) Determine the dimension of core and yoke for a 200 kVA, 50 Hz, 1 phase core type transformer. A cruciform core is used with distance between adjacent limbs equal to 1.6 times the width of core lamination. Assume voltage per turn 14 V, maximum flux density 1.1 Wb/m^2 window space factor = 0.32, current density 3A/mm^2 and stacking factor = 0.9. The net iron area is 0.56 d^2 in a cruciform core where 'd' is the diameter of circumscribing circle. Also the width of largest stamping is 0.85 d.

e) The diameter and length of 500kW, 500V, 445 r.p.m., 6 pole D.C generator are 84cm and 35cm respectively. If it is lap wound with 660 conductors, estimate the specific magnetic and electric loading.

Q.3 Answer any two questions. **12**

a) Design an adequate cooling arrangement for a 250 KVA 6600/400 V, 50Hz, 3 phase Delta/Star, oil immersed natural cool transformer with following data:
1) Winding temperature not to exceed 500c
2) Total loss at full load is 5.0 Kw.
3) Tank dimensions, height x length x width = (125x100x50) cm
Sketch the diagram to show the arrangement.

b) Derive the output equation of DC machine.

c) Find the suitable values diameter and length armature of the core for 100Kw, 250V, 6 pole, 750 r.p.m, D.C. generator having 90% efficiency. Assume an average flux density in the air of about 0.58 Wb/m^2 and amp. Conductor Per meter to be 28000. The ratio of core length to pole pitch is 0.67.

Section – II

Q.4 Attempt any four **16**

a) Derive the output equation of three phase induction motor.

b) Write short note on choice of Specific Magnetic & Electric loading for Synchronous Machine.

c) Find the current in the bar and end rings of a cage rotor of 6 poles, 3-ph, and induction motor having 72 stator slots with 15 conductors in each slot. If the stator current per phase is 20 amp and rotor slots are 55. Hence find the suitable size of the cage bars and end rings.

d) Determine the main dimension for a 2500 KVA, 50Hz, 3-ph, 187.5 rpm, and 3KV Salient pole generator. The specific magnetic loading is 0.6 wb/m^2 and specific electric loading is 34000 A/m. The ratio of core length to Pole pitch is 0.65 for circular poles. Specify the type of pole construction used if the synchronous speed is about 2 times the normal speed.

e) Determine the main dimension for a 1000 KVA, 50Hz, 3-ph, 375rpm alternator. The average air gap flux density is 0.55 Wb/m^2 and the ampere conductor per meter are 28000. Use rectangular pole and assume suitable value for ratio of core length to pole pitch in order that bolted on pole construction is used for which the maximum permissible peripheral speed is 50 m/s. the runaway speed is 1.8 times the synchronous speed.

Q.5 Attempt any Two **12**

a) Determine the main dimensions of 12 MVA, 13.8 kV, 50 Hz, 1500 rpm, 3-ph, star connected alternator. The following particulars are provided. Ave. gap density = 0.60 tesla, Ampere conductors per meter = 42000, Peripheral speed = 80 m/sec. Find also the maximum flux, the no. of stator slots if one conductor per slot is used, the no. of turns per phase.

b) In the design of a 30 HP, 3-ph, 440 V, 960 rpm, 50 Hz. Delta connected induction motor. Assume specific electric loading of 25000 ac/m and specific magnetic loading of 0.46 Wb/m^2 full load efficiency 86% and power factor 0.87. Estimate:

1) Diameter of stator bore
2) Length of stator core
3) Peripheral velocity
4) Turns per phase

c) 1250 kVA, 3phase, 50 Hz, 3300 V, 300 r.p.m., star connected syn. Generator, has the following design data:
Specific magnetic loading = 0.58 Wb/m^2, specific electric loading = 33000 ampere conductor per meter, winding = concentric, SCR = 1.2, field turns per pole = 60. The peripheral speed is not to exceed 30 m/s. Find the core length, bore diameter, turns per phase, air gap length. Assume the mmf required for air gap = 80% of no load field mmf.
Gap contraction factor = 1.15, field form factor = 0.67

Seat No.	

Set **S**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Monday,18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 MCQ/Objective Type Questions **14**

1) Limitation imposed on the design is/are _____.
a) Saturation of magnetic circuit b) Temperature rise
c) Commutation d) All of the above

2) Which types of slots are normally used in induction motor?
a) Open b) Semi closed
c) Closed d) Round

3) In case of induction motors, the ratio of length to pole pitch for good efficiency is taken as _____.
a) 1.0 b) 1.5
c) 2.0 d) 5.0

4) The value of specific electric loading of induction motor is in the range of ____.
a) 40 to 400 amps. Cond./m b) 400 to 4000 amp. Cond./m
c) 5000 to 45000 amp. Cond./m d) 30000 to 100,000 amp. Cond./m

5) A synchronous machine with a large length of air gap will have _____.
a) Lower limit of stability
b) Higher value of inherent regulation
c) Higher noise level
d) Smaller unbalanced magnetic pull

6) The effect of leakage flux in case of 3-phase induction motor is to _____.
a) Reduce the torque produced b) Increase the torque produced
c) Increase the power factor d) None of the above

7) The length of air gap to be provided in _____ is primarily determined by power factor consideration.
a) DC series motor b) DC shunt motor
c) Induction motor d) Synchronous motor

8) What is the maximum possible peripheral velocity which the rotor of a turbo-generator can tolerate?
a) 30 m/sec b) 50 m/sec
c) 120 m/sec d) 180 m/sec

9) The design of mechanical parts is particularly important in case of _____ Speed machines.
a) High b) Medium
c) Low d) All of these

10) The major consideration to develop a good design is _____.
a) Durability
b) Cost
c) Compliance with performance criteria as laid down in specifications
d) All of the above

11) Ratio of net core area to Area of Circumscribing circle is, in square type transformer is _____.
a) 0.58 b) 0.45
c) 0.64 d) 0.51

12) Helical windings are employed in _____ transformers.
a) distribution b) power
c) shell type d) none of these

13) In D.C. machines the usual limit of slot pitch is _____.
a) between 5 to 10 mm b) between 10 to 15 mm
c) between 15 to 20 mm d) between 25 to 35 mm

14) DC machines provided with a large value of air gap length _____.
a) provides comparatively quiet operation
b) provides better ventilation
c) provides poor ventilation
d) both (a) and (b)

Seat No.	

Set **S**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (BTN07601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions:1) All questions are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Answer any four questions. **16**

a) Explain principles used in the Design of Electrical Machines.

b) Explain the factors those affect size of rotating electrical machines.

c) Distinguish between core transformer and shell transformer.

d) Determine the dimension of core and yoke for a 200 kVA, 50 Hz, 1 phase core type transformer. A cruciform core is used with distance between adjacent limbs equal to 1.6 times the width of core lamination. Assume voltage per turn 14 V, maximum flux density 1.1 Wb/m^2 window space factor = 0.32, current density 3A/mm^2 and stacking factor = 0.9. The net iron area is 0.56 d^2 in a cruciform core where 'd' is the diameter of circumscribing circle. Also the width of largest stamping is 0.85 d.

e) The diameter and length of 500kW, 500V, 445 r.p.m., 6 pole D.C generator are 84cm and 35cm respectively. If it is lap wound with 660 conductors, estimate the specific magnetic and electric loading.

Q.3 Answer any two questions. **12**

a) Design an adequate cooling arrangement for a 250 KVA 6600/400 V, 50Hz, 3 phase Delta/Star, oil immersed natural cool transformer with following data:
1) Winding temperature not to exceed 500c
2) Total loss at full load is 5.0 Kw.
3) Tank dimensions, height x length x width = (125x100x50) cm
Sketch the diagram to show the arrangement.

b) Derive the output equation of DC machine.

c) Find the suitable values diameter and length armature of the core for 100Kw, 250V, 6 pole, 750 r.p.m, D.C. generator having 90% efficiency. Assume an average flux density in the air of about 0.58 Wb/m^2 and amp. Conductor Per meter to be 28000. The ratio of core length to pole pitch is 0.67.

Section – II

Q.4 Attempt any four **16**

a) Derive the output equation of three phase induction motor.

b) Write short note on choice of Specific Magnetic & Electric loading for Synchronous Machine.

c) Find the current in the bar and end rings of a cage rotor of 6 poles, 3-ph, and induction motor having 72 stator slots with 15 conductors in each slot. If the stator current per phase is 20 amp and rotor slots are 55. Hence find the suitable size of the cage bars and end rings.

d) Determine the main dimension for a 2500 KVA, 50Hz, 3-ph, 187.5 rpm, and 3KV Salient pole generator. The specific magnetic loading is 0.6 wb/m^2 and specific electric loading is 34000 A/m. The ratio of core length to Pole pitch is 0.65 for circular poles. Specify the type of pole construction used if the synchronous speed is about 2 times the normal speed.

e) Determine the main dimension for a 1000 KVA, 50Hz, 3-ph, 375rpm alternator. The average air gap flux density is 0.55 Wb/m^2 and the ampere conductor per meter are 28000. Use rectangular pole and assume suitable value for ratio of core length to pole pitch in order that bolted on pole construction is used for which the maximum permissible peripheral speed is 50 m/s. the runaway speed is 1.8 times the synchronous speed.

Q.5 Attempt any Two **12**

a) Determine the main dimensions of 12 MVA, 13.8 kV, 50 Hz, 1500 rpm, 3-ph, star connected alternator. The following particulars are provided. Ave. gap density = 0.60 tesla, Ampere conductors per meter = 42000, Peripheral speed = 80 m/sec. Find also the maximum flux, the no. of stator slots if one conductor per slot is used, the no. of turns per phase.

b) In the design of a 30 HP, 3-ph, 440 V, 960 rpm, 50 Hz. Delta connected induction motor. Assume specific electric loading of 25000 ac/m and specific magnetic loading of 0.46 Wb/m^2 full load efficiency 86% and power factor 0.87. Estimate:

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2) Length of stator core
3) Peripheral velocity
4) Turns per phase

c) 1250 kVA, 3phase, 50 Hz, 3300 V, 300 r.p.m., star connected syn. Generator, has the following design data:
Specific magnetic loading = 0.58 Wb/m^2, specific electric loading = 33000 ampere conductor per meter, winding = concentric, SCR = 1.2, field turns per pole = 60. The peripheral speed is not to exceed 30 m/s. Find the core length, bore diameter, turns per phase, air gap length. Assume the mmf required for air gap = 80% of no load field mmf.
Gap contraction factor = 1.15, field form factor = 0.67

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Seat No.		Set	P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Power supply frequency for 25 kV single phase system is _____.
a) 161 b) 25
c) 50 d) 60

2) The coefficient of adhesion is highest when _____.
a) The rails are dry b) The rails are oiled
c) The rails ark wet with dew d) The rails are dusty

3) When the speed of the train is estimated taking into account the time of stop at a station in addition to the actual running time between stops, is known as _____.
a) Average speed b) Schedule speed
c) Notching speed d) Free running speed

4) Quadrilateral speed-time curve is the closer approximation for _____.
a) Main line service b) Suburban service
c) Urban service d) Urban and suburban

5) Which motor has relatively wider range of speed control?
a) D.C. shunt motor b) Synchronous motor
c) Slip ring I.M. d) Squirrel cage I.M.

6) Change of frequency in the supply does not affect _____.
a) Dielectric heating b) Resistance heating
c) Induction heating d) microwave heating

7) Which method of heating is likely to give leading power factor?
a) Electric are heating b) Induction heating
c) Dielectric heating d) Resistance heating

8) In case of induction heating, which of the following parameter is of high value?
a) Frequency b) Current
c) Voltage d) Capacitance

9) For arc heating, the electrodes are made of _____.
a) Copper b) Aluminum
c) Graphite d) ACSR conductor

10) Radiant efficiency of the luminous source depends on _____.
a) Shape of the source
b) Temperature of the source
c) Wavelength of light rays
d) all of the above

11) Carbon arc lamps are commonly used in _____.
a) Domestic lighting
b) Street lighting
c) Cinema projectors
d) Photography

12) The unit of luminous flux is _____.
a) steradian
b) candela
c) lumen
d) lux

13) The Act which has been enacted to provide for efficient use of energy and its conservation and for matters connected therewith is?
a) Indian Electricity Act 2003
b) Energy Conservation Act 2001
c) Indian Electricity Act 2010
d) Energy Conservation Act 2007

14) Which of the following is more energy efficient?
a) Incandescent Bulb
b) Fluorescent Tube light
c) CFL
d) None of these

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Draw and explain speed time curve for main line services.
b) Desirable characteristic of traction motors.
c) Explain plugging breaking system in traction system.
d) Write short note on motor selection in textile industries.
e) A train is required to run between two stations 1.6 km apart at an average speed of 40 kmph. The run is to be made to a simplified quadrilateral speed-time curve. If the maximum speed is limited to 64 kmph, acceleration to 2.0 kmphps, coasting and braking retardation to 0.16 kmphps and 3.2 kmphps, determine the duration of acceleration, coasting and braking periods.

Q.3 Solve any two **12**

a) Derive an expression for Trapezoidal Speed-Time Curve.
b) Explain series-parallel control of traction motors.
c) Write note on motor selection in sugar mills.

Section – II

Q.4 Solve any four **16**

a) Comparison between tungsten filament lamps and fluorescent tubes.
b) State advantages and disadvantages electrical welding.
c) Describe with the help of a neat diagram the construction and working of a high pressure mercury vapour lamp.
d) Explain the laws of illumination.
e) Write a note on Energy Conservation in Transport.

Q.5 Solve any two **12**

a) Explain flood lighting.
b) Explain Energy Conservation Planning.
c) Explain direct resistance and indirect resistance heating.

Seat No.		Set	Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In case of induction heating, which of the following parameter is of high value?
a) Frequency b) Current
c) Voltage d) Capacitance

2) For arc heating, the electrodes are made of _____.
a) Copper b) Aluminum
c) Graphite d) ACSR conductor

3) Radiant efficiency of the luminous source depends on _____.
a) Shape of the source b) Temperature of the source
c) Wavelength of light rays d) all of the above

4) Carbon arc lamps are commonly used in _____.
a) Domestic lighting b) Street lighting
c) Cinema projectors d) Photography

5) The unit of luminous flux is _____.
a) steradian b) candela
c) lumen d) lux

6) The Act which has been enacted to provide for efficient use of energy and its conservation and for matters connected therewith is?
a) Indian Electricity Act 2003
b) Energy Conservation Act 2001
c) Indian Electricity Act 2010
d) Energy Conservation Act 2007

7) Which of the following is more energy efficient?
a) Incandescent Bulb b) Fluorescent Tube light
c) CFL d) None of these

8) Power supply frequency for 25 kV single phase system is _____.
a) 161 b) 25
c) 50 d) 60

9) The coefficient of adhesion is highest when _____.
a) The rails are dry b) The rails are oiled
c) The rails ark wet with dew d) The rails are dusty

10) When the speed of the train is estimated taking into account the time of stop at a station in addition to the actual running time between stops, is known as _____.

a) Average speed
b) Schedule speed
c) Notching speed
d) Free running speed

11) Quadrilateral speed-time curve is the closer approximation for _____.

a) Main line service
b) Suburban service
c) Urban service
d) Urban and suburban

12) Which motor has relatively wider range of speed control?

a) D.C. shunt motor
b) Synchronous motor
c) Slip ring I.M.
d) Squirrel cage I.M.

13) Change of frequency in the supply does not affect _____.

a) Dielectric heating
b) Resistance heating
c) Induction heating
d) microwave heating

14) Which method of heating is likely to give leading power factor?

a) Electric are heating
b) Induction heating
c) Dielectric heating
d) Resistance heating

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Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Draw and explain speed time curve for main line services.
b) Desirable characteristic of traction motors.
c) Explain plugging breaking system in traction system.
d) Write short note on motor selection in textile industries.
e) A train is required to run between two stations 1.6 km apart at an average speed of 40 kmph. The run is to be made to a simplified quadrilateral speed-time curve. If the maximum speed is limited to 64 kmph, acceleration to 2.0 kmphps, coasting and braking retardation to 0.16 kmphps and 3.2 kmphps, determine the duration of acceleration, coasting and braking periods.

Q.3 Solve any two **12**

a) Derive an expression for Trapezoidal Speed-Time Curve.
b) Explain series-parallel control of traction motors.
c) Write note on motor selection in sugar mills.

Section – II

Q.4 Solve any four **16**

a) Comparison between tungsten filament lamps and fluorescent tubes.
b) State advantages and disadvantages electrical welding.
c) Describe with the help of a neat diagram the construction and working of a high pressure mercury vapour lamp.
d) Explain the laws of illumination.
e) Write a note on Energy Conservation in Transport.

Q.5 Solve any two **12**

a) Explain flood lighting.
b) Explain Energy Conservation Planning.
c) Explain direct resistance and indirect resistance heating.

Seat No.		Set	R

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Carbon arc lamps are commonly used in _____.
a) Domestic lighting b) Street lighting
c) Cinema projectors d) Photography

2) The unit of luminous flux is _____.
a) steradian b) candela
c) lumen d) lux

3) The Act which has been enacted to provide for efficient use of energy and its conservation and for matters connected therewith is?
a) Indian Electricity Act 2003
b) Energy Conservation Act 2001
c) Indian Electricity Act 2010
d) Energy Conservation Act 2007

4) Which of the following is more energy efficient?
a) Incandescent Bulb b) Fluorescent Tube light
c) CFL d) None of these

5) Power supply frequency for 25 kV single phase system is _____.
a) 161 b) 25
c) 50 d) 60

6) The coefficient of adhesion is highest when _____.
a) The rails are dry b) The rails are oiled
c) The rails ark wet with dew d) The rails are dusty

7) When the speed of the train is estimated taking into account the time of stop at a station in addition to the actual running time between stops, is known as _____.
a) Average speed b) Schedule speed
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8) Quadrilateral speed-time curve is the closer approximation for _____.
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9) Which motor has relatively wider range of speed control?
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c) Slip ring I.M. d) Squirrel cage I.M.

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a) Frequency b) Current
c) Voltage d) Capacitance

13) For arc heating, the electrodes are made of _____.
a) Copper b) Aluminum
c) Graphite d) ACSR conductor

14) Radiant efficiency of the luminous source depends on _____.
a) Shape of the source b) Temperature of the source
c) Wavelength of light rays d) all of the above

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Draw and explain speed time curve for main line services.
b) Desirable characteristic of traction motors.
c) Explain plugging breaking system in traction system.
d) Write short note on motor selection in textile industries.
e) A train is required to run between two stations 1.6 km apart at an average speed of 40 kmph. The run is to be made to a simplified quadrilateral speed-time curve. If the maximum speed is limited to 64 kmph, acceleration to 2.0 kmphps, coasting and braking retardation to 0.16 kmphps and 3.2 kmphps, determine the duration of acceleration, coasting and braking periods.

Q.3 Solve any two **12**

a) Derive an expression for Trapezoidal Speed-Time Curve.
b) Explain series-parallel control of traction motors.
c) Write note on motor selection in sugar mills.

Section – II

Q.4 Solve any four **16**

a) Comparison between tungsten filament lamps and fluorescent tubes.
b) State advantages and disadvantages electrical welding.
c) Describe with the help of a neat diagram the construction and working of a high pressure mercury vapour lamp.
d) Explain the laws of illumination.
e) Write a note on Energy Conservation in Transport.

Q.5 Solve any two **12**

a) Explain flood lighting.
b) Explain Energy Conservation Planning.
c) Explain direct resistance and indirect resistance heating.

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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c) 50 d) 60

11) The coefficient of adhesion is highest when _____.

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a) Average speed b) Schedule speed
c) Notching speed d) Free running speed

13) Quadrilateral speed-time curve is the closer approximation for _____.

a) Main line service b) Suburban service
c) Urban service d) Urban and suburban

14) Which motor has relatively wider range of speed control?

a) D.C. shunt motor b) Synchronous motor
c) Slip ring I.M. d) Squirrel cage I.M.

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Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (BTN07602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Draw and explain speed time curve for main line services.
b) Desirable characteristic of traction motors.
c) Explain plugging breaking system in traction system.
d) Write short note on motor selection in textile industries.
e) A train is required to run between two stations 1.6 km apart at an average speed of 40 kmph. The run is to be made to a simplified quadrilateral speed-time curve. If the maximum speed is limited to 64 kmph, acceleration to 2.0 kmphps, coasting and braking retardation to 0.16 kmphps and 3.2 kmphps, determine the duration of acceleration, coasting and braking periods.

Q.3 Solve any two **12**

a) Derive an expression for Trapezoidal Speed-Time Curve.
b) Explain series-parallel control of traction motors.
c) Write note on motor selection in sugar mills.

Section – II

Q.4 Solve any four **16**

a) Comparison between tungsten filament lamps and fluorescent tubes.
b) State advantages and disadvantages electrical welding.
c) Describe with the help of a neat diagram the construction and working of a high pressure mercury vapour lamp.
d) Explain the laws of illumination.
e) Write a note on Energy Conservation in Transport.

Q.5 Solve any two **12**

a) Explain flood lighting.
b) Explain Energy Conservation Planning.
c) Explain direct resistance and indirect resistance heating.

SLR-GF-443

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer book. Page no 03 (Starting page of the Answer Book). Each Question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat diagrams whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The minimum gate current which can turn on SCR is called _____.
a) Trigger current b) Holding current
c) Junction current d) Break over current

2) Which circuit gives inherent freewheeling action?
a) Half wave converter b) Semi converter
c) Full converter d) None

3) The output voltage of the AC voltage controller can be _____.
a) Variable b) Constant
c) Either of a) or b) d) None of these

4) Which device can be used in a chopper circuit?
a) BJT b) MOSFET
c) GTO d) All of the mentioned

5) The output of a single-phase half-bridge inverter on R load is ideally _____.
a) a sine wave b) a square wave
c) a triangular wave d) constant dc

6) Which one is greater of the following?
a) Leakage current
b) Holding current
c) Latching current
d) None

7) TRIAC and DIAC are _____.
a) Bi-directional devices b) Unidirectional devices
c) Can't decide d) None of these

8) A four-quadrant operation requires _____.
a) Two full converters in series
b) Two full converters connected in parallel
c) Two full converters connected in back-to-back
d) Two semi converters connected in back to back

9) Type A Chopper is used for obtaining which type of operating mode?

a) Reverse motoring mode
b) Motoring Mode
c) Reverse regenerative mode
d) Regenerative Braking mode

10) In 4 quadrant operation of a hoist 2rd quadrant represents _____.

a) Reverse motoring
b) Reverse braking
c) Forward braking
d) Forward motoring

11) Electrical Drives includes _____.

a) Power Electronics
b) Electrical Machines
c) Control Systems
d) All of the above

12) Construction of Trapezoidal Permanent Magnet A C is exactly similar to the _____.

a) Conventional DC motor
b) Brushless DC Motor
c) Permanent magnet synchronous motor
d) Totally different construction

13) In BLDC Motors the Hall effect sensor is used as _____.

a) rotor Voltage sensor
b) rotor position sensor
c) rotor current sensor
d) Both b & c

14) An elevator drive is required to operate in _____.

a) One quadrant only
b) Two quadrant
c) Three quadrant
d) Four quadrant

Seat No.	

Set | P

T. Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: **16**

a) What is meant by commutation? Explain class D commutation with proper waveform.
b) Draw and explain single phase full wave-controlled rectifier with 'RL' load with proper waveform.
c) Draw and explain step down a chopper with proper waveform.
d) Draw and explain single phase half bridge inverter with 'RL' load with proper waveform.
e) What are the types of AC controllers? Explain the phase angle control regulator.
f) A three-phase semi-converter feeds power to a resistive load of 10Ω. For a firing angle delay of 30 deg., the load takes 5 Kw. Find the magnitude of per phase input supply voltage.

Q.3 Attempt any two of the following: **12**

a) Draw and explain static V-I characteristics of SCR. Define latching and holding current.
b) Draw & explain three phases fully controlled rectifier with R load with proper waveform.
c) Draw a neat diagram & explain the 120° conduction mode of 3- a phase inverter with proper waveform.

Section – II

Q.4 Attempt any four of the following: **16**

a) Explain four quadrant operations with a neat diagram.
b) Write factors on which the choice of electric drive depends.
c) Write the comparison between AC Drives and DC Drives.
d) Draw & explain Brushless motor drives with waveform.
e) Draw the block diagram of the Electrical Drive system and explain each block.
f) Explain single-phase half-controlled converter-fed DC motor drives.

Q.5 Attempt any two of the following: **12**

a) Explain the Multi-Quadrant chopper fed separately excited DC motor.
b) Explain the dynamics of electrical drives with the fundamental torque equation.
c) Explain three phases fully controlled converter-fed DC motor drive with its six modes of operation.

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer book. Page no 03 (Starting page of the Answer Book). Each Question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat diagrams whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) A four-quadrant operation requires _____.
a) Two full converters in series
b) Two full converters connected in parallel
c) Two full converters connected in back-to-back
d) Two semi converters connected in back to back

2) Type A Chopper is used for obtaining which type of operating mode?
a) Reverse motoring mode b) Motoring Mode
c) Reverse regenerative mode d) Regenerative Braking mode

3) In 4 quadrant operation of a hoist 2rd quadrant represents _____.
a) Reverse motoring b) Reverse braking
c) Forward braking d) Forward motoring

4) Electrical Drives includes _____.
a) Power Electronics b) Electrical Machines
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5) Construction of Trapezoidal Permanent Magnet A C is exactly similar to the _____.
a) Conventional DC motor
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c) Permanent magnet synchronous motor
d) Totally different construction

6) In BLDC Motors the Hall effect sensor is used as _____.
a) rotor Voltage sensor b) rotor position sensor
c) rotor current sensor d) Both b & c

7) An elevator drive is required to operate in _____.
a) One quadrant only b) Two quadrant
c) Three quadrant d) Four quadrant

8) The minimum gate current which can turn on SCR is called _____.
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9) Which circuit gives inherent freewheeling action?
a) Half wave converter b) Semi converter
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10) The output voltage of the AC voltage controller can be _____.
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c) Either of a) or b) d) None of these

11) Which device can be used in a chopper circuit?
a) BJT b) MOSFET
c) GTO d) All of the mentioned

12) The output of a single-phase half-bridge inverter on R load is ideally _____.
a) a sine wave b) a square wave
c) a triangular wave d) constant dc

13) Which one is greater of the following?
a) Leakage current
b) Holding current
c) Latching current
d) None

14) TRIAC and DIAC are _____.
a) Bi-directional devices b) Unidirectional devices
c) Can't decide d) None of these

SLR-GF-443

Seat No.	

Set Q

T. Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following: **16**

a) What is meant by commutation? Explain class D commutation with proper waveform.
b) Draw and explain single phase full wave-controlled rectifier with 'RL' load with proper waveform.
c) Draw and explain step down a chopper with proper waveform.
d) Draw and explain single phase half bridge inverter with 'RL' load with proper waveform.
e) What are the types of AC controllers? Explain the phase angle control regulator.
f) A three-phase semi-converter feeds power to a resistive load of 10Ω. For a firing angle delay of 30 deg., the load takes 5 Kw. Find the magnitude of per phase input supply voltage.

Q.3 Attempt any two of the following: **12**

a) Draw and explain static V-I characteristics of SCR. Define latching and holding current.
b) Draw & explain three phases fully controlled rectifier with R load with proper waveform.
c) Draw a neat diagram & explain the 120° conduction mode of 3- a phase inverter with proper waveform.

Section – II

Q.4 Attempt any four of the following: **16**

a) Explain four quadrant operations with a neat diagram.
b) Write factors on which the choice of electric drive depends.
c) Write the comparison between AC Drives and DC Drives.
d) Draw & explain Brushless motor drives with waveform.
e) Draw the block diagram of the Electrical Drive system and explain each block.
f) Explain single-phase half-controlled converter-fed DC motor drives.

Q.5 Attempt any two of the following: **12**

a) Explain the Multi-Quadrant chopper fed separately excited DC motor.
b) Explain the dynamics of electrical drives with the fundamental torque equation.
c) Explain three phases fully controlled converter-fed DC motor drive with its six modes of operation.

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Seat No.	

Set R

T. Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer book. Page no 03 (Starting page of the Answer Book). Each Question carries one mark.
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4) Draw neat diagrams whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Electrical Drives includes _____.
a) Power Electronics b) Electrical Machines
c) Control Systems d) All of the above

2) Construction of Trapezoidal Permanent Magnet A C is exactly similar to the _____.
a) Conventional DC motor
b) Brushless DC Motor
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d) Totally different construction

3) In BLDC Motors the Hall effect sensor is used as _____.
a) rotor Voltage sensor b) rotor position sensor
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4) An elevator drive is required to operate in _____.
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c) Three quadrant d) Four quadrant

5) The minimum gate current which can turn on SCR is called _____.
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c) Junction current d) Break over current

6) Which circuit gives inherent freewheeling action?
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7) The output voltage of the AC voltage controller can be _____.
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a) BJT b) MOSFET
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13) Type A Chopper is used for obtaining which type of operating mode?
a) Reverse motoring mode b) Motoring Mode
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Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four of the following: **16**

a) What is meant by commutation? Explain class D commutation with proper waveform.
b) Draw and explain single phase full wave-controlled rectifier with 'RL' load with proper waveform.
c) Draw and explain step down a chopper with proper waveform.
d) Draw and explain single phase half bridge inverter with 'RL' load with proper waveform.
e) What are the types of AC controllers? Explain the phase angle control regulator.
f) A three-phase semi-converter feeds power to a resistive load of 10Ω. For a firing angle delay of 30 deg., the load takes 5 Kw. Find the magnitude of per phase input supply voltage.

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a) Draw and explain static V-I characteristics of SCR. Define latching and holding current.
b) Draw & explain three phases fully controlled rectifier with R load with proper waveform.
c) Draw a neat diagram & explain the 120° conduction mode of 3- a phase inverter with proper waveform.

Section – II

Q.4 Attempt any four of the following: **16**

a) Explain four quadrant operations with a neat diagram.
b) Write factors on which the choice of electric drive depends.
c) Write the comparison between AC Drives and DC Drives.
d) Draw & explain Brushless motor drives with waveform.
e) Draw the block diagram of the Electrical Drive system and explain each block.
f) Explain single-phase half-controlled converter-fed DC motor drives.

Q.5 Attempt any two of the following: **12**

a) Explain the Multi-Quadrant chopper fed separately excited DC motor.
b) Explain the dynamics of electrical drives with the fundamental torque equation.
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Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer book. Page no 03 (Starting page of the Answer Book). Each Question carries one mark.
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4) Draw neat diagrams whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which one is greater of the following?
a) Leakage current
b) Holding current
c) Latching current
d) None

2) TRIAC and DIAC are _____.
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c) Can't decide d) None of these

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a) Variable b) Constant
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13) Which device can be used in a chopper circuit?
a) BJT b) MOSFET
c) GTO d) All of the mentioned

14) The output of a single-phase half-bridge inverter on R load is ideally _____.
a) a sine wave b) a square wave
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SLR-GF-443

Seat No.		Set	s

T. Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics & Industrial Drives (BTN07603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four of the following: **16**

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Q.3 Attempt any two of the following: **12**

a) Draw and explain static V-I characteristics of SCR. Define latching and holding current.
b) Draw & explain three phases fully controlled rectifier with R load with proper waveform.
c) Draw a neat diagram & explain the 120° conduction mode of 3- a phase inverter with proper waveform.

Section – II

Q.4 Attempt any four of the following: **16**

a) Explain four quadrant operations with a neat diagram.
b) Write factors on which the choice of electric drive depends.
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d) Draw & explain Brushless motor drives with waveform.
e) Draw the block diagram of the Electrical Drive system and explain each block.
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Q.5 Attempt any two of the following: **12**

a) Explain the Multi-Quadrant chopper fed separately excited DC motor.
b) Explain the dynamics of electrical drives with the fundamental torque equation.
c) Explain three phases fully controlled converter-fed DC motor drive with its six modes of operation.

SLR-GF-444

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Draw neat diagram whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) Differentiators are avoided in the system design as they:
a) Are costlier
b) Reduces the response of the system
c) Develop noise and saturate the amplifier
d) Cannot be formed with capacitors and inductors

2) Phase lag compensation will _____.
a) improve relative stability
b) increase the speed of response
c) increase bandwidth
d) increase overshoot

3) Due to which of the following reasons excessive bandwidth in control system should be avoided _____.
a) It leads to slow speed of response
b) It leads to low relative stability
c) Noise is proportional to bandwidth
d) None of the above

4) The transfer function of a simple RC network as a controller is $Gc(s) = \frac{s+z}{s+p}$ the condition of RC network to act as phase lead controller is _____.
a) $p < z$ b) $p = 0$
c) $p = z$ d) $p > z$

5) The phase lag produced by the transportation relays _____.
a) is independent of frequency
b) is inversely proportional to frequency
c) increases linearly with frequency
d) decreases linearly with frequency

6) The eigen values of a linear system are the locations of _____.
a) finite poles b) poles of the system
c) zeros of the system d) none of the above

7) The system matrix of a system is given by $A = \begin{bmatrix} 0 & 1 \\ -3 & -5 \end{bmatrix}$ The characteristic equation is given by _____.

a) $s^2 + 5s + 3 = 0$ b) $s^2 - 3s - 5 = 0$
c) $s^2 + 3s + 5 = 0$ d) $s^2 + s + 2 = 0$

8) The necessary and sufficient condition to be satisfied for observer design is that the system should be completely _____.

a) State controllable
b) State observable
c) State controllable and state observable
d) Any of the above

9) The eigen values of the matrix $(A - BK)$ are called _____.

a) open loop poles b) open loop zeros
c) regulator poles d) none of these

10) In phase plane _____.

a) $X1$ is represented in x-axis, and $X2$ in y-axis
b) $X2$ is represented in x-axis, and $X1$ in y-axis
c) any one of above
d) none of the above

11) The describing function N of a nonlinear control system is a function of _____.

a) amplitude of the input b) frequency of the input
c) initial conditions of the output d) both a) and b)

12) The points at which derivatives of all the state variables are zero are: _____.

a) Singular points b) Nonsingular points
c) Poles d) Zeros

13) Which of the following methods suitable for the stability analysis of sampled data control systems?

a) Jury's stability test b) Root locus technique
c) Bilinear transformation d) All of the above

14) The first step required to convert analog signal to digital is:

a) Sampling d) Holding
c) Reconstruction d) Quantization

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.
4) Draw neat diagram whenever necessary.

Section – I

Q.2 Attempt any four of the following: **16**

a) Derive the realization of lag compensator circuit using active network.

b) Explain the procedure to design lead compensator using frequency response analysis.

c) Explain the procedure to design lag-lead compensator using root locus method.

d) Obtain state transition matrix for the following system matrix $A = \begin{bmatrix} 0 & -3 \\ 1 & -4 \end{bmatrix}$

e) The transfer function of the system is given as: $T(s) = \frac{s+3}{s^3+5s^2+8s+4}$ Obtain the state variable model of the system.

Q.3 Attempt the following: **12**

a) The forward path TF of a unity feedback control system is given by $G(s) = \frac{k}{s(s^2+8s+17)}$. The system has to have percentage overshoot for unit step input $\leq 16\%$ and steady state error for unit input $\leq {}^{17}/_{70}$ rad/sec. design a lag compensator using root locus.

b) For a unity feedback system with OLTF $G(s) = \frac{2}{s(s+1)(s+2)}$. Design a suitable lag compensator for the system so that the static velocity error constant Kv is 5 sec-1, the PM is at least 40° and the gain margin is at least 10dB.

OR

b) Find the transfer function of:

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -5 & -1 \\ 3 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 2 \\ 5 \end{bmatrix} u(t) \qquad Y = \begin{bmatrix} 1 & 2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

Section – II

Q.4 Attempt any four of the following: **16**

a) What are methods for determination of state feedback gain matrix K? Explain any one method.

b) Explain limit cycle phenomenon in the non-linear control systems.

c) Explain the stability of non-linear control system.

d) Determine the kind of singularity for the following differential equation.
$\ddot{Y} - 8\,\dot{Y} + 17Y = 34$

e) Derive the pulse T.F. of closed loop systems.

f) Explain Digital control system with neat diagram.

Q.5 Attempt any two of the following: **12**

a) Find out the state feedback gain matrix K for the following system using any one method such that the closed loop poles are located at $S = -1 \pm j2$ and $S = -10$.

$$\begin{bmatrix} \dot{x_1} \\ \dot{x_2} \\ \dot{x_3} \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & -5 & -6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u(t)$$

b) Derive the describing function of saturation nonlinearity.

c) Check the stability of the sampled data control system represented by the equation.
$z^4 - 0.9\,z^3 + 0.14\,z^2 + 0.216\,z + 0.032 = 0$

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) The necessary and sufficient condition to be satisfied for observer design is that the system should be completely _____.
a) State controllable
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3) In phase plane _____.
a) $X1$ is represented in x-axis, and $X2$ in y-axis
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4) The describing function N of a nonlinear control system is a function of _____.
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5) The points at which derivatives of all the state variables are zero are: _____.
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6) Which of the following methods suitable for the stability analysis of sampled data control systems?
a) Jury's stability test b) Root locus technique
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a) Sampling d) Holding
c) Reconstruction d) Quantization

8) Differentiators are avoided in the system design as they:
a) Are costlier
b) Reduces the response of the system
c) Develop noise and saturate the amplifier
d) Cannot be formed with capacitors and inductors

9) Phase lag compensation will _____.
a) improve relative stability
b) increase the speed of response
c) increase bandwidth
d) increase overshoot

10) Due to which of the following reasons excessive bandwidth in control system should be avoided _____.
a) It leads to slow speed of response
b) It leads to low relative stability
c) Noise is proportional to bandwidth
d) None of the above

11) The transfer function of a simple RC network as a controller is $Gc(s) = \frac{s+z}{s+p}$ the condition of RC network to act as phase lead controller is _____.
a) $p < z$ b) $p = 0$
c) $p = z$ d) $p > z$

12) The phase lag produced by the transportation relays _____.
a) is independent of frequency
b) is inversely proportional to frequency
c) increases linearly with frequency
d) decreases linearly with frequency

13) The eigen values of a linear system are the locations of _____.
a) finite poles b) poles of the system
c) zeros of the system d) none of the above

14) The system matrix of a system is given by $A = \begin{bmatrix} 0 & 1 \\ -3 & -5 \end{bmatrix}$ The characteristic equation is given by _____.
a) $s^2 + 5s + 3 = 0$ b) $s^2 - 3s - 5 = 0$
c) $s^2 + 3s + 5 = 0$ d) $s^2 + s + 2 = 0$

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.
4) Draw neat diagram whenever necessary.

Section – I

Q.2 Attempt any four of the following: **16**

a) Derive the realization of lag compensator circuit using active network.

b) Explain the procedure to design lead compensator using frequency response analysis.

c) Explain the procedure to design lag-lead compensator using root locus method.

d) Obtain state transition matrix for the following system matrix $A = \begin{bmatrix} 0 & -3 \\ 1 & -4 \end{bmatrix}$

e) The transfer function of the system is given as: $T(s) = \frac{s+3}{s^3+5s^2+8s+4}$ Obtain the state variable model of the system.

Q.3 Attempt the following: **12**

a) The forward path TF of a unity feedback control system is given by $G(s) = \frac{k}{s(s^2+8s+17)}$. The system has to have percentage overshoot for unit step input $\leq 16\%$ and steady state error for unit input $\leq {}^{17}/_{70}$ rad/sec. design a lag compensator using root locus.

b) For a unity feedback system with OLTF $G(s) = \frac{2}{s(s+1)(s+2)}$. Design a suitable lag compensator for the system so that the static velocity error constant Kv is 5 sec-1, the PM is at least 40° and the gain margin is at least 10dB.

OR

b) Find the transfer function of:

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -5 & -1 \\ 3 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 2 \\ 5 \end{bmatrix} u(t) \qquad Y = \begin{bmatrix} 1 & 2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

Section – II

Q.4 Attempt any four of the following: **16**

a) What are methods for determination of state feedback gain matrix K? Explain any one method.

b) Explain limit cycle phenomenon in the non-linear control systems.

c) Explain the stability of non-linear control system.

d) Determine the kind of singularity for the following differential equation.
$\ddot{Y} - 8\,\dot{Y} + 17Y = 34$

e) Derive the pulse T.F. of closed loop systems.

f) Explain Digital control system with neat diagram.

Q.5 Attempt any two of the following: **12**

a) Find out the state feedback gain matrix K for the following system using any one method such that the closed loop poles are located at $S = -1 \pm j2$ and $S = -10$.

$$\begin{bmatrix} \dot{x_1} \\ \dot{x_2} \\ \dot{x_3} \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & -5 & -6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u(t)$$

b) Derive the describing function of saturation nonlinearity.

c) Check the stability of the sampled data control system represented by the equation.
$z^4 - 0.9\,z^3 + 0.14\,z^2 + 0.216\,z + 0.032 = 0$

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Draw neat diagram whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) The describing function N of a nonlinear control system is a function of _____.
a) amplitude of the input b) frequency of the input
c) initial conditions of the output d) both a) and b)

2) The points at which derivatives of all the state variables are zero are: _____.
a) Singular points b) Nonsingular points
c) Poles d) Zeros

3) Which of the following methods suitable for the stability analysis of sampled data control systems?
a) Jury's stability test b) Root locus technique
c) Bilinear transformation d) All of the above

4) The first step required to convert analog signal to digital is:
a) Sampling d) Holding
c) Reconstruction d) Quantization

5) Differentiators are avoided in the system design as they:
a) Are costlier
b) Reduces the response of the system
c) Develop noise and saturate the amplifier
d) Cannot be formed with capacitors and inductors

6) Phase lag compensation will _____.
a) improve relative stability
b) increase the speed of response
c) increase bandwidth
d) increase overshoot

7) Due to which of the following reasons excessive bandwidth in control system should be avoided _____.
a) It leads to slow speed of response
b) It leads to low relative stability
c) Noise is proportional to bandwidth
d) None of the above

8) The transfer function of a simple RC network as a controller is $Gc(s) = \frac{s+z}{s+p}$ the condition of RC network to act as phase lead controller is _____.

a) $p < z$ b) $p = 0$

c) $p = z$ d) $p > z$

9) The phase lag produced by the transportation relays _____.

a) is independent of frequency

b) is inversely proportional to frequency

c) increases linearly with frequency

d) decreases linearly with frequency

10) The eigen values of a linear system are the locations of _____.

a) finite poles b) poles of the system

c) zeros of the system d) none of the above

11) The system matrix of a system is given by $A = \begin{bmatrix} 0 & 1 \\ -3 & -5 \end{bmatrix}$ The characteristic equation is given by _____.

a) $s^2 + 5s + 3 = 0$ b) $s^2 - 3s - 5 = 0$

c) $s^2 + 3s + 5 = 0$ d) $s^2 + s + 2 = 0$

12) The necessary and sufficient condition to be satisfied for observer design is that the system should be completely _____.

a) State controllable

b) State observable

c) State controllable and state observable

d) Any of the above

13) The eigen values of the matrix $(A - BK)$ are called _____.

a) open loop poles b) open loop zeros

c) regulator poles d) none of these

14) In phase plane _____.

a) $X1$ is represented in x-axis, and $X2$ in y-axis

b) $X2$ is represented in x-axis, and $X1$ in y-axis

c) any one of above

d) none of the above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.
4) Draw neat diagram whenever necessary.

Section – I

Q.2 Attempt any four of the following: **16**

a) Derive the realization of lag compensator circuit using active network.

b) Explain the procedure to design lead compensator using frequency response analysis.

c) Explain the procedure to design lag-lead compensator using root locus method.

d) Obtain state transition matrix for the following system matrix $A = \begin{bmatrix} 0 & -3 \\ 1 & -4 \end{bmatrix}$

e) The transfer function of the system is given as: $T(s) = \frac{s+3}{s^3+5s^2+8s+4}$ Obtain the state variable model of the system.

Q.3 Attempt the following: **12**

a) The forward path TF of a unity feedback control system is given by $G(s) = \frac{k}{s(s^2+8s+17)}$. The system has to have percentage overshoot for unit step input $\leq 16\%$ and steady state error for unit input $\leq {}^{17}/_{70}$ rad/sec. design a lag compensator using root locus.

b) For a unity feedback system with OLTF $G(s) = \frac{2}{s(s+1)(s+2)}$. Design a suitable lag compensator for the system so that the static velocity error constant Kv is 5 sec-1, the PM is at least 40° and the gain margin is at least 10dB.

OR

b) Find the transfer function of:

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -5 & -1 \\ 3 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 2 \\ 5 \end{bmatrix} u(t) \qquad Y = \begin{bmatrix} 1 & 2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

Section – II

Q.4 Attempt any four of the following: **16**

a) What are methods for determination of state feedback gain matrix K? Explain any one method.

b) Explain limit cycle phenomenon in the non-linear control systems.

c) Explain the stability of non-linear control system.

d) Determine the kind of singularity for the following differential equation.
$\ddot{Y} - 8\,\dot{Y} + 17Y = 34$

e) Derive the pulse T.F. of closed loop systems.

f) Explain Digital control system with neat diagram.

Q.5 Attempt any two of the following: **12**

a) Find out the state feedback gain matrix K for the following system using any one method such that the closed loop poles are located at $S = -1 \pm j2$ and $S = -10$.

$$\begin{bmatrix} \dot{x_1} \\ \dot{x_2} \\ \dot{x_3} \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & -5 & -6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u(t)$$

b) Derive the describing function of saturation nonlinearity.

c) Check the stability of the sampled data control system represented by the equation.
$z^4 - 0.9\,z^3 + 0.14\,z^2 + 0.216\,z + 0.032 = 0$

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Draw neat diagram whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) The eigen values of a linear system are the locations of _____.
a) finite poles b) poles of the system
c) zeros of the system d) none of the above

2) The system matrix of a system is given by $A = \begin{bmatrix} 0 & 1 \\ -3 & -5 \end{bmatrix}$ The characteristic equation is given by _____.
a) $s^2 + 5s + 3 = 0$ b) $s^2 - 3s - 5 = 0$
c) $s^2 + 3s + 5 = 0$ d) $s^2 + s + 2 = 0$

3) The necessary and sufficient condition to be satisfied for observer design is that the system should be completely _____.
a) State controllable
b) State observable
c) State controllable and state observable
d) Any of the above

4) The eigen values of the matrix $(A - BK)$ are called _____.
a) open loop poles b) open loop zeros
c) regulator poles d) none of these

5) In phase plane _____.
a) $X1$ is represented in x-axis, and $X2$ in y-axis
b) $X2$ is represented in x-axis, and $X1$ in y-axis
c) any one of above
d) none of the above

6) The describing function N of a nonlinear control system is a function of _____.
a) amplitude of the input b) frequency of the input
c) initial conditions of the output d) both a) and b)

7) The points at which derivatives of all the state variables are zero are: _____.
a) Singular points b) Nonsingular points
c) Poles d) Zeros

8) Which of the following methods suitable for the stability analysis of sampled data control systems?

a) Jury's stability test
b) Root locus technique
c) Bilinear transformation
d) All of the above

9) The first step required to convert analog signal to digital is:

a) Sampling
d) Holding
c) Reconstruction
d) Quantization

10) Differentiators are avoided in the system design as they:

a) Are costlier
b) Reduces the response of the system
c) Develop noise and saturate the amplifier
d) Cannot be formed with capacitors and inductors

11) Phase lag compensation will _____.

a) improve relative stability
b) increase the speed of response
c) increase bandwidth
d) increase overshoot

12) Due to which of the following reasons excessive bandwidth in control system should be avoided _____.

a) It leads to slow speed of response
b) It leads to low relative stability
c) Noise is proportional to bandwidth
d) None of the above

13) The transfer function of a simple RC network as a controller is $Gc(s) = \frac{s+z}{s+p}$ the condition of RC network to act as phase lead controller is _____.

a) $p < z$
b) $p = 0$
c) $p = z$
d) $p > z$

14) The phase lag produced by the transportation relays _____.

a) is independent of frequency
b) is inversely proportional to frequency
c) increases linearly with frequency
d) decreases linearly with frequency

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control Systems (BTN07604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.
4) Draw neat diagram whenever necessary.

Section – I

Q.2 Attempt any four of the following: **16**

a) Derive the realization of lag compensator circuit using active network.

b) Explain the procedure to design lead compensator using frequency response analysis.

c) Explain the procedure to design lag-lead compensator using root locus method.

d) Obtain state transition matrix for the following system matrix $A = \begin{bmatrix} 0 & -3 \\ 1 & -4 \end{bmatrix}$

e) The transfer function of the system is given as: $T(s) = \frac{s+3}{s^3+5s^2+8s+4}$ Obtain the state variable model of the system.

Q.3 Attempt the following: **12**

a) The forward path TF of a unity feedback control system is given by $G(s) = \frac{k}{s(s^2+8s+17)}$. The system has to have percentage overshoot for unit step input $\leq 16\%$ and steady state error for unit input $\leq {}^{17}/_{70}$ rad/sec. design a lag compensator using root locus.

b) For a unity feedback system with OLTF $G(s) = \frac{2}{s(s+1)(s+2)}$. Design a suitable lag compensator for the system so that the static velocity error constant Kv is 5 sec-1, the PM is at least 40° and the gain margin is at least 10dB.

OR

b) Find the transfer function of:

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -5 & -1 \\ 3 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 2 \\ 5 \end{bmatrix} u(t) \qquad Y = \begin{bmatrix} 1 & 2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

Section – II

Q.4 Attempt any four of the following: **16**

a) What are methods for determination of state feedback gain matrix K? Explain any one method.

b) Explain limit cycle phenomenon in the non-linear control systems.

c) Explain the stability of non-linear control system.

d) Determine the kind of singularity for the following differential equation.
$\ddot{Y} - 8\,\dot{Y} + 17Y = 34$

e) Derive the pulse T.F. of closed loop systems.

f) Explain Digital control system with neat diagram.

Q.5 Attempt any two of the following: **12**

a) Find out the state feedback gain matrix K for the following system using any one method such that the closed loop poles are located at $S = -1 \pm j2$ and $S = -10$.

$$\begin{bmatrix} \dot{x_1} \\ \dot{x_2} \\ \dot{x_3} \end{bmatrix} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -1 & -5 & -6 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u(t)$$

b) Derive the describing function of saturation nonlinearity.

c) Check the stability of the sampled data control system represented by the equation.
$z^4 - 0.9\,z^3 + 0.14\,z^2 + 0.216\,z + 0.032 = 0$

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What is an operating system?
a) interface between the hardware and application programs
b) collection of programs that manages hardware resources
c) system service provider to the application programs
d) all of the mentioned

2) In Operating Systems, which of the following is/are CPU scheduling algorithms?
a) Priority b) Round Robin
c) Shortest Job First d) All of the mentioned

3) To access the services of the operating system, the interface is provided by the _____.
a) Library b) System calls
c) Assembly instructions d) API

4) The systems which allow only one process execution at a time, are called _____.
a) uniprogramming systems b) uniprocessing systems
c) unit asking systems d) none of the mentioned

5) A process can be terminated due to _____.
a) normal exit b) fatal error
c) killed by another process d) all of the mentioned

6) Which of the following condition is required for a deadlock to be possible?
a) mutual exclusion
b) a process may hold allocated resources while awaiting assignment of other resources
c) no resource can be forcibly removed from a process holding it
d) all of the mentioned

7) A system is in the safe state if _____.
a) the system can allocate resources to each process in some order and still avoid a deadlock
b) there exists a safe sequence
c) all of the mentioned
d) none of the mentioned

8) Which process can be affected by other processes executing in the system?
a) cooperating process b) child process
c) parent process d) init process

9) Binding of instructions and data to memory addresses can be done at _____.
a) Compile time b) Load time
c) Execution time d) All of the mentioned

10) The _____ swaps processes in and out of the memory.
a) Memory manager b) CPU
c) CPU manager d) User

11) Because of virtual memory, the memory can be shared among _____.
a) processes b) threads
c) instructions d) none of the mentioned

12) The pager concerns with the _____.
a) individual page of a process b) entire process
c) entire thread d) first page of a process

13) Virtual memory is normally implemented by _____.
a) demand paging b) buses
c) virtualization d) all of the mentioned

14) A page fault occurs when?
a) a page gives inconsistent data
b) a page cannot be accessed due to its absence from memory
c) a page is invisible
d) all of the mentioned

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Explain Process Life Cycle with diagram.
b) Explain scheduling criteria's.
c) Explain spooling with neat diagram.
d) Explain concept of system call along with its types.

Q.3 Attempt any Two. **16**

a) Explain Priority scheduling and Round Robin Scheduling algorithm with example.
Process=PR(P0=3,P1=5,P2=2,P3=1,P4=4)
Process=BT(P0=10,P1=6,P2=2,P3=4,P4=8) use TQ=4
b) Explain the concept of thread with its types.
c) Explain Operating system along with its functions.

Section – II

Q.4 Attempt any Three. **12**

a) Explain Segmentation with diagram.
b) Explain Deadlock Prevention.
c) Explain Demand paging.
d) Explain File Access methods.

Q.5 Attempt any Two. **16**

a) Explain Paging in detail.
b) Explain LRU and Optimal and solve example with 3 frames.
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
c) Explain Banker's algorithm with data structures used in it give example.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which process can be affected by other processes executing in the system?
a) cooperating process b) child process
c) parent process d) init process

2) Binding of instructions and data to memory addresses can be done at _____.
a) Compile time b) Load time
c) Execution time d) All of the mentioned

3) The _____ swaps processes in and out of the memory.
a) Memory manager b) CPU
c) CPU manager d) User

4) Because of virtual memory, the memory can be shared among _____.
a) processes b) threads
c) instructions d) none of the mentioned

5) The pager concerns with the _____.
a) individual page of a process b) entire process
c) entire thread d) first page of a process

6) Virtual memory is normally implemented by _____.
a) demand paging b) buses
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7) A page fault occurs when?
a) a page gives inconsistent data
b) a page cannot be accessed due to its absence from memory
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8) What is an operating system?
a) interface between the hardware and application programs
b) collection of programs that manages hardware resources
c) system service provider to the application programs
d) all of the mentioned

9) In Operating Systems, which of the following is/are CPU scheduling algorithms?
a) Priority
b) Round Robin
c) Shortest Job First
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10) To access the services of the operating system, the interface is provided by the _____.
a) Library
b) System calls
c) Assembly instructions
d) API

11) The systems which allow only one process execution at a time, are called _____.
a) uniprogramming systems
b) uniprocessing systems
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12) A process can be terminated due to _____.
a) normal exit
b) fatal error
c) killed by another process
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13) Which of the following condition is required for a deadlock to be possible?
a) mutual exclusion
b) a process may hold allocated resources while awaiting assignment of other resources
c) no resource can be forcibly removed from a process holding it
d) all of the mentioned

14) A system is in the safe state if _____.
a) the system can allocate resources to each process in some order and still avoid a deadlock
b) there exists a safe sequence
c) all of the mentioned
d) none of the mentioned

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Explain Process Life Cycle with diagram.
b) Explain scheduling criteria's.
c) Explain spooling with neat diagram.
d) Explain concept of system call along with its types.

Q.3 Attempt any Two. **16**

a) Explain Priority scheduling and Round Robin Scheduling algorithm with example.
Process=PR(P0=3,P1=5,P2=2,P3=1,P4=4)
Process=BT(P0=10,P1=6,P2=2,P3=4,P4=8) use TQ=4
b) Explain the concept of thread with its types.
c) Explain Operating system along with its functions.

Section – II

Q.4 Attempt any Three. **12**

a) Explain Segmentation with diagram.
b) Explain Deadlock Prevention.
c) Explain Demand paging.
d) Explain File Access methods.

Q.5 Attempt any Two. **16**

a) Explain Paging in detail.
b) Explain LRU and Optimal and solve example with 3 frames.
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
c) Explain Banker's algorithm with data structures used in it give example.

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Because of virtual memory, the memory can be shared among _____.
a) processes b) threads
c) instructions d) none of the mentioned

2) The pager concerns with the _____.
a) individual page of a process b) entire process
c) entire thread d) first page of a process

3) Virtual memory is normally implemented by _____.
a) demand paging b) buses
c) virtualization d) all of the mentioned

4) A page fault occurs when?
a) a page gives inconsistent data
b) a page cannot be accessed due to its absence from memory
c) a page is invisible
d) all of the mentioned

5) What is an operating system?
a) interface between the hardware and application programs
b) collection of programs that manages hardware resources
c) system service provider to the application programs
d) all of the mentioned

6) In Operating Systems, which of the following is/are CPU scheduling algorithms?
a) Priority b) Round Robin
c) Shortest Job First d) All of the mentioned

7) To access the services of the operating system, the interface is provided by the _____.
a) Library b) System calls
c) Assembly instructions d) API

8) The systems which allow only one process execution at a time, are called _____.
a) uniprogramming systems b) uniprocessing systems
c) unit asking systems d) none of the mentioned

9) A process can be terminated due to _____.
a) normal exit b) fatal error
c) killed by another process d) all of the mentioned

10) Which of the following condition is required for a deadlock to be possible?
a) mutual exclusion
b) a process may hold allocated resources while awaiting assignment of other resources
c) no resource can be forcibly removed from a process holding it
d) all of the mentioned

11) A system is in the safe state if _____.
a) the system can allocate resources to each process in some order and still avoid a deadlock
b) there exists a safe sequence
c) all of the mentioned
d) none of the mentioned

12) Which process can be affected by other processes executing in the system?
a) cooperating process b) child process
c) parent process d) init process

13) Binding of instructions and data to memory addresses can be done at _____.
a) Compile time b) Load time
c) Execution time d) All of the mentioned

14) The _____ swaps processes in and out of the memory.
a) Memory manager b) CPU
c) CPU manager d) User

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Explain Process Life Cycle with diagram.
b) Explain scheduling criteria's.
c) Explain spooling with neat diagram.
d) Explain concept of system call along with its types.

Q.3 Attempt any Two. **16**

a) Explain Priority scheduling and Round Robin Scheduling algorithm with example.
Process=PR(P0=3,P1=5,P2=2,P3=1,P4=4)
Process=BT(P0=10,P1=6,P2=2,P3=4,P4=8) use TQ=4
b) Explain the concept of thread with its types.
c) Explain Operating system along with its functions.

Section – II

Q.4 Attempt any Three. **12**

a) Explain Segmentation with diagram.
b) Explain Deadlock Prevention.
c) Explain Demand paging.
d) Explain File Access methods.

Q.5 Attempt any Two. **16**

a) Explain Paging in detail.
b) Explain LRU and Optimal and solve example with 3 frames.
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
c) Explain Banker's algorithm with data structures used in it give example.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following condition is required for a deadlock to be possible?
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b) a process may hold allocated resources while awaiting assignment of other resources
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2) A system is in the safe state if _____.
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c) all of the mentioned
d) none of the mentioned

3) Which process can be affected by other processes executing in the system?
a) cooperating process b) child process
c) parent process d) init process

4) Binding of instructions and data to memory addresses can be done at _____.
a) Compile time b) Load time
c) Execution time d) All of the mentioned

5) The _____ swaps processes in and out of the memory.
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6) Because of virtual memory, the memory can be shared among _____.
a) processes b) threads
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7) The pager concerns with the _____.
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8) Virtual memory is normally implemented by _____.
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c) virtualization d) all of the mentioned

9) A page fault occurs when?
a) a page gives inconsistent data
b) a page cannot be accessed due to its absence from memory
c) a page is invisible
d) all of the mentioned

10) What is an operating system?
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b) collection of programs that manages hardware resources
c) system service provider to the application programs
d) all of the mentioned

11) In Operating Systems, which of the following is/are CPU scheduling algorithms?
a) Priority
b) Round Robin
c) Shortest Job First
d) All of the mentioned

12) To access the services of the operating system, the interface is provided by the _____.
a) Library
b) System calls
c) Assembly instructions
d) API

13) The systems which allow only one process execution at a time, are called _____.
a) uniprogramming systems
b) uniprocessing systems
c) unit asking systems
d) none of the mentioned

14) A process can be terminated due to _____.
a) normal exit
b) fatal error
c) killed by another process
d) all of the mentioned

SLR-GF-445

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (BTN07606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Explain Process Life Cycle with diagram.
b) Explain scheduling criteria's.
c) Explain spooling with neat diagram.
d) Explain concept of system call along with its types.

Q.3 Attempt any Two. **16**

a) Explain Priority scheduling and Round Robin Scheduling algorithm with example.
Process=PR(P0=3,P1=5,P2=2,P3=1,P4=4)
Process=BT(P0=10,P1=6,P2=2,P3=4,P4=8) use TQ=4
b) Explain the concept of thread with its types.
c) Explain Operating system along with its functions.

Section – II

Q.4 Attempt any Three. **12**

a) Explain Segmentation with diagram.
b) Explain Deadlock Prevention.
c) Explain Demand paging.
d) Explain File Access methods.

Q.5 Attempt any Two. **16**

a) Explain Paging in detail.
b) Explain LRU and Optimal and solve example with 3 frames.
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
c) Explain Banker's algorithm with data structures used in it give example.

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Compared to the fixed-dome model of a biogas plant, a floating-drum-type plant _____.
a) is more efficient b) is less efficient
c) is equally efficient d) is very cheap

2) Bio-diesel is _____.
a) Obtained from fermentation of sugars
b) Obtained from pyrolysis process
c) Exudates of plants
d) An upgraded vegetable oil

3) _____ is called as the bio gas.
a) Bio ethanol b) Bio methane
c) Bio diesel d) Bio butanol

4) The geothermal energy is the _____ from the earth.
a) Heat b) Light
c) Photons d) Protons

5) Two-basin tidal schemes _____.
a) Are more economical than single basin schemes
b) Operate on ebb cycles in both basins
c) Produce less uniform power
d) Produce more uniform power

6) The use of pelton wheel is desirable for the conditions of _____.
a) Low head and high discharge b) High head and low discharge
c) High head and high discharge d) Low head and low discharge

7) OTEC stands for _____.
a) Ocean Thermal Energy Conversion
b) Ocean Thermal Energy Component
c) Ocean Thermodynamic Energy Conversion
d) Ocean Thermodynamic Energy Component

8) The percentage of the incoming radiation reflected back to space by the earth is _____.

a) 10% b) 20%
c) 30% d) 40%

9) What is the standard value of solar constant?

a) 1 KW/m^2 b) 1.367 KW/m^2
c) 1.5 KW/m^2 d) 5 KW/m^2

10) Diffused radiation _____.

a) Has no unique direction
b) Has a unique direction
c) Has short wavelength as compared to beam radiation
d) Has larger magnitude as compared to beam radiation

11) In flat-plate collector the temperatures of the working fluid can be raised unto _____.

a) 500^0c b) 100^0c
c) 300^0c d) 50^0c

12) The range of wind speed suitable for wind power generator is _____.

a) 0 to 5 m/s b) 5 to 25 m/s
c) 25 to 50 m/s d) 50 to 75 m/s

13) A major disadvantage to using wind to produce electricity is _____.

a) The emissions it produces once in place
b) Its energy efficiency compared to conventional power sources
c) That people can use a single mill or develop a large-scale wind farm
d) The initial startup cost

14) Turbines blades have _____ type cross section to extract energy from wind.

a) Aero foil b) Elliptical
c) Rectangular d) All of the above

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four. **16**

a) Distinguish between Renewable and Non Renewable energy sources.
b) With the help of neat diagram explain terrestrial an extra-terrestrial solar radiation.
c) With neat diagrams explain classification of concentrating type collectors.
d) Draw and Explain Advanced Solar Collector.
e) Define the terms:
1) Tip speed ratio
2) swept area
3) solidity
4) cut-in, cut- out and rated speed
f) Draw and describe horizontal axis wind mills.

Q.3 Attempt any two. **12**

a) Explain savonious and durries wind mill operation with diagram.
b) Write short note on solar distillation system.
c) Draw and explain the performance characteristics of wind mill.

Section – II

Q.4 Attempt any four. **16**

a) Distinguish between fixed dome type & Floating drum type biogas plant.
b) With the help of bacterial reactions explain principle of biogas generation.
c) Draw and describe the dry steam geothermal power plant.
d) Explain the different types of geothermal resources.
e) Draw and describe the working of open cycle OTEC system.
f) Write short note on carnot cycle.

Q.5 Attempt any two. **12**

a) Explain fixed drum type biogas plant.
b) Describe the working of closed cycle OTEC system. And also explain the advantages and disadvantages of Tidal power.
c) Explain tidal energy conversion system with proper diagram.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The percentage of the incoming radiation reflected back to space by the earth is _____.
a) 10% b) 20%
c) 30% d) 40%

2) What is the standard value of solar constant?
a) 1 KW/m^2 b) 1.367 KW/m^2
c) 1.5 KW/m^2 d) 5 KW/m^2

3) Diffused radiation _____.
a) Has no unique direction
b) Has a unique direction
c) Has short wavelength as compared to beam radiation
d) Has larger magnitude as compared to beam radiation

4) In flat-plate collector the temperatures of the working fluid can be raised unto _____.
a) 500^0c b) 100^0c
c) 300^0c d) 50^0c

5) The range of wind speed suitable for wind power generator is _____.
a) 0 to 5 m/s b) 5 to 25 m/s
c) 25 to 50 m/s d) 50 to 75 m/s

6) A major disadvantage to using wind to produce electricity is _____.
a) The emissions it produces once in place
b) Its energy efficiency compared to conventional power sources
c) That people can use a single mill or develop a large-scale wind farm
d) The initial startup cost

7) Turbines blades have _____ type cross section to extract energy from wind.
a) Aero foil b) Elliptical
c) Rectangular d) All of the above

8) Compared to the fixed-dome model of a biogas plant, a floating-drum-type plant _____.
a) is more efficient
b) is less efficient
c) is equally efficient
d) is very cheap

9) Bio-diesel is _____.
a) Obtained from fermentation of sugars
b) Obtained from pyrolysis process
c) Exudates of plants
d) An upgraded vegetable oil

10) _____ is called as the bio gas.
a) Bio ethanol
b) Bio methane
c) Bio diesel
d) Bio butanol

11) The geothermal energy is the _____ from the earth.
a) Heat
b) Light
c) Photons
d) Protons

12) Two-basin tidal schemes _____.
a) Are more economical than single basin schemes
b) Operate on ebb cycles in both basins
c) Produce less uniform power
d) Produce more uniform power

13) The use of pelton wheel is desirable for the conditions of _____.
a) Low head and high discharge
b) High head and low discharge
c) High head and high discharge
d) Low head and low discharge

14) OTEC stands for _____.
a) Ocean Thermal Energy Conversion
b) Ocean Thermal Energy Component
c) Ocean Thermodynamic Energy Conversion
d) Ocean Thermodynamic Energy Component

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four. **16**

a) Distinguish between Renewable and Non Renewable energy sources.
b) With the help of neat diagram explain terrestrial an extra-terrestrial solar radiation.
c) With neat diagrams explain classification of concentrating type collectors.
d) Draw and Explain Advanced Solar Collector.
e) Define the terms:
1) Tip speed ratio
2) swept area
3) solidity
4) cut-in, cut- out and rated speed
f) Draw and describe horizontal axis wind mills.

Q.3 Attempt any two. **12**

a) Explain savonious and durries wind mill operation with diagram.
b) Write short note on solar distillation system.
c) Draw and explain the performance characteristics of wind mill.

Section – II

Q.4 Attempt any four. **16**

a) Distinguish between fixed dome type & Floating drum type biogas plant.
b) With the help of bacterial reactions explain principle of biogas generation.
c) Draw and describe the dry steam geothermal power plant.
d) Explain the different types of geothermal resources.
e) Draw and describe the working of open cycle OTEC system.
f) Write short note on carnot cycle.

Q.5 Attempt any two. **12**

a) Explain fixed drum type biogas plant.
b) Describe the working of closed cycle OTEC system. And also explain the advantages and disadvantages of Tidal power.
c) Explain tidal energy conversion system with proper diagram.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In flat-plate collector the temperatures of the working fluid can be raised unto _____.
a) 500^0c b) 100^0c
c) 300^0c d) 50^0c

2) The range of wind speed suitable for wind power generator is _____.
a) 0 to 5 m/s b) 5 to 25 m/s
c) 25 to 50 m/s d) 50 to 75 m/s

3) A major disadvantage to using wind to produce electricity is _____.
a) The emissions it produces once in place
b) Its energy efficiency compared to conventional power sources
c) That people can use a single mill or develop a large-scale wind farm
d) The initial startup cost

4) Turbines blades have _____ type cross section to extract energy from wind.
a) Aero foil b) Elliptical
c) Rectangular d) All of the above

5) Compared to the fixed-dome model of a biogas plant, a floating-drum-type plant _____.
a) is more efficient b) is less efficient
c) is equally efficient d) is very cheap

6) Bio-diesel is _____.
a) Obtained from fermentation of sugars
b) Obtained from pyrolysis process
c) Exudates of plants
d) An upgraded vegetable oil

7) _____ is called as the bio gas.
a) Bio ethanol b) Bio methane
c) Bio diesel d) Bio butanol

8) The geothermal energy is the _____ from the earth.
a) Heat b) Light
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9) Two-basin tidal schemes _____.
a) Are more economical than single basin schemes
b) Operate on ebb cycles in both basins
c) Produce less uniform power
d) Produce more uniform power

10) The use of pelton wheel is desirable for the conditions of _____.
a) Low head and high discharge b) High head and low discharge
c) High head and high discharge d) Low head and low discharge

11) OTEC stands for _____.
a) Ocean Thermal Energy Conversion
b) Ocean Thermal Energy Component
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12) The percentage of the incoming radiation reflected back to space by the earth is _____.
a) 10% b) 20%
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13) What is the standard value of solar constant?
a) 1 KW/m^2 b) 1.367 KW/m^2
c) 1.5 KW/m^2 d) 5 KW/m^2

14) Diffused radiation _____.
a) Has no unique direction
b) Has a unique direction
c) Has short wavelength as compared to beam radiation
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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four. **16**

a) Distinguish between Renewable and Non Renewable energy sources.
b) With the help of neat diagram explain terrestrial an extra-terrestrial solar radiation.
c) With neat diagrams explain classification of concentrating type collectors.
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e) Define the terms:
1) Tip speed ratio
2) swept area
3) solidity
4) cut-in, cut- out and rated speed
f) Draw and describe horizontal axis wind mills.

Q.3 Attempt any two. **12**

a) Explain savonious and durries wind mill operation with diagram.
b) Write short note on solar distillation system.
c) Draw and explain the performance characteristics of wind mill.

Section – II

Q.4 Attempt any four. **16**

a) Distinguish between fixed dome type & Floating drum type biogas plant.
b) With the help of bacterial reactions explain principle of biogas generation.
c) Draw and describe the dry steam geothermal power plant.
d) Explain the different types of geothermal resources.
e) Draw and describe the working of open cycle OTEC system.
f) Write short note on carnot cycle.

Q.5 Attempt any two. **12**

a) Explain fixed drum type biogas plant.
b) Describe the working of closed cycle OTEC system. And also explain the advantages and disadvantages of Tidal power.
c) Explain tidal energy conversion system with proper diagram.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The use of pelton wheel is desirable for the conditions of _____.
a) Low head and high discharge b) High head and low discharge
c) High head and high discharge d) Low head and low discharge

2) OTEC stands for _____.
a) Ocean Thermal Energy Conversion
b) Ocean Thermal Energy Component
c) Ocean Thermodynamic Energy Conversion
d) Ocean Thermodynamic Energy Component

3) The percentage of the incoming radiation reflected back to space by the earth is _____.
a) 10% b) 20%
c) 30% d) 40%

4) What is the standard value of solar constant?
a) 1 KW/m^2 b) 1.367 KW/m^2
c) 1.5 KW/m^2 d) 5 KW/m^2

5) Diffused radiation _____.
a) Has no unique direction
b) Has a unique direction
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6) In flat-plate collector the temperatures of the working fluid can be raised unto _____.
a) 500^0c b) 100^0c
c) 300^0c d) 50^0c

7) The range of wind speed suitable for wind power generator is _____.
a) 0 to 5 m/s b) 5 to 25 m/s
c) 25 to 50 m/s d) 50 to 75 m/s

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b) Its energy efficiency compared to conventional power sources
c) That people can use a single mill or develop a large-scale wind farm
d) The initial startup cost

9) Turbines blades have _____ type cross section to extract energy from wind.
a) Aero foil b) Elliptical
c) Rectangular d) All of the above

10) Compared to the fixed-dome model of a biogas plant, a floating-drum-type plant _____.
a) is more efficient b) is less efficient
c) is equally efficient d) is very cheap

11) Bio-diesel is _____.
a) Obtained from fermentation of sugars
b) Obtained from pyrolysis process
c) Exudates of plants
d) An upgraded vegetable oil

12) _____ is called as the bio gas.
a) Bio ethanol b) Bio methane
c) Bio diesel d) Bio butanol

13) The geothermal energy is the _____ from the earth.
a) Heat b) Light
c) Photons d) Protons

14) Two-basin tidal schemes _____.
a) Are more economical than single basin schemes
b) Operate on ebb cycles in both basins
c) Produce less uniform power
d) Produce more uniform power

SLR-GF-446

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (BTN07607)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four. **16**

a) Distinguish between Renewable and Non Renewable energy sources.
b) With the help of neat diagram explain terrestrial an extra-terrestrial solar radiation.
c) With neat diagrams explain classification of concentrating type collectors.
d) Draw and Explain Advanced Solar Collector.
e) Define the terms:
1) Tip speed ratio
2) swept area
3) solidity
4) cut-in, cut- out and rated speed
f) Draw and describe horizontal axis wind mills.

Q.3 Attempt any two. **12**

a) Explain savonious and durries wind mill operation with diagram.
b) Write short note on solar distillation system.
c) Draw and explain the performance characteristics of wind mill.

Section – II

Q.4 Attempt any four. **16**

a) Distinguish between fixed dome type & Floating drum type biogas plant.
b) With the help of bacterial reactions explain principle of biogas generation.
c) Draw and describe the dry steam geothermal power plant.
d) Explain the different types of geothermal resources.
e) Draw and describe the working of open cycle OTEC system.
f) Write short note on carnot cycle.

Q.5 Attempt any two. **12**

a) Explain fixed drum type biogas plant.
b) Describe the working of closed cycle OTEC system. And also explain the advantages and disadvantages of Tidal power.
c) Explain tidal energy conversion system with proper diagram.

SLR-GF-447

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Optical modulators are widely used with superior performance _____.
a) Only Laboratory
b) including optical communications, signal processing, and optical measurements
c) time Measurement
d) None of the above

2) Optical fiber is the technology associated with data transmission using _____.
a) air b) light pulses
c) waves d) both a & c

3) Optical fiber is used by telecommunications companies to transmit _____.
a) Telephone signals
b) Telephone signals, Internet communication and cable television signals
c) Internet communication and cable television signals
d) None of the above

4) How do you measure bending losses in optical fiber?
a) By taking the logarithmic ratio of input power (P_i) to the output power (P_o)
b) By taking the logarithmic of output power (P_o)
c) By taking the logarithmic of input power (P_i)
d) Only Power

5) DWDM Means _____.
a) Data wavelength-division multiplexing
b) Dense wavelength-division multiplexing
c) Dense wavelength-diverted multiplexing
d) Dense wavelength-division manager

6) A light-emitting diode (LED) is a semiconductor device that emit light when _____.
a) Output reaches saturation level
b) Current flows through it
c) Output will be a sine waveform
d) Output will be a non-sinusoidal waveform

7) Fiber optic Ethernet transmits data signals over _____.
a) Fiber cables rather than the copper cables of traditional Ethernet wiring
b) Copper cables
c) Wired Cable
d) All of the mentioned

8) In an optical network, which topologies are used?
a) Ring b) Star
c) Bus d) All of the above

9) Dense wavelength division multiplexing is a _____
a) Wired communication technique
b) Fiber-optic transmission technique
c) Mixing techniques
d) Protocol

10) A major consideration with all types of fiber, fiber connection is the _____.
a) optical loss encountered at the interface
b) air loss
c) hest loss
d) None of the above

11) Fiber splicing is the process of _____.
a) Temporary joining of two fibers
b) permanently joining two fibers together
c) permanent and temporary joint
d) None of the above

12) An optical amplifier is a device that amplifiers _____.
a) Electrical signal b) an optical signal
c) Both a and b d) None of the above

13) Wavelength division multiplexing (WDM) is a _____.
a) Technique of multiplexing multiple optical carrier signals
b) Technique of multiplexing multiple ray
c) Both a & b
d) None of the above

14) A LASER Means _____.
a) Light amplification some emit radiation
b) Light activated stimulated emission of radiation
c) Both a & b
d) Light amplification by stimulated emission of radiation

SLR-GF-447

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the Following (Any Four) **16**

a) Write any 8 application of Optical Fiber communication.
b) Write down the types of optical fiber. Explain any one in details.
c) Write a short note on fiber alignment & joint losses.
d) What is fiber splices? Explain.
e) Explain shortly fiber coupler & fiber connector.

Q.3 Answer the Following (Any Two) **12**

a) Write down the type of dispersion in optical fiber communication. Explain in details.
b) What are semiconductor injection laser and their structure?
c) Explain mode theory (Ray Theory) of Optical Fiber.

Section – II

Q.4 Answer the Following (Any Four) **16**

a) Explain wavelength division modulation (WDM).
b) Explain requirement of optical detector.
c) Explain phototransistor in optical detectors.
d) Explain SONET/SDH rings.
e) Draw LED characteristics. Explain.

Q.5 Answer the Following (Any Two) **12**

a) Explain the performance parameter of detector in details.
b) Explain optical network in details.
c) Explain avalanche photodiodes in details.

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In an optical network, which topologies are used?
a) Ring b) Star
c) Bus d) All of the above

2) Dense wavelength division multiplexing is a _____
a) Wired communication technique
b) Fiber-optic transmission technique
c) Mixing techniques
d) Protocol

3) A major consideration with all types of fiber, fiber connection is the _____.
a) optical loss encountered at the interface
b) air loss
c) hest loss
d) None of the above

4) Fiber splicing is the process of _____.
a) Temporary joining of two fibers
b) permanently joining two fibers together
c) permanent and temporary joint
d) None of the above

5) An optical amplifier is a device that amplifiers _____.
a) Electrical signal b) an optical signal
c) Both a and b d) None of the above

6) Wavelength division multiplexing (WDM) is a _____.
a) Technique of multiplexing multiple optical carrier signals
b) Technique of multiplexing multiple ray
c) Both a & b
d) None of the above

7) A LASER Means _____.
a) Light amplification some emit radiation
b) Light activated stimulated emission of radiation
c) Both a & b
d) Light amplification by stimulated emission of radiation

8) Optical modulators are widely used with superior performance _____.
a) Only Laboratory
b) including optical communications, signal processing, and optical measurements
c) time Measurement
d) None of the above

9) Optical fiber is the technology associated with data transmission using _____.
a) air
b) light pulses
c) waves
d) both a & c

10) Optical fiber is used by telecommunications companies to transmit _____.
a) Telephone signals
b) Telephone signals, Internet communication and cable television signals
c) Internet communication and cable television signals
d) None of the above

11) How do you measure bending losses in optical fiber?
a) By taking the logarithmic ratio of input power (P_i) to the output power (P_o)
b) By taking the logarithmic of output power (P_o)
c) By taking the logarithmic of input power (P_i)
d) Only Power

12) DWDM Means _____.
a) Data wavelength-division multiplexing
b) Dense wavelength-division multiplexing
c) Dense wavelength-diverted multiplexing
d) Dense wavelength-division manager

13) A light-emitting diode (LED) is a semiconductor device that emit light when _____.
a) Output reaches saturation level
b) Current flows through it
c) Output will be a sine waveform
d) Output will be a non-sinusoidal waveform

14) Fiber optic Ethernet transmits data signals over _____.
a) Fiber cables rather than the copper cables of traditional Ethernet wiring
b) Copper cables
c) Wired Cable
d) All of the mentioned

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Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the Following (Any Four) **16**

a) Write any 8 application of Optical Fiber communication.
b) Write down the types of optical fiber. Explain any one in details.
c) Write a short note on fiber alignment & joint losses.
d) What is fiber splices? Explain.
e) Explain shortly fiber coupler & fiber connector.

Q.3 Answer the Following (Any Two) **12**

a) Write down the type of dispersion in optical fiber communication. Explain in details.
b) What are semiconductor injection laser and their structure?
c) Explain mode theory (Ray Theory) of Optical Fiber.

Section – II

Q.4 Answer the Following (Any Four) **16**

a) Explain wavelength division modulation (WDM).
b) Explain requirement of optical detector.
c) Explain phototransistor in optical detectors.
d) Explain SONET/SDH rings.
e) Draw LED characteristics. Explain.

Q.5 Answer the Following (Any Two) **12**

a) Explain the performance parameter of detector in details.
b) Explain optical network in details.
c) Explain avalanche photodiodes in details.

Seat No.		Set	R

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Fiber splicing is the process of _____.
a) Temporary joining of two fibers
b) permanently joining two fibers together
c) permanent and temporary joint
d) None of the above

2) An optical amplifier is a device that amplifiers _____.
a) Electrical signal b) an optical signal
c) Both a and b d) None of the above

3) Wavelength division multiplexing (WDM) is a _____.
a) Technique of multiplexing multiple optical carrier signals
b) Technique of multiplexing multiple ray
c) Both a & b
d) None of the above

4) A LASER Means _____.
a) Light amplification some emit radiation
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c) Both a & b
d) Light amplification by stimulated emission of radiation

5) Optical modulators are widely used with superior performance _____.
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b) including optical communications, signal processing, and optical measurements
c) time Measurement
d) None of the above

6) Optical fiber is the technology associated with data transmission using _____.
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c) Internet communication and cable television signals
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8) How do you measure bending losses in optical fiber?
a) By taking the logarithmic ratio of input power (P_i) to the output power (P_o)
b) By taking the logarithmic of output power (P_o)
c) By taking the logarithmic of input power (P_i)
d) Only Power

9) DWDM Means _____.
a) Data wavelength-division multiplexing
b) Dense wavelength-division multiplexing
c) Dense wavelength-diverted multiplexing
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a) Ring b) Star
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13) Dense wavelength division multiplexing is a _____
a) Wired communication technique
b) Fiber-optic transmission technique
c) Mixing techniques
d) Protocol

14) A major consideration with all types of fiber, fiber connection is the _____.
a) optical loss encountered at the interface
b) air loss
c) hest loss
d) None of the above

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Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the Following (Any Four) **16**

a) Write any 8 application of Optical Fiber communication.
b) Write down the types of optical fiber. Explain any one in details.
c) Write a short note on fiber alignment & joint losses.
d) What is fiber splices? Explain.
e) Explain shortly fiber coupler & fiber connector.

Q.3 Answer the Following (Any Two) **12**

a) Write down the type of dispersion in optical fiber communication. Explain in details.
b) What are semiconductor injection laser and their structure?
c) Explain mode theory (Ray Theory) of Optical Fiber.

Section – II

Q.4 Answer the Following (Any Four) **16**

a) Explain wavelength division modulation (WDM).
b) Explain requirement of optical detector.
c) Explain phototransistor in optical detectors.
d) Explain SONET/SDH rings.
e) Draw LED characteristics. Explain.

Q.5 Answer the Following (Any Two) **12**

a) Explain the performance parameter of detector in details.
b) Explain optical network in details.
c) Explain avalanche photodiodes in details.

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) A light-emitting diode (LED) is a semiconductor device that emit light when _____.
a) Output reaches saturation level
b) Current flows through it
c) Output will be a sine waveform
d) Output will be a non-sinusoidal waveform

2) Fiber optic Ethernet transmits data signals over _____.
a) Fiber cables rather than the copper cables of traditional Ethernet wiring
b) Copper cables
c) Wired Cable
d) All of the mentioned

3) In an optical network, which topologies are used?
a) Ring b) Star
c) Bus d) All of the above

4) Dense wavelength division multiplexing is a _____
a) Wired communication technique
b) Fiber-optic transmission technique
c) Mixing techniques
d) Protocol

5) A major consideration with all types of fiber, fiber connection is the _____.
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b) air loss
c) hest loss
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6) Fiber splicing is the process of _____.
a) Temporary joining of two fibers
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a) Electrical signal b) an optical signal
c) Both a and b d) None of the above

8) Wavelength division multiplexing (WDM) is a _____.
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b) Technique of multiplexing multiple ray
c) Both a & b
d) None of the above

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b) Light activated stimulated emission of radiation
c) Both a & b
d) Light amplification by stimulated emission of radiation

10) Optical modulators are widely used with superior performance _____.
a) Only Laboratory
b) including optical communications, signal processing, and optical measurements
c) time Measurement
d) None of the above

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a) air b) light pulses
c) waves d) both a & c

12) Optical fiber is used by telecommunications companies to transmit _____.
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b) Telephone signals, Internet communication and cable television signals
c) Internet communication and cable television signals
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13) How do you measure bending losses in optical fiber?
a) By taking the logarithmic ratio of input power (P_i) to the output power (P_o)
b) By taking the logarithmic of output power (P_o)
c) By taking the logarithmic of input power (P_i)
d) Only Power

14) DWDM Means _____.
a) Data wavelength-division multiplexing
b) Dense wavelength-division multiplexing
c) Dense wavelength-diverted multiplexing
d) Dense wavelength-division manager

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Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Fiber Optic Communication (BTN07608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the Following (Any Four) **16**

a) Write any 8 application of Optical Fiber communication.
b) Write down the types of optical fiber. Explain any one in details.
c) Write a short note on fiber alignment & joint losses.
d) What is fiber splices? Explain.
e) Explain shortly fiber coupler & fiber connector.

Q.3 Answer the Following (Any Two) **12**

a) Write down the type of dispersion in optical fiber communication. Explain in details.
b) What are semiconductor injection laser and their structure?
c) Explain mode theory (Ray Theory) of Optical Fiber.

Section – II

Q.4 Answer the Following (Any Four) **16**

a) Explain wavelength division modulation (WDM).
b) Explain requirement of optical detector.
c) Explain phototransistor in optical detectors.
d) Explain SONET/SDH rings.
e) Draw LED characteristics. Explain.

Q.5 Answer the Following (Any Two) **12**

a) Explain the performance parameter of detector in details.
b) Explain optical network in details.
c) Explain avalanche photodiodes in details.

SLR-GF-448

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The more correct a senor can measure, the more _____ it is.
a) Accurate b) Precise
c) Scaled d) Extent

2) The smallest change which a sensor can detect is termed _____.
a) Accuracy b) Precision
c) Resolution d) Scale

3) Piezoelectric crystals produce _____.
a) No voltage b) Low voltage
c) High voltage d) Very high voltage

4) Hall effect transducer can be used to measure _____.
a) Magnetic field b) Angular displacement
c) Linear displacement d) All of the mentioned

5) Which among the following is not a dynamic characteristic?
a) Response Speed
b) Accuracy
c) Retardation type measuring lag
d) Time delay lag

6) Which of the following method is employed for ADC?
a) Ladder network
b) Successive approximation type
c) PWM type
d) None of the mentioned

7) The interface between an analog signal and a digital processor is _____.
a) D/A converter b) A/D converter
c) Modulator d) Demodulator

8) Which typo of position can be determined by a position sensor?
a) Mechanical position b) Lateral position
c) Prone position d) Lithotomy position

9) How the capacitance in a capacitive position sensor is altered?
a) By changing dielectric constant
b) By changing overlapping area of plates
c) By changing both dielectric constant and overlapping area
d) By adding a resistance in parallel

10) The wet etching process is _____.
a) isotropic
b) anisotropic
c) isotropic for few materials
d) isobaric process

11) The process of modifying a metal's properties is called _____.
a) Electrolysis
b) Electro deposition
c) Electro less plating
d) Electroplating

12) Which type of coil is a solenoid?
a) Electromagnetic
b) Electrical
c) Mechanical
d) Chemical

13) Which gear can be used to transmit rectilinear motion?
a) Spur gear
b) Helical gear
c) Bevel gear
d) Rack and pinion gear

14) What pumps hydraulic oil to the hydraulic circuit?
a) Flow control valve
b) Oil reservoir
c) Rotatory pumps
d) Pressure gauge

SLR-GF-448

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**

a) Give classification of sensor and explain active and passive sensor.
b) Explain the principle of working of Hall effect sensor.
c) State and explain the different types of batteries for low power sensors.
d) Explain the principle of working of piezo-electric effect sensor.
e) Draw and explain the symbol and characteristics of amplifier.
f) Explain the saturation and dead band characteristics of sensor.

Q.3 Attempt any two. **12**

a) Describe the dynamic models of sensor element.
b) State characteristics of sensor and explain the transfer function characteristics.
c) State different types of excitation circuits and explain any one of them in details.

Section – II

Q.4 Attempt any four. **16**

a) State the different types of pressure sensor and explain any one of them.
b) State the sensors used for occupancy and motion detector application and explain any one of them.
c) With neat sketch explain vacuum deposition method of surface processing.
d) Explain the wet etching MEMS Technology.
e) Define the Actuator and give their classifications.
f) Write the Selection criteria of Actuators.

Q.5 Attempt any two. **12**

a) State the different types of light detector and explain any one of them.
b) State the different types of material used for fabrication of sensor and explain any one of them.
c) State and explain the principle of operation of Electromechanical Actuators and Explain any one of them in details.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which typo of position can be determined by a position sensor?
a) Mechanical position b) Lateral position
c) Prone position d) Lithotomy position

2) How the capacitance in a capacitive position sensor is altered?
a) By changing dielectric constant
b) By changing overlapping area of plates
c) By changing both dielectric constant and overlapping area
d) By adding a resistance in parallel

3) The wet etching process is _____.
a) isotropic b) anisotropic
c) isotropic for few materials d) isobaric process

4) The process of modifying a metal's properties is called _____.
a) Electrolysis b) Electro deposition
c) Electro less plating d) Electroplating

5) Which type of coil is a solenoid?
a) Electromagnetic b) Electrical
c) Mechanical d) Chemical

6) Which gear can be used to transmit rectilinear motion?
a) Spur gear b) Helical gear
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7) What pumps hydraulic oil to the hydraulic circuit?
a) Flow control valve b) Oil reservoir
c) Rotatory pumps d) Pressure gauge

8) The more correct a senor can measure, the more _____ it is.
a) Accurate b) Precise
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10) Piezoelectric crystals produce _____.
a) No voltage b) Low voltage
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11) Hall effect transducer can be used to measure _____.
a) Magnetic field b) Angular displacement
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12) Which among the following is not a dynamic characteristic?
a) Response Speed
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d) Time delay lag

13) Which of the following method is employed for ADC?
a) Ladder network
b) Successive approximation type
c) PWM type
d) None of the mentioned

14) The interface between an analog signal and a digital processor is _____.
a) D/A converter b) A/D converter
c) Modulator d) Demodulator

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**

a) Give classification of sensor and explain active and passive sensor.
b) Explain the principle of working of Hall effect sensor.
c) State and explain the different types of batteries for low power sensors.
d) Explain the principle of working of piezo-electric effect sensor.
e) Draw and explain the symbol and characteristics of amplifier.
f) Explain the saturation and dead band characteristics of sensor.

Q.3 Attempt any two. **12**

a) Describe the dynamic models of sensor element.
b) State characteristics of sensor and explain the transfer function characteristics.
c) State different types of excitation circuits and explain any one of them in details.

Section – II

Q.4 Attempt any four. **16**

a) State the different types of pressure sensor and explain any one of them.
b) State the sensors used for occupancy and motion detector application and explain any one of them.
c) With neat sketch explain vacuum deposition method of surface processing.
d) Explain the wet etching MEMS Technology.
e) Define the Actuator and give their classifications.
f) Write the Selection criteria of Actuators.

Q.5 Attempt any two. **12**

a) State the different types of light detector and explain any one of them.
b) State the different types of material used for fabrication of sensor and explain any one of them.
c) State and explain the principle of operation of Electromechanical Actuators and Explain any one of them in details.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The process of modifying a metal's properties is called _____.
a) Electrolysis b) Electro deposition
c) Electro less plating d) Electroplating

2) Which type of coil is a solenoid?
a) Electromagnetic b) Electrical
c) Mechanical d) Chemical

3) Which gear can be used to transmit rectilinear motion?
a) Spur gear b) Helical gear
c) Bevel gear d) Rack and pinion gear

4) What pumps hydraulic oil to the hydraulic circuit?
a) Flow control valve b) Oil reservoir
c) Rotatory pumps d) Pressure gauge

5) The more correct a senor can measure, the more _____ it is.
a) Accurate b) Precise
c) Scaled d) Extent

6) The smallest change which a sensor can detect is termed _____.
a) Accuracy b) Precision
c) Resolution d) Scale

7) Piezoelectric crystals produce _____.
a) No voltage b) Low voltage
c) High voltage d) Very high voltage

8) Hall effect transducer can be used to measure _____.
a) Magnetic field b) Angular displacement
c) Linear displacement d) All of the mentioned

9) Which among the following is not a dynamic characteristic?
a) Response Speed
b) Accuracy
c) Retardation type measuring lag
d) Time delay lag

10) Which of the following method is employed for ADC?
a) Ladder network
b) Successive approximation type
c) PWM type
d) None of the mentioned

11) The interface between an analog signal and a digital processor is _____.
a) D/A converter b) A/D converter
c) Modulator d) Demodulator

12) Which typo of position can be determined by a position sensor?
a) Mechanical position b) Lateral position
c) Prone position d) Lithotomy position

13) How the capacitance in a capacitive position sensor is altered?
a) By changing dielectric constant
b) By changing overlapping area of plates
c) By changing both dielectric constant and overlapping area
d) By adding a resistance in parallel

14) The wet etching process is _____.
a) isotropic b) anisotropic
c) isotropic for few materials d) isobaric process

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**

a) Give classification of sensor and explain active and passive sensor.
b) Explain the principle of working of Hall effect sensor.
c) State and explain the different types of batteries for low power sensors.
d) Explain the principle of working of piezo-electric effect sensor.
e) Draw and explain the symbol and characteristics of amplifier.
f) Explain the saturation and dead band characteristics of sensor.

Q.3 Attempt any two. **12**

a) Describe the dynamic models of sensor element.
b) State characteristics of sensor and explain the transfer function characteristics.
c) State different types of excitation circuits and explain any one of them in details.

Section – II

Q.4 Attempt any four. **16**

a) State the different types of pressure sensor and explain any one of them.
b) State the sensors used for occupancy and motion detector application and explain any one of them.
c) With neat sketch explain vacuum deposition method of surface processing.
d) Explain the wet etching MEMS Technology.
e) Define the Actuator and give their classifications.
f) Write the Selection criteria of Actuators.

Q.5 Attempt any two. **12**

a) State the different types of light detector and explain any one of them.
b) State the different types of material used for fabrication of sensor and explain any one of them.
c) State and explain the principle of operation of Electromechanical Actuators and Explain any one of them in details.

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following method is employed for ADC?
a) Ladder network
b) Successive approximation type
c) PWM type
d) None of the mentioned

2) The interface between an analog signal and a digital processor is _____.
a) D/A converter b) A/D converter
c) Modulator d) Demodulator

3) Which typo of position can be determined by a position sensor?
a) Mechanical position b) Lateral position
c) Prone position d) Lithotomy position

4) How the capacitance in a capacitive position sensor is altered?
a) By changing dielectric constant
b) By changing overlapping area of plates
c) By changing both dielectric constant and overlapping area
d) By adding a resistance in parallel

5) The wet etching process is _____.
a) isotropic b) anisotropic
c) isotropic for few materials d) isobaric process

6) The process of modifying a metal's properties is called _____.
a) Electrolysis b) Electro deposition
c) Electro less plating d) Electroplating

7) Which type of coil is a solenoid?
a) Electromagnetic b) Electrical
c) Mechanical d) Chemical

8) Which gear can be used to transmit rectilinear motion?
a) Spur gear b) Helical gear
c) Bevel gear d) Rack and pinion gear

9) What pumps hydraulic oil to the hydraulic circuit?
a) Flow control valve
b) Oil reservoir
c) Rotatory pumps
d) Pressure gauge

10) The more correct a senor can measure, the more _____ it is.
a) Accurate
b) Precise
c) Scaled
d) Extent

11) The smallest change which a sensor can detect is termed _____.
a) Accuracy
b) Precision
c) Resolution
d) Scale

12) Piezoelectric crystals produce _____.
a) No voltage
b) Low voltage
c) High voltage
d) Very high voltage

13) Hall effect transducer can be used to measure _____.
a) Magnetic field
b) Angular displacement
c) Linear displacement
d) All of the mentioned

14) Which among the following is not a dynamic characteristic?
a) Response Speed
b) Accuracy
c) Retardation type measuring lag
d) Time delay lag

SLR-GF-448

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (BTN07609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**

a) Give classification of sensor and explain active and passive sensor.
b) Explain the principle of working of Hall effect sensor.
c) State and explain the different types of batteries for low power sensors.
d) Explain the principle of working of piezo-electric effect sensor.
e) Draw and explain the symbol and characteristics of amplifier.
f) Explain the saturation and dead band characteristics of sensor.

Q.3 Attempt any two. **12**

a) Describe the dynamic models of sensor element.
b) State characteristics of sensor and explain the transfer function characteristics.
c) State different types of excitation circuits and explain any one of them in details.

Section – II

Q.4 Attempt any four. **16**

a) State the different types of pressure sensor and explain any one of them.
b) State the sensors used for occupancy and motion detector application and explain any one of them.
c) With neat sketch explain vacuum deposition method of surface processing.
d) Explain the wet etching MEMS Technology.
e) Define the Actuator and give their classifications.
f) Write the Selection criteria of Actuators.

Q.5 Attempt any two. **12**

a) State the different types of light detector and explain any one of them.
b) State the different types of material used for fabrication of sensor and explain any one of them.
c) State and explain the principle of operation of Electromechanical Actuators and Explain any one of them in details.

Seat No.	

Set | P

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Hybrid Electric Vehicle Design (BTN07610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) Which of the following vehicle produces zero emissions _____.
a) gasoline vehicle b) Electric vehicle
c) hybrid vehicle d) Diesel vehicle

2) _____ captures the kinetic energy from braking and converts it into the electrical power that charges the vehicle's high voltage battery.
a) regenerative braking b) mechanical braking
c) both (a) & (b) d) None of the above

3) Flywheel stores energy in _____.
a) Chemical form b) Electrical form
c) Mechanical form d) Static form

4) Which of the following converts energy from the combustion of fuel directly to the electrical energy?
a) Ni-Cd cell b) Dynamo
c) Fuel cell d) Electrolytic cell

5) The key components in an HEV consist of an _____.
a) electric motor& battery
b) convertor
c) ICE, fuel tank and control board
d) All of the above

6) When brakes are applied on a moving vehicle; the kinetic energy is converted to _____.
a) Mechanical energy b) Heat energy
c) Electrical energy d) Potential energy

7) Which motor is suitable for high starting torque _____.
a) DC Series Motor b) DC shunt motor
c) DC separately Excited Motor d) Synchronous Motor

8) The uncontrolled skidding of vehicles while sudden brakes are applied is avoided through _____.

a) antilock brake system
b) Regenerative brake system
c) electric brake system
d) None of the above

9) Which strategy is not used in Energy management strategy system _____.

a) Optimization based
b) Rule based
c) Regression method
d) Global optimization strategy

10) Electric motors are ideal for vehicular applications because of _____.

a) the alpha delta characteristics
b) the V I characteristics
c) the Pd characteristics
d) the torque speed characteristics

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Hybrid Electric Vehicle Design (BTN07610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any five questions from the following questions.
2) Figures to the right indicates full marks.

Q.2 Attempt any five. **40**

a) Explain in detail vehicle performance, vehicle power source characterization in conventional vehicles.
b) Explain the Configuration and control of DC Motor drives.
c) Explain Fuel Cell based energy storage and its analysis in case of Hybrid Electric Vehicle (HEV).
d) Explain the requirement of power and energy during braking of front and rear wheels in Hybrid Electric Vehicle (HEV).
e) What are the different types of motors used in Hybrid Electric Vehicle (HEV), also explain the selection of size of such motors.
f) State and Explain classification of different energy management strategies used in hybrid electric vehicles.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Hybrid Electric Vehicle Design (BTN07610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) When brakes are applied on a moving vehicle; the kinetic energy is converted to _____.
a) Mechanical energy b) Heat energy
c) Electrical energy d) Potential energy

2) Which motor is suitable for high starting torque _____.
a) DC Series Motor b) DC shunt motor
c) DC separately Excited Motor d) Synchronous Motor

3) The uncontrolled skidding of vehicles while sudden brakes are applied is avoided through _____.
a) antilock brake system b) Regenerative brake system
c) electric brake system d) None of the above

4) Which strategy is not used in Energy management strategy system _____.
a) Optimization based b) Rule based
c) Regression method d) Global optimization strategy

5) Electric motors are ideal for vehicular applications because of _____.
a) the alpha delta characteristics
b) the V I characteristics
c) the Pd characteristics
d) the torque speed characteristics

6) Which of the following vehicle produces zero emissions _____.
a) gasoline vehicle b) Electric vehicle
c) hybrid vehicle d) Diesel vehicle

7) _____ captures the kinetic energy from braking and converts it into the electrical power that charges the vehicle's high voltage battery.
a) regenerative braking b) mechanical braking
c) both (a) & (b) d) None of the above

8) Flywheel stores energy in _____.
a) Chemical form b) Electrical form
c) Mechanical form d) Static form

9) Which of the following converts energy from the combustion of fuel directly to the electrical energy?

a) Ni-Cd cell
b) Dynamo
c) Fuel cell
d) Electrolytic cell

10) The key components in an HEV consist of an _____.

a) electric motor& battery
b) convertor
c) ICE, fuel tank and control board
d) All of the above

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Hybrid Electric Vehicle Design (BTN07610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any five questions from the following questions.
2) Figures to the right indicates full marks.

Q.2 Attempt any five. **40**

a) Explain in detail vehicle performance, vehicle power source characterization in conventional vehicles.
b) Explain the Configuration and control of DC Motor drives.
c) Explain Fuel Cell based energy storage and its analysis in case of Hybrid Electric Vehicle (HEV).
d) Explain the requirement of power and energy during braking of front and rear wheels in Hybrid Electric Vehicle (HEV).
e) What are the different types of motors used in Hybrid Electric Vehicle (HEV), also explain the selection of size of such motors.
f) State and Explain classification of different energy management strategies used in hybrid electric vehicles.

Seat No.	

Set R

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Hybrid Electric Vehicle Design (BTN07610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) Which strategy is not used in Energy management strategy system _____.
a) Optimization based b) Rule based
c) Regression method d) Global optimization strategy

2) Electric motors are ideal for vehicular applications because of _____.
a) the alpha delta characteristics
b) the V I characteristics
c) the Pd characteristics
d) the torque speed characteristics

3) Which of the following vehicle produces zero emissions _____.
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7) The key components in an HEV consist of an _____.
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c) ICE, fuel tank and control board
d) All of the above

8) When brakes are applied on a moving vehicle; the kinetic energy is converted to _____.

a) Mechanical energy b) Heat energy
c) Electrical energy d) Potential energy

9) Which motor is suitable for high starting torque _____.

a) DC Series Motor b) DC shunt motor
c) DC separately Excited Motor d) Synchronous Motor

10) The uncontrolled skidding of vehicles while sudden brakes are applied is avoided through _____.

a) antilock brake system b) Regenerative brake system
c) electric brake system d) None of the above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Hybrid Electric Vehicle Design (BTN07610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any five questions from the following questions.
2) Figures to the right indicates full marks.

Q.2 Attempt any five. **40**

a) Explain in detail vehicle performance, vehicle power source characterization in conventional vehicles.
b) Explain the Configuration and control of DC Motor drives.
c) Explain Fuel Cell based energy storage and its analysis in case of Hybrid Electric Vehicle (HEV).
d) Explain the requirement of power and energy during braking of front and rear wheels in Hybrid Electric Vehicle (HEV).
e) What are the different types of motors used in Hybrid Electric Vehicle (HEV), also explain the selection of size of such motors.
f) State and Explain classification of different energy management strategies used in hybrid electric vehicles.

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Hybrid Electric Vehicle Design (BTN07610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) Flywheel stores energy in _____.
a) Chemical form b) Electrical form
c) Mechanical form d) Static form

2) Which of the following converts energy from the combustion of fuel directly to the electrical energy?
a) Ni-Cd cell b) Dynamo
c) Fuel cell d) Electrolytic cell

3) The key components in an HEV consist of an _____.
a) electric motor& battery
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c) ICE, fuel tank and control board
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a) DC Series Motor b) DC shunt motor
c) DC separately Excited Motor d) Synchronous Motor

6) The uncontrolled skidding of vehicles while sudden brakes are applied is avoided through _____.
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c) electric brake system d) None of the above

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a) Optimization based b) Rule based
c) Regression method d) Global optimization strategy

8) Electric motors are ideal for vehicular applications because of _____.
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b) the V I characteristics
c) the Pd characteristics
d) the torque speed characteristics

9) Which of the following vehicle produces zero emissions _____.
a) gasoline vehicle
b) Electric vehicle
c) hybrid vehicle
d) Diesel vehicle

10) _____ captures the kinetic energy from braking and converts it into the electrical power that charges the vehicle's high voltage battery.
a) regenerative braking
b) mechanical braking
c) both (a) & (b)
d) None of the above

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Hybrid Electric Vehicle Design (BTN07610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Answer any five questions from the following questions.
2) Figures to the right indicates full marks.

Q.2 Attempt any five. **40**

a) Explain in detail vehicle performance, vehicle power source characterization in conventional vehicles.
b) Explain the Configuration and control of DC Motor drives.
c) Explain Fuel Cell based energy storage and its analysis in case of Hybrid Electric Vehicle (HEV).
d) Explain the requirement of power and energy during braking of front and rear wheels in Hybrid Electric Vehicle (HEV).
e) What are the different types of motors used in Hybrid Electric Vehicle (HEV), also explain the selection of size of such motors.
f) State and Explain classification of different energy management strategies used in hybrid electric vehicles.

SLR-GF-450

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10**

1) Avoid working in _____ conditions.
a) Cold b) Dry
c) Sunny d) Wet

2) _____ all electrical equipment before use.
a) Clean b) Inspect
c) Label d) Organize

3) _____ gives a stray current somewhere to go and keeps workers from becoming part of the circuit.
a) De-energizing b) Energizing
c) Grounding d) Guarding

4) Class-A fire consists of fire due to _____.
a) Wood b) Oil
c) Transformer d) Chemical

5) Specially designed PPE for electrical work includes _____ insulating gloves, matting, blankets, and covers.
a) Plastic b) Rubber
c) Steel d) Wood

6) _____ use caution when working near electricity.
a) Always b) Never
c) Rarely d) Sometimes

7) The minimum distance provided between two conducting points by air/gas/oil is Known as _____.
a) Clearances b) Creepages
c) Clearances and Creepages d) All of these

8) _____ workers have little or no training working on or near electricity.
a) Pipeline b) Qualified
c) Rescue d) Unqualified

9) Electrical hazards include shock, electrical arcs and blasts, and _____ or faulty equipment.

a) Broken
b) Double-insulated
c) Polished
d) Secure

10) _____ is a measurement of how much energy you are using each second.

a) Distance
b) Power
c) Volume
d) Weight

Seat No.	

Set **P**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Answer any Five questions. **40**

a) Write the safety precautions to be taken during the operation and maintenance of electrical equipment.
b) Explain in brief types of fire extinguisher.
c) State and explain method of artificial respiration.
d) Explain the effect of electrical shock on human body.
e) Explain the procedure of permit to do the work on electrical equipment.
f) State safety procedure during erection phase, commissioning phase and maintenance phase.

SLR-GF-450

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

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a) Distance b) Power
c) Volume d) Weight

6) Avoid working in _____ conditions.
a) Cold b) Dry
c) Sunny d) Wet

7) _____ all electrical equipment before use.
a) Clean b) Inspect
c) Label d) Organize

8) _____ gives a stray current somewhere to go and keeps workers from becoming part of the circuit.
a) De-energizing b) Energizing
c) Grounding d) Guarding

9) Class-A fire consists of fire due to _____.

a) Wood b) Oil
c) Transformer d) Chemical

10) Specially designed PPE for electrical work includes _____ insulating gloves, matting, blankets, and covers.

a) Plastic b) Rubber
c) Steel d) Wood

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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b) Explain in brief types of fire extinguisher.
c) State and explain method of artificial respiration.
d) Explain the effect of electrical shock on human body.
e) Explain the procedure of permit to do the work on electrical equipment.
f) State safety procedure during erection phase, commissioning phase and maintenance phase.

Seat No.		Set	R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10**

1) Electrical hazards include shock, electrical arcs and blasts, and _____ or faulty equipment.
a) Broken b) Double-insulated
c) Polished d) Secure

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c) Rarely d) Sometimes

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b) Creepages
c) Clearances and Creepages
d) All of these

10) _____ workers have little or no training working on or near electricity.

a) Pipeline
b) Qualified
c) Rescue
d) Unqualified

SLR-GF-450

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Answer any Five questions. **40**

a) Write the safety precautions to be taken during the operation and maintenance of electrical equipment.
b) Explain in brief types of fire extinguisher.
c) State and explain method of artificial respiration.
d) Explain the effect of electrical shock on human body.
e) Explain the procedure of permit to do the work on electrical equipment.
f) State safety procedure during erection phase, commissioning phase and maintenance phase.

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10**

1) _____ gives a stray current somewhere to go and keeps workers from becoming part of the circuit.
a) De-energizing b) Energizing
c) Grounding d) Guarding

2) Class-A fire consists of fire due to _____.
a) Wood b) Oil
c) Transformer d) Chemical

3) Specially designed PPE for electrical work includes _____ insulating gloves, matting, blankets, and covers.
a) Plastic b) Rubber
c) Steel d) Wood

4) _____ use caution when working near electricity.
a) Always b) Never
c) Rarely d) Sometimes

5) The minimum distance provided between two conducting points by air/gas/oil is Known as _____.
a) Clearances b) Creepages
c) Clearances and Creepages d) All of these

6) _____ workers have little or no training working on or near electricity.
a) Pipeline b) Qualified
c) Rescue d) Unqualified

7) Electrical hazards include shock, electrical arcs and blasts, and _____ or faulty equipment.
a) Broken b) Double-insulated
c) Polished d) Secure

8) _____ is a measurement of how much energy you are using each second.
a) Distance b) Power
c) Volume d) Weight

9) Avoid working in _____ conditions.

a) Cold b) Dry
c) Sunny d) Wet

10) _____ all electrical equipment before use.

a) Clean b) Inspect
c) Label d) Organize

SLR-GF-450

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (BTN07611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Answer any Five questions. **40**

a) Write the safety precautions to be taken during the operation and maintenance of electrical equipment.
b) Explain in brief types of fire extinguisher.
c) State and explain method of artificial respiration.
d) Explain the effect of electrical shock on human body.
e) Explain the procedure of permit to do the work on electrical equipment.
f) State safety procedure during erection phase, commissioning phase and maintenance phase.

Seat No.		Set	P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) Batteries used for electrical energy storage are _____.
a) Laclanche cells b) Edison cells
c) Lead acid cells d) Any of the above

2) Turn around efficiency of battery energy storage system is around _____.
a) 75 percent b) 50 percent
c) 25 percent d) 10 percent

3) Certain metals become super-conducting when cooled below _____.
a) melting point b) transition temperature
c) 00 K d) 00 C

4) Identify the adjacent figure _____.
a) solar cell b) solar module
c) solar array d) none of the above

5) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

6) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

7) Solar cells are made up of _____.
a) Semiconductor b) Conductors
c) Insulators d) All of the above

8) P-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

9) N-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

10) The process of adding impurity to silicon is known as _____.
a) Doping b) Imparting
c) Bombarding d) Injecting

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Attempt any four. **16**

a) Differentiate between Solar PV cell and Solar thermal energy.
b) Explain the basic structure of PV module.
c) Write short note on PV module testing and certification.
d) Explain the shading analysis of battery.
e) Explain the different types of Inverters and its operation.

Q.3 Attempt any two. **12**

a) Explain the different Components of a grid connected SPV system.
b) Explain the Introduction to single line diagram and its significance of PV Module.
c) Explain the preparation and general considerations for installation of DC and AC components.

Seat No.		Set	Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

2) Solar cells are made up of _____.
a) Semiconductor b) Conductors
c) Insulators d) All of the above

3) P-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

4) N-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

5) The process of adding impurity to silicon is known as _____.
a) Doping b) Imparting
c) Bombarding d) Injecting

6) Batteries used for electrical energy storage are _____.
a) Laclanche cells b) Edison cells
c) Lead acid cells d) Any of the above

7) Turn around efficiency of battery energy storage system is around _____.
a) 75 percent b) 50 percent
c) 25 percent d) 10 percent

8) Certain metals become super-conducting when cooled below _____.
a) melting point b) transition temperature
c) 00 K d) 00 C

9) Identify the adjacent figure _____.
a) solar cell b) solar module
c) solar array d) none of the above

10) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Attempt any four. **16**

a) Differentiate between Solar PV cell and Solar thermal energy.
b) Explain the basic structure of PV module.
c) Write short note on PV module testing and certification.
d) Explain the shading analysis of battery.
e) Explain the different types of Inverters and its operation.

Q.3 Attempt any two. **12**

a) Explain the different Components of a grid connected SPV system.
b) Explain the Introduction to single line diagram and its significance of PV Module.
c) Explain the preparation and general considerations for installation of DC and AC components.

Seat No.		Set	R

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) N-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

2) The process of adding impurity to silicon is known as _____.
a) Doping b) Imparting
c) Bombarding d) Injecting

3) Batteries used for electrical energy storage are _____.
a) Laclanche cells b) Edison cells
c) Lead acid cells d) Any of the above

4) Turn around efficiency of battery energy storage system is around _____.
a) 75 percent b) 50 percent
c) 25 percent d) 10 percent

5) Certain metals become super-conducting when cooled below _____.
a) melting point b) transition temperature
c) 00 K d) 00 C

6) Identify the adjacent figure _____.
a) solar cell b) solar module
c) solar array d) none of the above

7) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

8) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

9) Solar cells are made up of _____.
a) Semiconductor b) Conductors
c) Insulators d) All of the above

10) P-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Attempt any four. **16**

a) Differentiate between Solar PV cell and Solar thermal energy.
b) Explain the basic structure of PV module.
c) Write short note on PV module testing and certification.
d) Explain the shading analysis of battery.
e) Explain the different types of Inverters and its operation.

Q.3 Attempt any two. **12**

a) Explain the different Components of a grid connected SPV system.
b) Explain the Introduction to single line diagram and its significance of PV Module.
c) Explain the preparation and general considerations for installation of DC and AC components.

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct option from the following. **10**

1) Certain metals become super-conducting when cooled below _____.
a) melting point b) transition temperature
c) 00 K d) 00 C

2) Identify the adjacent figure _____.
a) solar cell b) solar module
c) solar array d) none of the above

3) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

4) Identify the adjacent figure
a) solar cell b) solar module
c) solar array d) none of the above

5) Solar cells are made up of _____.
a) Semiconductor b) Conductors
c) Insulators d) All of the above

6) P-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

7) N-type semiconductor has:
a) Pentavalent impurity b) Trivalent impurity
c) Divalent Impurity d) None of the above

8) The process of adding impurity to silicon is known as _____.
a) Doping b) Imparting
c) Bombarding d) Injecting

9) Batteries used for electrical energy storage are _____.
a) Laclanche cells b) Edison cells
c) Lead acid cells d) Any of the above

10) Turn around efficiency of battery energy storage system is around _____.
a) 75 percent b) 50 percent
c) 25 percent d) 10 percent

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design and Installation (BTN07612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.2 Attempt any four. **16**

a) Differentiate between Solar PV cell and Solar thermal energy.
b) Explain the basic structure of PV module.
c) Write short note on PV module testing and certification.
d) Explain the shading analysis of battery.
e) Explain the different types of Inverters and its operation.

Q.3 Attempt any two. **12**

a) Explain the different Components of a grid connected SPV system.
b) Explain the Introduction to single line diagram and its significance of PV Module.
c) Explain the preparation and general considerations for installation of DC and AC components.

SLR-GF-452

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) The major drawback of a primary cell is that _____.
a) chemical action is not reversible
b) chemical action is reversible
c) the electrolyte used is very costly
d) it is not portable

2) Flywheel stores energy in _____.
a) Chemical form b) Electrical form
c) Mechanical form d) Static form

3) The chief disadvantage of a nickel-cadmium cell is that it _____.
a) takes a long time for charging b) has high internal resistance
c) has a short life d) is very expensive

4) Which is the active material present on the negative plate in a lead-acid battery?
a) Lead dioxide b) Lead peroxide
c) Spongy lead d) Water

5) EMF of cell depends upon _____
a) External resistance
b) Internal resistance
c) Electrolyte & electrodes
d) Area of plates inside electrolyte

6) What is the unit of specific power in a battery?
a) Watt/Kg b) Watt-Kg
c) Watt d) None of the above

7) The batteries cannot be recharged simply by reversing the current _____
a) Li-Ion Battery b) Lead Acid battery
c) Li-poly Battery d) Aluminum Air battery

8) Which type of cells are very sensitive to the environment?
a) Lithium-ion b) Lead acid
c) Ultracapacitors d) None of the above

9) Adaptive SOC estimation method related to _____.
a) Neural network method
b) Support vector machine method
c) Kalman filter method
d) All of the above

10) What are the methods used in battery thermal management systems?
a) Cooling b) Heating
c) Insulation and Ventilation d) All of the above

11) Which component is not related to the active cell balancing method?
a) Capacitor b) Inductor
c) Resistor d) None of the above

12) The most common communication protocol used in BMS:
a) CAN bus b) SPI bus
c) 12 C bus d) None of these

13) What are the structural properties of EV batteries?
a) Cell design b) Current collectors
c) Cell enclosure d) All of the above

14) What is the primary reason for proper battery disposal and recycling?
a) Environmental protection b) Compliance with regulations
c) Resource conservation d) All of the above

SLR-GF-452

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Explain operation of Nickel-iron cell.
b) Write a note on efficiencies of a battery.
c) Explain with chemical reactions charging process of a lead acid battery.
d) Explain in detail ultra-capacitor energy storage device.
e) Explain with application operation of Li-ion battery.
f) Explain in short Specific energy and Specific Power parameters of a battery.

Q.3 Solve any Two **12**

a) Explain various nominal (general) parameters of a battery.
b) Explain general approach to modeling of batteries.
c) Explain in detail performance criteria for Electric Vehicles batteries.

Section – II

Q.4 Solve any Four **16**

a) Explain the Open circuit voltage State of Charge (SOC) estimation method.
b) Explain the fundamentals of the battery pack development process.
c) Describes the Current sensing in the Battery Management System (BMS).
d) Explain the structural properties of EV battery cell safety.
e) Describes the EV Battery testing methods.
f) Write a short note on Battery Thermal Runaway.

Q.5 Solve any Two **12**

a) Explain the active and passive cell balancing methods with a neat diagram.
b) Why is Battery Management System (BMS) important in Lithium-ion battery, and describes the core functions of BMS?
c) Explain the Lithium-ion battery recycling process with a neat diagram.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) Which type of cells are very sensitive to the environment?
a) Lithium-ion b) Lead acid
c) Ultracapacitors d) None of the above

2) Adaptive SOC estimation method related to _____.
a) Neural network method
b) Support vector machine method
c) Kalman filter method
d) All of the above

3) What are the methods used in battery thermal management systems?
a) Cooling b) Heating
c) Insulation and Ventilation d) All of the above

4) Which component is not related to the active cell balancing method?
a) Capacitor b) Inductor
c) Resistor d) None of the above

5) The most common communication protocol used in BMS:
a) CAN bus b) SPI bus
c) 12 C bus d) None of these

6) What are the structural properties of EV batteries?
a) Cell design b) Current collectors
c) Cell enclosure d) All of the above

7) What is the primary reason for proper battery disposal and recycling?
a) Environmental protection b) Compliance with regulations
c) Resource conservation d) All of the above

8) The major drawback of a primary cell is that _____.
a) chemical action is not reversible
b) chemical action is reversible
c) the electrolyte used is very costly
d) it is not portable

9) Flywheel stores energy in _____.

a) Chemical form b) Electrical form
c) Mechanical form d) Static form

10) The chief disadvantage of a nickel-cadmium cell is that it _____.

a) takes a long time for charging b) has high internal resistance
c) has a short life d) is very expensive

11) Which is the active material present on the negative plate in a lead-acid battery?

a) Lead dioxide b) Lead peroxide
c) Spongy lead d) Water

12) EMF of cell depends upon _____

a) External resistance
b) Internal resistance
c) Electrolyte & electrodes
d) Area of plates inside electrolyte

13) What is the unit of specific power in a battery?

a) Watt/Kg b) Watt-Kg
c) Watt d) None of the above

14) The batteries cannot be recharged simply by reversing the current _____

a) Li-Ion Battery b) Lead Acid battery
c) Li-poly Battery d) Aluminum Air battery

SLR-GF-452

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Explain operation of Nickel-iron cell.
b) Write a note on efficiencies of a battery.
c) Explain with chemical reactions charging process of a lead acid battery.
d) Explain in detail ultra-capacitor energy storage device.
e) Explain with application operation of Li-ion battery.
f) Explain in short Specific energy and Specific Power parameters of a battery.

Q.3 Solve any Two **12**

a) Explain various nominal (general) parameters of a battery.
b) Explain general approach to modeling of batteries.
c) Explain in detail performance criteria for Electric Vehicles batteries.

Section – II

Q.4 Solve any Four **16**

a) Explain the Open circuit voltage State of Charge (SOC) estimation method.
b) Explain the fundamentals of the battery pack development process.
c) Describes the Current sensing in the Battery Management System (BMS).
d) Explain the structural properties of EV battery cell safety.
e) Describes the EV Battery testing methods.
f) Write a short note on Battery Thermal Runaway.

Q.5 Solve any Two **12**

a) Explain the active and passive cell balancing methods with a neat diagram.
b) Why is Battery Management System (BMS) important in Lithium-ion battery, and describes the core functions of BMS?
c) Explain the Lithium-ion battery recycling process with a neat diagram.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) Which component is not related to the active cell balancing method?
a) Capacitor b) Inductor
c) Resistor d) None of the above

2) The most common communication protocol used in BMS:
a) CAN bus b) SPI bus
c) 12 C bus d) None of these

3) What are the structural properties of EV batteries?
a) Cell design b) Current collectors
c) Cell enclosure d) All of the above

4) What is the primary reason for proper battery disposal and recycling?
a) Environmental protection b) Compliance with regulations
c) Resource conservation d) All of the above

5) The major drawback of a primary cell is that _____.
a) chemical action is not reversible
b) chemical action is reversible
c) the electrolyte used is very costly
d) it is not portable

6) Flywheel stores energy in _____.
a) Chemical form b) Electrical form
c) Mechanical form d) Static form

7) The chief disadvantage of a nickel-cadmium cell is that it _____.
a) takes a long time for charging b) has high internal resistance
c) has a short life d) is very expensive

8) Which is the active material present on the negative plate in a lead-acid battery?
a) Lead dioxide b) Lead peroxide
c) Spongy lead d) Water

9) EMF of cell depends upon _____
a) External resistance
b) Internal resistance
c) Electrolyte & electrodes
d) Area of plates inside electrolyte

10) What is the unit of specific power in a battery?
a) Watt/Kg b) Watt-Kg
c) Watt d) None of the above

11) The batteries cannot be recharged simply by reversing the current _____
a) Li-Ion Battery b) Lead Acid battery
c) Li-poly Battery d) Aluminum Air battery

12) Which type of cells are very sensitive to the environment?
a) Lithium-ion b) Lead acid
c) Ultracapacitors d) None of the above

13) Adaptive SOC estimation method related to _____.
a) Neural network method
b) Support vector machine method
c) Kalman filter method
d) All of the above

14) What are the methods used in battery thermal management systems?
a) Cooling b) Heating
c) Insulation and Ventilation d) All of the above

SLR-GF-452

Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Explain operation of Nickel-iron cell.
b) Write a note on efficiencies of a battery.
c) Explain with chemical reactions charging process of a lead acid battery.
d) Explain in detail ultra-capacitor energy storage device.
e) Explain with application operation of Li-ion battery.
f) Explain in short Specific energy and Specific Power parameters of a battery.

Q.3 Solve any Two **12**

a) Explain various nominal (general) parameters of a battery.
b) Explain general approach to modeling of batteries.
c) Explain in detail performance criteria for Electric Vehicles batteries.

Section – II

Q.4 Solve any Four **16**

a) Explain the Open circuit voltage State of Charge (SOC) estimation method.
b) Explain the fundamentals of the battery pack development process.
c) Describes the Current sensing in the Battery Management System (BMS).
d) Explain the structural properties of EV battery cell safety.
e) Describes the EV Battery testing methods.
f) Write a short note on Battery Thermal Runaway.

Q.5 Solve any Two **12**

a) Explain the active and passive cell balancing methods with a neat diagram.
b) Why is Battery Management System (BMS) important in Lithium-ion battery, and describes the core functions of BMS?
c) Explain the Lithium-ion battery recycling process with a neat diagram.

Seat No.	

Set | S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) What is the unit of specific power in a battery?
a) Watt/Kg b) Watt-Kg
c) Watt d) None of the above

2) The batteries cannot be recharged simply by reversing the current _____
a) Li-Ion Battery b) Lead Acid battery
c) Li-poly Battery d) Aluminum Air battery

3) Which type of cells are very sensitive to the environment?
a) Lithium-ion b) Lead acid
c) Ultracapacitors d) None of the above

4) Adaptive SOC estimation method related to _____.
a) Neural network method
b) Support vector machine method
c) Kalman filter method
d) All of the above

5) What are the methods used in battery thermal management systems?
a) Cooling b) Heating
c) Insulation and Ventilation d) All of the above

6) Which component is not related to the active cell balancing method?
a) Capacitor b) Inductor
c) Resistor d) None of the above

7) The most common communication protocol used in BMS:
a) CAN bus b) SPI bus
c) 12 C bus d) None of these

8) What are the structural properties of EV batteries?
a) Cell design b) Current collectors
c) Cell enclosure d) All of the above

9) What is the primary reason for proper battery disposal and recycling?
a) Environmental protection b) Compliance with regulations
c) Resource conservation d) All of the above

10) The major drawback of a primary cell is that _____.
a) chemical action is not reversible
b) chemical action is reversible
c) the electrolyte used is very costly
d) it is not portable

11) Flywheel stores energy in _____.
a) Chemical form b) Electrical form
c) Mechanical form d) Static form

12) The chief disadvantage of a nickel-cadmium cell is that it _____.
a) takes a long time for charging b) has high internal resistance
c) has a short life d) is very expensive

13) Which is the active material present on the negative plate in a lead-acid battery?
a) Lead dioxide b) Lead peroxide
c) Spongy lead d) Water

14) EMF of cell depends upon _____
a) External resistance
b) Internal resistance
c) Electrolyte & electrodes
d) Area of plates inside electrolyte

SLR-GF-452

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Management System for Electric Vehicle (BTN07614)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Explain operation of Nickel-iron cell.
b) Write a note on efficiencies of a battery.
c) Explain with chemical reactions charging process of a lead acid battery.
d) Explain in detail ultra-capacitor energy storage device.
e) Explain with application operation of Li-ion battery.
f) Explain in short Specific energy and Specific Power parameters of a battery.

Q.3 Solve any Two **12**

a) Explain various nominal (general) parameters of a battery.
b) Explain general approach to modeling of batteries.
c) Explain in detail performance criteria for Electric Vehicles batteries.

Section – II

Q.4 Solve any Four **16**

a) Explain the Open circuit voltage State of Charge (SOC) estimation method.
b) Explain the fundamentals of the battery pack development process.
c) Describes the Current sensing in the Battery Management System (BMS).
d) Explain the structural properties of EV battery cell safety.
e) Describes the EV Battery testing methods.
f) Write a short note on Battery Thermal Runaway.

Q.5 Solve any Two **12**

a) Explain the active and passive cell balancing methods with a neat diagram.
b) Why is Battery Management System (BMS) important in Lithium-ion battery, and describes the core functions of BMS?
c) Explain the Lithium-ion battery recycling process with a neat diagram.

SLR-GF-453

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Distributed Energy Integration (BTN07613)

Day & Date: Sunday,24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) For the stable operation of an interconnected system, which passive element can be used as an interconnecting element?
a) Resistor b) Relay
c) Capacitor d) Reactor

2) The flywheel is accelerated when _____.
a) Driving torque > Load torque b) Driving torque < Load torque
c) Driving torque = Load torque d) Any of the above

3) Which of the following material is used as separator material in Lithium-ion batteries?
a) Brass b) Metal sheet
c) Paper d) Plastic

4) The area of cross-section of the neutral in a 3-wire D.C. system is generally _____ the area of cross-section of main conductor.
a) same as b) one - fourth
c) One - half d) double

5) Why is compressed air in a storage system cooled before storage?
a) Prevent heat loss during storage
b) Improve turn around efficiency
c) Reduces storage volume
d) Help in a hybrid system

6) In an SMES _____.
a) Magnetic energy is converted to electrical energy
b) Magnetic energy can be stored indefinitely
c) Electrical resistance of coil drops to zero
d) All of the above

7) The null point of a uniformly loaded distributor feed at the equal voltage at both ends lies at _____.
a) Midpoint
b) Either end
c) Two third distance from one end
d) One-fourth distance from one end

8) Distribution management systems: _____.
a) Radial system
b) Tree system
c) Ring mains system
d) All are equally reliable

9) The main objective of energy management is to _____.
a) Minimize energy cost
b) Minimum environmental effects
c) Maintain optimum energy procurement and utilization
d) All of these

10) What is the main advantage of ring main system over radial system?
i. Voltage drop in the feeder is less.
ii. Power factor is higher.
iii. Supply is more reliable.
Which among the above statements are correct?
a) i and ii only
b) ii and iii only
c) i and iii only
d) i, ii, and iii

11) In the design of a distributor which of the following is the major consideration?
a) Voltage drops
b) Current carrying capacity
c) Frequency
d) KVA system

12) The loads on distributors systems are generally _____.
a) Balanced
b) Unbalanced
c) Either of above
d) none of above

13) Which of the following is used to maintain constant voltage in the feeder circuit?
a) Induction regulator
b) Booster
c) Tap changer
d) Phase advancers

14) What is the main objective of energy storage?
a) Offset adverse effect of fluctuating demand
b) Assure steady output from existing plants
c) Meet peak demand on short notice
d) All of these

SLR-GF-453

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Distributed Energy Integration (BTN07613)

Day & Date: Sunday,24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four of the following. **16**
- **a)** State & explain issues with distributed generation in detail.
- **b)** Discuss different solutions against integration issues in distributed generation.
- **c)** Explain the viability of DG integration in the deregulated electricity market.
- **d)** Discuss allocation of losses in distribution networks with DG.
- **e)** Write a short note on DGs in distribution networks.

Q.3 Attempt any Two of the following **12**
- **a)** Explain the role of a Virtual power plant in DG management.
- **b)** What are the different types of energy storage systems used in microgrids? Explain in detail.
- **c)** Write a short note on Markets for Ancillary Services.

Section – II

Q.4 Attempt Any Four of the following: **16**
- **a)** Write an overview of technical regulations for the interconnection of DGs.
- **b)** Explain different Forecasting methods and their applications.
- **c)** Explain Frequency control for the interconnection of DGs.
- **d)** Explain the role of microgrids in Energy Reliability.
- **e)** Write a short note on Loss reduction and Investment reduction.

Q.5 Attempt Any Two of the following. **12**
- **a)** Describe the concept of microgrid & also its advantages & applications.
- **b)** Write a short note on the operation and analysis of microgrids.
- **c)** State & explain large-scale storage for grid stability /Backup.

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Distributed Energy Integration (BTN07613)

Day & Date: Sunday,24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Distribution management systems: _____.
a) Radial system b) Tree system
c) Ring mains system d) All are equally reliable

2) The main objective of energy management is to _____.
a) Minimize energy cost
b) Minimum environmental effects
c) Maintain optimum energy procurement and utilization
d) All of these

3) What is the main advantage of ring main system over radial system?
i. Voltage drop in the feeder is less.
ii. Power factor is higher.
iii. Supply is more reliable.
Which among the above statements are correct?
a) i and ii only b) ii and iii only
c) i and iii only d) i, ii, and iii

4) In the design of a distributor which of the following is the major consideration?
a) Voltage drops b) Current carrying capacity
c) Frequency d) KVA system

5) The loads on distributors systems are generally _____.
a) Balanced b) Unbalanced
c) Either of above d) none of above

6) Which of the following is used to maintain constant voltage in the feeder circuit?
a) Induction regulator b) Booster
c) Tap changer d) Phase advancers

7) What is the main objective of energy storage?
a) Offset adverse effect of fluctuating demand
b) Assure steady output from existing plants
c) Meet peak demand on short notice
d) All of these

8) For the stable operation of an interconnected system, which passive element can be used as an interconnecting element?
a) Resistor b) Relay
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9) The flywheel is accelerated when _____.
a) Driving torque > Load torque b) Driving torque < Load torque
c) Driving torque = Load torque d) Any of the above

10) Which of the following material is used as separator material in Lithium-ion batteries?
a) Brass b) Metal sheet
c) Paper d) Plastic

11) The area of cross-section of the neutral in a 3-wire D.C. system is generally _____ the area of cross-section of main conductor.
a) same as b) one - fourth
c) One - half d) double

12) Why is compressed air in a storage system cooled before storage?
a) Prevent heat loss during storage
b) Improve turn around efficiency
c) Reduces storage volume
d) Help in a hybrid system

13) In an SMES _____.
a) Magnetic energy is converted to electrical energy
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c) Electrical resistance of coil drops to zero
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14) The null point of a uniformly loaded distributor feed at the equal voltage at both ends lies at _____.
a) Midpoint
b) Either end
c) Two third distance from one end
d) One-fourth distance from one end

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Seat No.	

Set Q

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Distributed Energy Integration (BTN07613)

Day & Date: Sunday,24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four of the following. **16**
- **a)** State & explain issues with distributed generation in detail.
- **b)** Discuss different solutions against integration issues in distributed generation.
- **c)** Explain the viability of DG integration in the deregulated electricity market.
- **d)** Discuss allocation of losses in distribution networks with DG.
- **e)** Write a short note on DGs in distribution networks.

Q.3 Attempt any Two of the following **12**
- **a)** Explain the role of a Virtual power plant in DG management.
- **b)** What are the different types of energy storage systems used in microgrids? Explain in detail.
- **c)** Write a short note on Markets for Ancillary Services.

Section – II

Q.4 Attempt Any Four of the following: **16**
- **a)** Write an overview of technical regulations for the interconnection of DGs.
- **b)** Explain different Forecasting methods and their applications.
- **c)** Explain Frequency control for the interconnection of DGs.
- **d)** Explain the role of microgrids in Energy Reliability.
- **e)** Write a short note on Loss reduction and Investment reduction.

Q.5 Attempt Any Two of the following. **12**
- **a)** Describe the concept of microgrid & also its advantages & applications.
- **b)** Write a short note on the operation and analysis of microgrids.
- **c)** State & explain large-scale storage for grid stability /Backup.

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Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Distributed Energy Integration (BTN07613)

Day & Date: Sunday,24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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5) For the stable operation of an interconnected system, which passive element can be used as an interconnecting element?
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Which among the above statements are correct?
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SLR-GF-453

Seat No.	

Set R

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Distributed Energy Integration (BTN07613)

Day & Date: Sunday,24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four of the following. **16**
- **a)** State & explain issues with distributed generation in detail.
- **b)** Discuss different solutions against integration issues in distributed generation.
- **c)** Explain the viability of DG integration in the deregulated electricity market.
- **d)** Discuss allocation of losses in distribution networks with DG.
- **e)** Write a short note on DGs in distribution networks.

Q.3 Attempt any Two of the following **12**
- **a)** Explain the role of a Virtual power plant in DG management.
- **b)** What are the different types of energy storage systems used in microgrids? Explain in detail.
- **c)** Write a short note on Markets for Ancillary Services.

Section – II

Q.4 Attempt Any Four of the following: **16**
- **a)** Write an overview of technical regulations for the interconnection of DGs.
- **b)** Explain different Forecasting methods and their applications.
- **c)** Explain Frequency control for the interconnection of DGs.
- **d)** Explain the role of microgrids in Energy Reliability.
- **e)** Write a short note on Loss reduction and Investment reduction.

Q.5 Attempt Any Two of the following. **12**
- **a)** Describe the concept of microgrid & also its advantages & applications.
- **b)** Write a short note on the operation and analysis of microgrids.
- **c)** State & explain large-scale storage for grid stability /Backup.

Seat No.	

Set **S**

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Distributed Energy Integration (BTN07613)

Day & Date: Sunday,24-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In an SMES _____.
a) Magnetic energy is converted to electrical energy
b) Magnetic energy can be stored indefinitely
c) Electrical resistance of coil drops to zero
d) All of the above

2) The null point of a uniformly loaded distributor feed at the equal voltage at both ends lies at _____.
a) Midpoint
b) Either end
c) Two third distance from one end
d) One-fourth distance from one end

3) Distribution management systems: _____.
a) Radial system b) Tree system
c) Ring mains system d) All are equally reliable

4) The main objective of energy management is to _____.
a) Minimize energy cost
b) Minimum environmental effects
c) Maintain optimum energy procurement and utilization
d) All of these

5) What is the main advantage of ring main system over radial system?
i. Voltage drop in the feeder is less.
ii. Power factor is higher.
iii. Supply is more reliable.
Which among the above statements are correct?
a) i and ii only b) ii and iii only
c) i and iii only d) i, ii, and iii

6) In the design of a distributor which of the following is the major consideration?
a) Voltage drops b) Current carrying capacity
c) Frequency d) KVA system

7) The loads on distributors systems are generally _____.
a) Balanced b) Unbalanced
c) Either of above d) none of above

8) Which of the following is used to maintain constant voltage in the feeder circuit?
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9) What is the main objective of energy storage?
a) Offset adverse effect of fluctuating demand
b) Assure steady output from existing plants
c) Meet peak demand on short notice
d) All of these

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a) Resistor b) Relay
c) Capacitor d) Reactor

11) The flywheel is accelerated when _____.
a) Driving torque > Load torque b) Driving torque < Load torque
c) Driving torque = Load torque d) Any of the above

12) Which of the following material is used as separator material in Lithium-ion batteries?
a) Brass b) Metal sheet
c) Paper d) Plastic

13) The area of cross-section of the neutral in a 3-wire D.C. system is generally _____ the area of cross-section of main conductor.
a) same as b) one - fourth
c) One - half d) double

14) Why is compressed air in a storage system cooled before storage?
a) Prevent heat loss during storage
b) Improve turn around efficiency
c) Reduces storage volume
d) Help in a hybrid system

SLR-GF-453

Seat No.	

Set S

T.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Distributed Energy Integration (BTN07613)

Day & Date: Sunday,24-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any four of the following. **16**
- **a)** State & explain issues with distributed generation in detail.
- **b)** Discuss different solutions against integration issues in distributed generation.
- **c)** Explain the viability of DG integration in the deregulated electricity market.
- **d)** Discuss allocation of losses in distribution networks with DG.
- **e)** Write a short note on DGs in distribution networks.

Q.3 Attempt any Two of the following **12**
- **a)** Explain the role of a Virtual power plant in DG management.
- **b)** What are the different types of energy storage systems used in microgrids? Explain in detail.
- **c)** Write a short note on Markets for Ancillary Services.

Section – II

Q.4 Attempt Any Four of the following: **16**
- **a)** Write an overview of technical regulations for the interconnection of DGs.
- **b)** Explain different Forecasting methods and their applications.
- **c)** Explain Frequency control for the interconnection of DGs.
- **d)** Explain the role of microgrids in Energy Reliability.
- **e)** Write a short note on Loss reduction and Investment reduction.

Q.5 Attempt Any Two of the following. **12**
- **a)** Describe the concept of microgrid & also its advantages & applications.
- **b)** Write a short note on the operation and analysis of microgrids.
- **c)** State & explain large-scale storage for grid stability /Backup.

SLR-GF-454

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (197045601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Electrical machines having a power output upto about 750 W may be called _____ machines.
a) Small size b) Medium size
c) Large size d) None of the above

2) Ratio of net core area to Area of Circumscribing circle is, in square type transformer is _____.
a) 0.58 b) 0.45
c) 0.64 d) 0.51

3) With increase in voltage, the window space factor of transformer _____.
a) Decrease
b) Increase
c) Remains constant
d) Decrease or increase depending upon whether it is a distribution or power transformer

4) In D.C. machines the usual limit of slot pitch is _____.
a) between 5 to 10 mm b) between 10 to 15 mm
c) between 15 to 20 mm d) between 25 to 35 mm

5) DC machines provided with a large value of air gap length _____.
a) provides comparatively quiet operation
b) provides better ventilation
c) provides poor ventilation
d) both (a) and (b)

6) Limitation imposed on the design is/are _____.
a) Saturation of magnetic circuit b) Temperature rise
c) Commutation d) All of the above

7) Which types of slots are normally used in induction motor?
a) Open b) Semi closed
c) Closed d) Round

8) In case of induction motors, the ratio of length to pole pitch for good efficiency is taken as _____.

a) 1.0 b) 1.5
c) 2.0 d) 5.0

9) The value of specific electric loading of induction motor is in the range of _____.

a) 40 to 400 amps. Cond./m b) 400 to 4000 amp. Cond./m
c) 5000 to 45000 amp. Cond./m d) 30000 to 100,000 amp. Cond./m

10) A synchronous machine with a large length of air gap will have _____.

a) Lower limit of stability
b) Higher value of inherent regulation
c) Higher noise level
d) Smaller unbalanced magnetic pull

11) The effect of leakage flux in case of 3-phase induction motor is to _____.

a) Reduce the torque produced b) Increase the torque produced
c) Increase the power factor d) None of the above

12) The length of airgap to be provided in _____ is primarily determined by power factor consideration.

a) DC series motor b) DC shunt motor
c) Induction motor d) Synchronous motor

13) Which of the following prime mover is least efficient?

a) steam engine b) petrol engine
c) diesel engine d) gas turbine

14) The design of mechanical parts is particularly important in case of _____ Speed machines.

a) High b) Medium
c) Low d) All of these

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (197045601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four. **16**

a) Explain modern trends in machine design.

b) Explain the factors those affect size of rotating electrical machines.

c) Distinguish between core transformer and shell transformer.

d) The ratio of flux to full load mmf in a 400 KVA, 50 Hz, single phase core type power transformer is 2.4×10^{-6}. Calculate the net iron area and the window area of the transformer. Maximum flux density in the core is 1.3 wb/m^2, current density 2.7 Amp/mm^2 and window space factor 0.26.

e) The diameter and length of 500kW, 500V, 445 r.p.m, 6 pole D.C generator are 84cm and 35cm respectively. If it is lap wound with 660 conductors, estimate the specific magnetic and electric loading.

Q.3 Attempt any Two. **12**

a) Design an adequate cooling arrangement for a 250 KVA 6600/400 V, 50Hz, 3 phase Delta/Star, oil immersed natural cool transformer with following data:
i) Winding temperature not to exceed 500c
ii) Total loss at full load is 5.0 Kw.
iii) Tank dimensions, height x length x width = (125x100x50) cm
Sketch the diagram to show the arrangement.

b) Derive the output equation of AC and DC machine.

c) Find the suitable values diameter and length armature of the core for 100Kw, 250V, 6 pole, 750 r.p.m, D.C. generator having 90% efficiency. Assume an average flux density in the air of about 0.58 Wb/m^2 and amp. conductor per meter to be 28000. The ratio of core length to pole pitch is 0.67.

Section – II

Q.4 Attempt Any Four. **16**

a) Derive the output equation of three phase induction motor.

b) Discuss the factors which influence the selection of air-gap of Synchronous Machine.

c) Find the current in the bar and end rings of a cage rotor of 6 poles, 3-ph, and induction motor having 72 stator slots with 15 conductors in each slot. If the stator current per phase is 20 amp and rotor slots are 55. Hence find the suitable size of the cage bars and end rings.

d) Estimate the KVA rating of a 3-phase, 50 Hz, 2-pole turbo machine having core length 160 cm, peripheral speed 140 m/sec, ac = 525 per cm and Bav = 0.52 wb/m^2. Assume uniformly distributed winding.

e) Determine the main dimension for a 1000 KVA, 50Hz, 3-ph, 375 rpm alternator. The average air gap flux density is 0.55 Wb/m^2 and the ampere conductor per meter are 28000. Use rectangular pole and assume suitable value for ratio of core length to pole pitch in order that bolted on pole construction is used for which the maximum permissible peripheral speed is 50 m/s. the runaway speed is 1.8 times the synchronous speed.

Q.5 Attempt any two. **12**

a) Determine the main dimensions of 12 MV A, 13.8 kV, 50 Hz, 1500 rpm, 3-ph, star connected alternator. The following particulars are provided. Ave. gap density = 0.60 tesla Ampere conductors per meter = 42000 Peripheral speed = 80 m/sec. Find also the maximum flux, the no. of stator slots if one conductor per slot is used, the no. of turns per phase.

b) In the design of a 30 HP, 3-ph, 440 V. 960 rpm, 50 Hz. Delta connected induction motor. Assume specific electric loading of 25000 ac/m and specific magnetic loading of 0.46 Wb/m^2 full load efficiency 86% and power factor 0.87. Estimate:

i) Diameter of stator bore
ii) Length of stator core
iii) Peripheral velocity
iv) Turns per phase

c) A 500 kVA, 3.3 kV, 50 Hz, 600 r.p.m., 3 phase salient pole alternator has 180 turns per phase. Estimate the length of air gap if average flux density is 0.54 Wb/m^2; the ratio pole arc to pole pitch 0.65; short circuit ratio 1.2; the gap contraction factor 1.15 and winding factor 0.955. The mmf required for gap is 80% of no load field mmf. Star connection.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (197045601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In case of induction motors, the ratio of length to pole pitch for good efficiency is taken as _____.
a) 1.0 b) 1.5
c) 2.0 d) 5.0

2) The value of specific electric loading of induction motor is in the range of _____.
a) 40 to 400 amps. Cond./m b) 400 to 4000 amp. Cond./m
c) 5000 to 45000 amp. Cond./m d) 30000 to 100,000 amp. Cond./m

3) A synchronous machine with a large length of air gap will have _____.
a) Lower limit of stability
b) Higher value of inherent regulation
c) Higher noise level
d) Smaller unbalanced magnetic pull

4) The effect of leakage flux in case of 3-phase induction motor is to _____.
a) Reduce the torque produced b) Increase the torque produced
c) Increase the power factor d) None of the above

5) The length of airgap to be provided in _____ is primarily determined by power factor consideration.
a) DC series motor b) DC shunt motor
c) Induction motor d) Synchronous motor

6) Which of the following prime mover is least efficient?
a) steam engine b) petrol engine
c) diesel engine d) gas turbine

7) The design of mechanical parts is particularly important in case of _____ Speed machines.
a) High b) Medium
c) Low d) All of these

8) Electrical machines having a power output upto about 750 W may be called _____ machines.
a) Small size b) Medium size
c) Large size d) None of the above

9) Ratio of net core area to Area of Circumscribing circle is, in square type transformer is _____.

a) 0.58 b) 0.45
c) 0.64 d) 0.51

10) With increase in voltage, the window space factor of transformer _____.

a) Decrease
b) Increase
c) Remains constant
d) Decrease or increase depending upon whether it is a distribution or power transformer

11) In D.C. machines the usual limit of slot pitch is _____.

a) between 5 to 10 mm b) between 10 to 15 mm
c) between 15 to 20 mm d) between 25 to 35 mm

12) DC machines provided with a large value of air gap length _____.

a) provides comparatively quiet operation
b) provides better ventilation
c) provides poor ventilation
d) both (a) and (b)

13) Limitation imposed on the design is/are _____.

a) Saturation of magnetic circuit b) Temperature rise
c) Commutation d) All of the above

14) Which types of slots are normally used in induction motor?

a) Open b) Semi closed
c) Closed d) Round

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (197045601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve Any Four. **16**

a) Explain modern trends in machine design.

b) Explain the factors those affect size of rotating electrical machines.

c) Distinguish between core transformer and shell transformer.

d) The ratio of flux to full load mmf in a 400 KVA, 50 Hz, single phase core type power transformer is 2.4×10^{-6}. Calculate the net iron area and the window area of the transformer. Maximum flux density in the core is 1.3 wb/m^2, current density 2.7 Amp/mm^2 and window space factor 0.26.

e) The diameter and length of 500kW, 500V, 445 r.p.m, 6 pole D.C generator are 84cm and 35cm respectively. If it is lap wound with 660 conductors, estimate the specific magnetic and electric loading.

Q.3 Attempt any Two. **12**

a) Design an adequate cooling arrangement for a 250 KVA 6600/400 V, 50Hz, 3 phase Delta/Star, oil immersed natural cool transformer with following data:
i) Winding temperature not to exceed 500c
ii) Total loss at full load is 5.0 Kw.
iii) Tank dimensions, height x length x width = (125x100x50) cm
Sketch the diagram to show the arrangement.

b) Derive the output equation of AC and DC machine.

c) Find the suitable values diameter and length armature of the core for 100Kw, 250V, 6 pole, 750 r.p.m, D.C. generator having 90% efficiency. Assume an average flux density in the air of about 0.58 Wb/m^2 and amp. conductor per meter to be 28000. The ratio of core length to pole pitch is 0.67.

Section – II

Q.4 Attempt Any Four. **16**

a) Derive the output equation of three phase induction motor.

b) Discuss the factors which influence the selection of air-gap of Synchronous Machine.

c) Find the current in the bar and end rings of a cage rotor of 6 poles, 3-ph, and induction motor having 72 stator slots with 15 conductors in each slot. If the stator current per phase is 20 amp and rotor slots are 55. Hence find the suitable size of the cage bars and end rings.

d) Estimate the KVA rating of a 3-phase, 50 Hz, 2-pole turbo machine having core length 160 cm, peripheral speed 140 m/sec, ac = 525 per cm and Bav = 0.52 wb/m^2. Assume uniformly distributed winding.

e) Determine the main dimension for a 1000 KVA, 50Hz, 3-ph, 375 rpm alternator. The average air gap flux density is 0.55 Wb/m^2 and the ampere conductor per meter are 28000. Use rectangular pole and assume suitable value for ratio of core length to pole pitch in order that bolted on pole construction is used for which the maximum permissible peripheral speed is 50 m/s. the runaway speed is 1.8 times the synchronous speed.

Q.5 Attempt any two. **12**

a) Determine the main dimensions of 12 MV A, 13.8 kV, 50 Hz, 1500 rpm, 3-ph, star connected alternator. The following particulars are provided. Ave. gap density = 0.60 tesla Ampere conductors per meter = 42000 Peripheral speed = 80 m/sec. Find also the maximum flux, the no. of stator slots if one conductor per slot is used, the no. of turns per phase.

b) In the design of a 30 HP, 3-ph, 440 V. 960 rpm, 50 Hz. Delta connected induction motor. Assume specific electric loading of 25000 ac/m and specific magnetic loading of 0.46 Wb/m^2 full load efficiency 86% and power factor 0.87. Estimate:

i) Diameter of stator bore
ii) Length of stator core
iii) Peripheral velocity
iv) Turns per phase

c) A 500 kVA, 3.3 kV, 50 Hz, 600 r.p.m., 3 phase salient pole alternator has 180 turns per phase. Estimate the length of air gap if average flux density is 0.54 Wb/m^2; the ratio pole arc to pole pitch 0.65; short circuit ratio 1.2; the gap contraction factor 1.15 and winding factor 0.955. The mmf required for gap is 80% of no load field mmf. Star connection.

Seat No.	

Set | R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (197045601)

Day & Date: Monday, 18-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The effect of leakage flux in case of 3-phase induction motor is to _____.
a) Reduce the torque produced b) Increase the torque produced
c) Increase the power factor d) None of the above

2) The length of airgap to be provided in _____ is primarily determined by power factor consideration.
a) DC series motor b) DC shunt motor
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5) Electrical machines having a power output upto about 750 W may be called _____ machines.
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c) 5000 to 45000 amp. Cond./m d) 30000 to 100,000 amp. Cond./m

14) A synchronous machine with a large length of air gap will have _____.
a) Lower limit of stability
b) Higher value of inherent regulation
c) Higher noise level
d) Smaller unbalanced magnetic pull

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (197045601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
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Section – I

Q.2 Solve Any Four. **16**

a) Explain modern trends in machine design.

b) Explain the factors those affect size of rotating electrical machines.

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d) The ratio of flux to full load mmf in a 400 KVA, 50 Hz, single phase core type power transformer is 2.4×10^{-6}. Calculate the net iron area and the window area of the transformer. Maximum flux density in the core is 1.3 wb/m^2, current density 2.7 Amp/mm^2 and window space factor 0.26.

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i) Winding temperature not to exceed 500c
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c) Find the suitable values diameter and length armature of the core for 100Kw, 250V, 6 pole, 750 r.p.m, D.C. generator having 90% efficiency. Assume an average flux density in the air of about 0.58 Wb/m^2 and amp. conductor per meter to be 28000. The ratio of core length to pole pitch is 0.67.

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e) Determine the main dimension for a 1000 KVA, 50Hz, 3-ph, 375 rpm alternator. The average air gap flux density is 0.55 Wb/m^2 and the ampere conductor per meter are 28000. Use rectangular pole and assume suitable value for ratio of core length to pole pitch in order that bolted on pole construction is used for which the maximum permissible peripheral speed is 50 m/s. the runaway speed is 1.8 times the synchronous speed.

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b) In the design of a 30 HP, 3-ph, 440 V. 960 rpm, 50 Hz. Delta connected induction motor. Assume specific electric loading of 25000 ac/m and specific magnetic loading of 0.46 Wb/m^2 full load efficiency 86% and power factor 0.87. Estimate:

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c) A 500 kVA, 3.3 kV, 50 Hz, 600 r.p.m., 3 phase salient pole alternator has 180 turns per phase. Estimate the length of air gap if average flux density is 0.54 Wb/m^2; the ratio pole arc to pole pitch 0.65; short circuit ratio 1.2; the gap contraction factor 1.15 and winding factor 0.955. The mmf required for gap is 80% of no load field mmf. Star connection.

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (197045601)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

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SLR-GF-454

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machine Design (197045601)

Day & Date: Monday, 18-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Solve Any Four. **16**

a) Explain modern trends in machine design.

b) Explain the factors those affect size of rotating electrical machines.

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Q.3 Attempt any Two. **12**

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i) Winding temperature not to exceed 500c
ii) Total loss at full load is 5.0 Kw.
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Sketch the diagram to show the arrangement.

b) Derive the output equation of AC and DC machine.

c) Find the suitable values diameter and length armature of the core for 100Kw, 250V, 6 pole, 750 r.p.m, D.C. generator having 90% efficiency. Assume an average flux density in the air of about 0.58 Wb/m^2 and amp. conductor per meter to be 28000. The ratio of core length to pole pitch is 0.67.

Section – II

Q.4 Attempt Any Four. **16**

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b) Discuss the factors which influence the selection of air-gap of Synchronous Machine.

c) Find the current in the bar and end rings of a cage rotor of 6 poles, 3-ph, and induction motor having 72 stator slots with 15 conductors in each slot. If the stator current per phase is 20 amp and rotor slots are 55. Hence find the suitable size of the cage bars and end rings.

d) Estimate the KVA rating of a 3-phase, 50 Hz, 2-pole turbo machine having core length 160 cm, peripheral speed 140 m/sec, ac = 525 per cm and Bav = 0.52 wb/m^2. Assume uniformly distributed winding.

e) Determine the main dimension for a 1000 KVA, 50Hz, 3-ph, 375 rpm alternator. The average air gap flux density is 0.55 Wb/m^2 and the ampere conductor per meter are 28000. Use rectangular pole and assume suitable value for ratio of core length to pole pitch in order that bolted on pole construction is used for which the maximum permissible peripheral speed is 50 m/s. the runaway speed is 1.8 times the synchronous speed.

Q.5 Attempt any two. **12**

a) Determine the main dimensions of 12 MV A, 13.8 kV, 50 Hz, 1500 rpm, 3-ph, star connected alternator. The following particulars are provided. Ave. gap density = 0.60 tesla Ampere conductors per meter = 42000 Peripheral speed = 80 m/sec. Find also the maximum flux, the no. of stator slots if one conductor per slot is used, the no. of turns per phase.

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Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Candela is the unit of which?
a) Wavelength b) Luminous intensity
c) Luminous flux d) Frequency

2) Solid angle is expressed in terms of _____.
a) Radians / meter b) Radians
c) Steredians d) Degree

3) Which lamps can be directly connected to a solar cell?
a) Incandescent b) Metal Halide
c) Compact Fluorescent d) LED

4) Candela/metre square is the unit of which quantity?
a) Illuminance b) Luminous flux
c) Luminance d) Luminous Intensity

5) Properties of good heating element _____.
a) High resistance b) High melting point
c) Low temperature coefficient d) All of the above

6) Types of train service _____.
a) Online services b) Urban services
c) sub-urban services d) b and c

7) Element of speed time curve _____.
a) Coasting b) Initial acceleration
c) Constant speed d) All of these

8) Which Period is absent in Urban Train Service _____.
a) Acceleration b) Free running
c) Coasting d) Braking

9) Area inside of the speed time curve is represent that _____.
a) Acceleration of the train time taken by the
b) Time taken by the train
c) Distance travelled by the train
d) Crest speed

10) Factors affecting to Schedules speed _____.
a) Maximum speed b) Acceleration and braking
c) Stoppage time d) All

11) Which motor is more suitable for traction service?
a) DC series motor b) DC shunt motor
c) Single phase ac series motor d) Three phase induction motor

12) Power equation of dielectric heating _____.
a) $P = VI\ COS\ \Phi$ b) $P = R$
c) $P = 3\ VI\ COS\ \Phi$ d) $P = 2\pi\ f\ C\ \delta$

13) Type of resistance Welding _____.
a) Spot welding b) Seam welding
c) Projection welding d) All of the above

14) In Resistance heating the method of heat control is _____.
a) By change the number element
b) By changing tapping
c) By inserting with external resistance
d) All of the above

Seat No.	

Set | P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
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Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary

Section – I

Q.2 Solve any four **16**

a) What is an electrical drive? State the important factors on which the selection of electrical drives depends.
b) What are the requirements if ideal electric traction?
c) Explain speed-time curve of a train running on main line. Define 'crest speed', 'average speed' and 'schedule speed'.
d) Derive a suitable equation to determine Vm from a simplified speed-time curve.
e) Explain the transition methods in traction system.

Q.3 Solve any two **12**

a) Explain in brief different types of auxiliary equipments and control equipments in control of traction system.
b) Describe the procedure of calculating the specific energy consumption of an electric train.
c) A schedule speed of 45km/h is required between two stops 1.5 km apart. Find the maximum speed over the run if the stop is of 20 second duration. The values of acceleration and redardation are 2.4 km/h/s and 3.2 km/h/s respectively. Assume a simplified trapezoidal speed time curve.

Section – II

Q.4 Solve any four **16**

a) What do you understand by direct, indirect and semi-indirect lighting?
b) A 250 V lamp has a total flux of 1500 lumens and takes a current of 0.4 A. Calculate
i) lumens/watt
ii) M.S.C.P./watt
c) Describe the properties of good heating material. Give the different heating elements.
d) What is resistance welding? What are its limitations?
e) Explain the construction and working of a fluorescent tube.

Q.5 Solve any two **12**

a) Explain the working principle of arc furnace. Describe any one type of arc furnace.

b) A hall measuring 27.5m x 45.75m is to be illuminated using 200 watt filament lamps. The luminous efficiency of the 200 watt filament lamp is 14.4 lumens/watt. Inside the hall an average illumination of 108 lumens/m^2 is to be provided on the working plane. The walls and ceiling are brightly painted. Take coefficient of utilization s 0.35 and depreciation factor as 0.9. Calculate the number of lamps required for this.

c) Explain the energy conservation methods followed in small and large scale industries.

Seat No.		Set	Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which Period is absent in Urban Train Service _____.
a) Acceleration b) Free running
c) Coasting d) Braking

2) Area inside of the speed time curve is represent that _____.
a) Acceleration of the train time taken by the
b) Time taken by the train
c) Distance travelled by the train
d) Crest speed

3) Factors affecting to Schedules speed _____.
a) Maximum speed b) Acceleration and braking
c) Stoppage time d) All

4) Which motor is more suitable for traction service?
a) DC series motor b) DC shunt motor
c) Single phase ac series motor d) Three phase induction motor

5) Power equation of dielectric heating _____.
a) $P = VI \cos \Phi$ b) $P = R$
c) $P = 3\ VI \cos\ \Phi$ d) $P = 2\pi f C \delta$

6) Type of resistance Welding _____.
a) Spot welding b) Seam welding
c) Projection welding d) All of the above

7) In Resistance heating the method of heat control is _____.
a) By change the number element
b) By changing tapping
c) By inserting with external resistance
d) All of the above

8) Candela is the unit of which?
a) Wavelength b) Luminous intensity
c) Luminous flux d) Frequency

9) Solid angle is expressed in terms of _____.
a) Radians / meter b) Radians
c) Steredians d) Degree

10) Which lamps can be directly connected to a solar cell?
a) Incandescent b) Metal Halide
c) Compact Fluorescent d) LED

11) Candela/metre square is the unit of which quantity?
a) Illuminance b) Luminous flux
c) Luminance d) Luminous Intensity

12) Properties of good heating element _____.
a) High resistance b) High melting point
c) Low temperature coefficient d) All of the above

13) Types of train service _____.
a) Online services b) Urban services
c) sub-urban services d) b and c

14) Element of speed time curve _____.
a) Coasting b) Initial acceleration
c) Constant speed d) All of these

Seat No.	

Set | Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary

Section – I

Q.2 Solve any four **16**

a) What is an electrical drive? State the important factors on which the selection of electrical drives depends.
b) What are the requirements if ideal electric traction?
c) Explain speed-time curve of a train running on main line. Define 'crest speed', 'average speed' and 'schedule speed'.
d) Derive a suitable equation to determine Vm from a simplified speed-time curve.
e) Explain the transition methods in traction system.

Q.3 Solve any two **12**

a) Explain in brief different types of auxiliary equipments and control equipments in control of traction system.
b) Describe the procedure of calculating the specific energy consumption of an electric train.
c) A schedule speed of 45km/h is required between two stops 1.5 km apart. Find the maximum speed over the run if the stop is of 20 second duration. The values of acceleration and redardation are 2.4 km/h/s and 3.2 km/h/s respectively. Assume a simplified trapezoidal speed time curve.

Section – II

Q.4 Solve any four **16**

a) What do you understand by direct, indirect and semi-indirect lighting?
b) A 250 V lamp has a total flux of 1500 lumens and takes a current of 0.4 A. Calculate
i) lumens/watt
ii) M.S.C.P./watt
c) Describe the properties of good heating material. Give the different heating elements.
d) What is resistance welding? What are its limitations?
e) Explain the construction and working of a fluorescent tube.

Q.5 Solve any two **12**

a) Explain the working principle of arc furnace. Describe any one type of arc furnace.

b) A hall measuring 27.5m x 45.75m is to be illuminated using 200 watt filament lamps. The luminous efficiency of the 200 watt filament lamp is 14.4 lumens/watt. Inside the hall an average illumination of 108 lumens/m^2 is to be provided on the working plane. The walls and ceiling are brightly painted. Take coefficient of utilization s 0.35 and depreciation factor as 0.9. Calculate the number of lamps required for this.

c) Explain the energy conservation methods followed in small and large scale industries.

Seat No.		Set	R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which motor is more suitable for traction service?
a) DC series motor b) DC shunt motor
c) Single phase ac series motor d) Three phase induction motor

2) Power equation of dielectric heating _____.
a) $P = VI\ COS\ \Phi$ b) $P = R$
c) $P = 3\ VI\ COS\ \Phi$ d) $P = 2\pi\ f\ C\ \delta$

3) Type of resistance Welding _____.
a) Spot welding b) Seam welding
c) Projection welding d) All of the above

4) In Resistance heating the method of heat control is _____.
a) By change the number element
b) By changing tapping
c) By inserting with external resistance
d) All of the above

5) Candela is the unit of which?
a) Wavelength b) Luminous intensity
c) Luminous flux d) Frequency

6) Solid angle is expressed in terms of _____.
a) Radians / meter b) Radians
c) Steredians d) Degree

7) Which lamps can be directly connected to a solar cell?
a) Incandescent b) Metal Halide
c) Compact Fluorescent d) LED

8) Candela/metre square is the unit of which quantity?
a) Illuminance b) Luminous flux
c) Luminance d) Luminous Intensity

9) Properties of good heating element _____.
a) High resistance b) High melting point
c) Low temperature coefficient d) All of the above

10) Types of train service _____.
a) Online services b) Urban services
c) sub-urban services d) b and c

11) Element of speed time curve _____.
a) Coasting b) Initial acceleration
c) Constant speed d) All of these

12) Which Period is absent in Urban Train Service _____.
a) Acceleration b) Free running
c) Coasting d) Braking

13) Area inside of the speed time curve is represent that _____.
a) Acceleration of the train time taken by the
b) Time taken by the train
c) Distance travelled by the train
d) Crest speed

14) Factors affecting to Schedules speed _____.
a) Maximum speed b) Acceleration and braking
c) Stoppage time d) All

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary

Section – I

Q.2 Solve any four **16**

a) What is an electrical drive? State the important factors on which the selection of electrical drives depends.
b) What are the requirements if ideal electric traction?
c) Explain speed-time curve of a train running on main line. Define 'crest speed', 'average speed' and 'schedule speed'.
d) Derive a suitable equation to determine Vm from a simplified speed-time curve.
e) Explain the transition methods in traction system.

Q.3 Solve any two **12**

a) Explain in brief different types of auxiliary equipments and control equipments in control of traction system.
b) Describe the procedure of calculating the specific energy consumption of an electric train.
c) A schedule speed of 45km/h is required between two stops 1.5 km apart. Find the maximum speed over the run if the stop is of 20 second duration. The values of acceleration and redardation are 2.4 km/h/s and 3.2 km/h/s respectively. Assume a simplified trapezoidal speed time curve.

Section – II

Q.4 Solve any four **16**

a) What do you understand by direct, indirect and semi-indirect lighting?
b) A 250 V lamp has a total flux of 1500 lumens and takes a current of 0.4 A. Calculate
i) lumens/watt
ii) M.S.C.P./watt
c) Describe the properties of good heating material. Give the different heating elements.
d) What is resistance welding? What are its limitations?
e) Explain the construction and working of a fluorescent tube.

Q.5 Solve any two **12**

a) Explain the working principle of arc furnace. Describe any one type of arc furnace.

b) A hall measuring 27.5m x 45.75m is to be illuminated using 200 watt filament lamps. The luminous efficiency of the 200 watt filament lamp is 14.4 lumens/watt. Inside the hall an average illumination of 108 lumens/m^2 is to be provided on the working plane. The walls and ceiling are brightly painted. Take coefficient of utilization s 0.35 and depreciation factor as 0.9. Calculate the number of lamps required for this.

c) Explain the energy conservation methods followed in small and large scale industries.

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday,19-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Types of train service _____.
a) Online services b) Urban services
c) sub-urban services d) b and c

2) Element of speed time curve _____.
a) Coasting b) Initial acceleration
c) Constant speed d) All of these

3) Which Period is absent in Urban Train Service _____.
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c) Distance travelled by the train
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8) Type of resistance Welding _____.
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   a) By change the number element
   b) By changing tapping
   c) By inserting with external resistance
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10) Candela is the unit of which?
   a) Wavelength
   b) Luminous intensity
   c) Luminous flux
   d) Frequency

11) Solid angle is expressed in terms of _____.
   a) Radians / meter
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   c) Steredians
   d) Degree

12) Which lamps can be directly connected to a solar cell?
   a) Incandescent
   b) Metal Halide
   c) Compact Fluorescent
   d) LED

13) Candela/metre square is the unit of which quantity?
   a) Illuminance
   b) Luminous flux
   c) Luminance
   d) Luminous Intensity

14) Properties of good heating element _____.
   a) High resistance
   b) High melting point
   c) Low temperature coefficient
   d) All of the above

Seat No.	

Set | S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Utilization (197045602)

Day & Date: Tuesday, 19-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary

Section – I

Q.2 Solve any four **16**

a) What is an electrical drive? State the important factors on which the selection of electrical drives depends.
b) What are the requirements if ideal electric traction?
c) Explain speed-time curve of a train running on main line. Define 'crest speed', 'average speed' and 'schedule speed'.
d) Derive a suitable equation to determine Vm from a simplified speed-time curve.
e) Explain the transition methods in traction system.

Q.3 Solve any two **12**

a) Explain in brief different types of auxiliary equipments and control equipments in control of traction system.
b) Describe the procedure of calculating the specific energy consumption of an electric train.
c) A schedule speed of 45km/h is required between two stops 1.5 km apart. Find the maximum speed over the run if the stop is of 20 second duration. The values of acceleration and redardation are 2.4 km/h/s and 3.2 km/h/s respectively. Assume a simplified trapezoidal speed time curve.

Section – II

Q.4 Solve any four **16**

a) What do you understand by direct, indirect and semi-indirect lighting?
b) A 250 V lamp has a total flux of 1500 lumens and takes a current of 0.4 A. Calculate
i) lumens/watt
ii) M.S.C.P./watt
c) Describe the properties of good heating material. Give the different heating elements.
d) What is resistance welding? What are its limitations?
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Q.5 Solve any two **12**

a) Explain the working principle of arc furnace. Describe any one type of arc furnace.

b) A hall measuring 27.5m x 45.75m is to be illuminated using 200 watt filament lamps. The luminous efficiency of the 200 watt filament lamp is 14.4 lumens/watt. Inside the hall an average illumination of 108 lumens/m^2 is to be provided on the working plane. The walls and ceiling are brightly painted. Take coefficient of utilization s 0.35 and depreciation factor as 0.9. Calculate the number of lamps required for this.

c) Explain the energy conservation methods followed in small and large scale industries.

SLR-GF-456

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics (197045603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Silicon controlled rectifier is _____.
a) Unidirectional b) Bidirectional
c) Unidirectional & bidirectional d) None

2) The thyristor turn-off requires that the anode current _____.
a) falls below the holding current
b) falls below the latching current
c) rises above the holding current
d) rises above the latching current

3) The GTO can be turned off _____.
a) by a positive gate pulse
b) by a negative gate pulse
c) by a negative anode-cathode voltage
d) by removing the gate pulse

4) TRIAC and DIAC are _____.
a) Bi-directional devices b) Unidirectional devices
c) Can't decide d) None of these

5) In a single-phase half-wave circuit with RL load and a freewheeling diode, the freewheeling period is _____.
a) 0 to π b) α to $\pi + \alpha$
c) π to $2\pi + \alpha$ d) $\pi/2$ to $2\pi - \alpha$

6) *A* single-phase half wave circuit has Vs = 230 V with a R load of $100\ \Omega$. Find the average load current at $\alpha = 30°$
a) 1.45 A b) 0.57 A
c) 0.96 A d) 2.3 A

7) A type D chopper is a _____.
a) Two quadrant type-B chopper
b) Two quadrant type-A chopper
c) Two quadrant type-C chopper
d) None of the above

8) The load voltage of a chopper can be controlled by varying the _____.
a) Duty cycle b) Firing angle
c) Reactor position d) Extinction angle

9) The values of duty cycle (α) lies between _____.
a) $0 < \alpha < 1$ b) $0 > \alpha > -1$
c) $0 <= \alpha <= 1$ d) $1 < \alpha < 100$

10) The commutation method used in an inverter is _____.
a) Natural communication b) Forced communication
c) Both a & b d) None of the above

11) The output of a single-phase half bridge inverter on R load is ideally _____.
a) A sine wave b) A square wave
c) A triangular wave d) A constant dc

12) Single phase half bridge inverters requires _____.
a) Two wire ac supply b) Two wire dc supply
c) Three wire ac supply d) Three wire dc supply

13) The AC voltage controllers are used in _____ applications.
a) Power generation b) Electric heating
c) Conveyor belt motion d) Power transmission

14) The output voltage of AC regulators can be _____.
a) Variable b) Constant
c) Either of a or b d) None of these

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics (197045603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Describe in details turn on methods of SCR.
b) What is the necessity of firing circuit? Explain RC firing circuit.
c) Explain the working principle of Depletion p-channel MOSFET with V-I characteristics
d) Draw & explain V-I characteristics of TRIAC.
e) Draw and explain single phase full wave controlled rectifier with 'RL' load with proper wave form.

Q.3 Solve any two. **12**

a) Draw and explain static V-I characteristics of SCR. Define latching and holding current.
b) What is meant by commutation? Explain class D commutation with proper wave form.
c) Draw & explain three phase full controlled rectifier with R load with proper wave form.

Section – II

Q.4 Solve any four. **16**

a) Draw and explain step up chopper with proper wave form.
b) Write the comparison between CSI and VSI.
c) Draw and explain single phase full bridge inverter with 'RL' load with proper wave.
d) Explain the voltage control and harmonics analysis of inverter.
e) What are the types of AC controllers? Explain the phase angle control regulator.

Q.5 Solve any two. **12**

a) Draw the neat waveform and explain the operation of Buck converter and derive the expression for peak to peak load voltage and load current.
b) Draw a neat diagram & explain the 180 degree conduction mode of 3-phase inverter with proper waveform.
c) Explain in details SMPS and UPS.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics (197045603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The load voltage of a chopper can be controlled by varying the _____.
a) Duty cycle b) Firing angle
c) Reactor position d) Extinction angle

2) The values of duty cycle (α) lies between _____.
a) $0 < \alpha < 1$ b) $0 > \alpha > -1$
c) $0 <= \alpha <= 1$ d) $1 < \alpha < 100$

3) The commutation method used in an inverter is _____.
a) Natural communication b) Forced communication
c) Both a & b d) None of the above

4) The output of a single-phase half bridge inverter on R load is ideally _____.
a) A sine wave b) A square wave
c) A triangular wave d) A constant dc

5) Single phase half bridge inverters requires _____.
a) Two wire ac supply b) Two wire dc supply
c) Three wire ac supply d) Three wire dc supply

6) The AC voltage controllers are used in _____ applications.
a) Power generation b) Electric heating
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7) The output voltage of AC regulators can be _____.
a) Variable b) Constant
c) Either of a or b d) None of these

8) Silicon controlled rectifier is _____.
a) Unidirectional b) Bidirectional
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9) The thyristor turn-off requires that the anode current _____.
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c) rises above the holding current
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10) The GTO can be turned off _____.
a) by a positive gate pulse
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12) In a single-phase half-wave circuit with RL load and a freewheeling diode, the freewheeling period is _____.
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13) *A* single-phase half wave circuit has Vs = 230 V with a R load of $100\ \Omega$. Find the average load current at $\alpha = 30°$
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b) Two quadrant type-A chopper
c) Two quadrant type-C chopper
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SLR-GF-456

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics (197045603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four. **16**

a) Describe in details turn on methods of SCR.
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e) Draw and explain single phase full wave controlled rectifier with 'RL' load with proper wave form.

Q.3 Solve any two. **12**

a) Draw and explain static V-I characteristics of SCR. Define latching and holding current.
b) What is meant by commutation? Explain class D commutation with proper wave form.
c) Draw & explain three phase full controlled rectifier with R load with proper wave form.

Section – II

Q.4 Solve any four. **16**

a) Draw and explain step up chopper with proper wave form.
b) Write the comparison between CSI and VSI.
c) Draw and explain single phase full bridge inverter with 'RL' load with proper wave.
d) Explain the voltage control and harmonics analysis of inverter.
e) What are the types of AC controllers? Explain the phase angle control regulator.

Q.5 Solve any two. **12**

a) Draw the neat waveform and explain the operation of Buck converter and derive the expression for peak to peak load voltage and load current.
b) Draw a neat diagram & explain the 180 degree conduction mode of 3-phase inverter with proper waveform.
c) Explain in details SMPS and UPS.

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics (197045603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The output of a single-phase half bridge inverter on R load is ideally _____.
a) A sine wave b) A square wave
c) A triangular wave d) A constant dc

2) Single phase half bridge inverters requires _____.
a) Two wire ac supply b) Two wire dc supply
c) Three wire ac supply d) Three wire dc supply

3) The AC voltage controllers are used in _____ applications.
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4) The output voltage of AC regulators can be _____.
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b) by a negative gate pulse
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9) In a single-phase half-wave circuit with RL load and a freewheeling diode, the freewheeling period is _____.

a) 0 to π b) α to $\pi + \alpha$

c) π to $2\pi + \alpha$ d) $\pi/2$ to $2\pi - \alpha$

10) *A* single-phase half wave circuit has Vs = 230 V with a R load of $100\ \Omega$. Find the average load current at $\alpha = 30°$

a) 1.45 A b) 0.57 A

c) 0.96 A d) 2.3 A

11) A type D chopper is a _____.

a) Two quadrant type-B chopper

b) Two quadrant type-A chopper

c) Two quadrant type-C chopper

d) None of the above

12) The load voltage of a chopper can be controlled by varying the _____.

a) Duty cycle b) Firing angle

c) Reactor position d) Extinction angle

13) The values of duty cycle (α) lies between _____.

a) $0 < \alpha < 1$ b) $0 > \alpha > -1$

c) $0 <= \alpha <= 1$ d) $1 < \alpha < 100$

14) The commutation method used in an inverter is _____.

a) Natural communication b) Forced communication

c) Both a & b d) None of the above

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics (197045603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Describe in details turn on methods of SCR.
b) What is the necessity of firing circuit? Explain RC firing circuit.
c) Explain the working principle of Depletion p-channel MOSFET with V-I characteristics
d) Draw & explain V-I characteristics of TRIAC.
e) Draw and explain single phase full wave controlled rectifier with 'RL' load with proper wave form.

Q.3 Solve any two. **12**

a) Draw and explain static V-I characteristics of SCR. Define latching and holding current.
b) What is meant by commutation? Explain class D commutation with proper wave form.
c) Draw & explain three phase full controlled rectifier with R load with proper wave form.

Section – II

Q.4 Solve any four. **16**

a) Draw and explain step up chopper with proper wave form.
b) Write the comparison between CSI and VSI.
c) Draw and explain single phase full bridge inverter with 'RL' load with proper wave.
d) Explain the voltage control and harmonics analysis of inverter.
e) What are the types of AC controllers? Explain the phase angle control regulator.

Q.5 Solve any two. **12**

a) Draw the neat waveform and explain the operation of Buck converter and derive the expression for peak to peak load voltage and load current.
b) Draw a neat diagram & explain the 180 degree conduction mode of 3-phase inverter with proper waveform.
c) Explain in details SMPS and UPS.

Seat No.	

Set **S**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics (197045603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) *A* single-phase half wave circuit has Vs = 230 V with a R load of $100\ \Omega$. Find the average load current at $\alpha = 30°$
a) 1.45 A b) 0.57 A
c) 0.96 A d) 2.3 A

2) A type D chopper is a _____.
a) Two quadrant type-B chopper
b) Two quadrant type-A chopper
c) Two quadrant type-C chopper
d) None of the above

3) The load voltage of a chopper can be controlled by varying the _____.
a) Duty cycle b) Firing angle
c) Reactor position d) Extinction angle

4) The values of duty cycle (α) lies between _____.
a) $0 < \alpha < 1$ b) $0 > \alpha > -1$
c) $0 <= \alpha <= 1$ d) $1 < \alpha < 100$

5) The commutation method used in an inverter is _____.
a) Natural communication b) Forced communication
c) Both a & b d) None of the above

6) The output of a single-phase half bridge inverter on R load is ideally _____.
a) A sine wave b) A square wave
c) A triangular wave d) A constant dc

7) Single phase half bridge inverters requires _____.
a) Two wire ac supply b) Two wire dc supply
c) Three wire ac supply d) Three wire dc supply

8) The AC voltage controllers are used in _____ applications.
a) Power generation b) Electric heating
c) Conveyor belt motion d) Power transmission

9) The output voltage of AC regulators can be _____.
a) Variable b) Constant
c) Either of a or b d) None of these

10) Silicon controlled rectifier is _____.
a) Unidirectional b) Bidirectional
c) Unidirectional & bidirectional d) None

11) The thyristor turn-off requires that the anode current _____.
a) falls below the holding current
b) falls below the latching current
c) rises above the holding current
d) rises above the latching current

12) The GTO can be turned off _____.
a) by a positive gate pulse
b) by a negative gate pulse
c) by a negative anode-cathode voltage
d) by removing the gate pulse

13) TRIAC and DIAC are _____.
a) Bi-directional devices b) Unidirectional devices
c) Can't decide d) None of these

14) In a single-phase half-wave circuit with RL load and a freewheeling diode, the freewheeling period is _____.
a) 0 to π b) α to $\pi + \alpha$
c) π to $2\pi + \alpha$ d) $\pi/2$ to $2\pi - \alpha$

SLR-GF-456

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Electronics (197045603)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four. **16**

a) Describe in details turn on methods of SCR.
b) What is the necessity of firing circuit? Explain RC firing circuit.
c) Explain the working principle of Depletion p-channel MOSFET with V-I characteristics
d) Draw & explain V-I characteristics of TRIAC.
e) Draw and explain single phase full wave controlled rectifier with 'RL' load with proper wave form.

Q.3 Solve any two. **12**

a) Draw and explain static V-I characteristics of SCR. Define latching and holding current.
b) What is meant by commutation? Explain class D commutation with proper wave form.
c) Draw & explain three phase full controlled rectifier with R load with proper wave form.

Section – II

Q.4 Solve any four. **16**

a) Draw and explain step up chopper with proper wave form.
b) Write the comparison between CSI and VSI.
c) Draw and explain single phase full bridge inverter with 'RL' load with proper wave.
d) Explain the voltage control and harmonics analysis of inverter.
e) What are the types of AC controllers? Explain the phase angle control regulator.

Q.5 Solve any two. **12**

a) Draw the neat waveform and explain the operation of Buck converter and derive the expression for peak to peak load voltage and load current.
b) Draw a neat diagram & explain the 180 degree conduction mode of 3-phase inverter with proper waveform.
c) Explain in details SMPS and UPS.

SLR-GF-457

Seat No.	

Set P

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals & Systems (197045604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The signal operation $(-t + t0)$ is known as _____. (where $t0$ is shifting factor)
a) Amplitude scaling
b) Time scaling
c) Time shifting
d) Combined time reversal and time shifting

2) The impulse function is _____ when $t = 0$.
a) One b) Zero
c) Infinity d) None of the above

3) Which one is an example of causal systems?
a) $y[n] = x[n] + 1/2x[n-1]$ b) $y[n] = x[n] + 1/2x[n+1]$
c) $y[n] = x[n] + 1/2x[n]$ d) None of the above

4) The energy of power signals is equivalent to _____.
a) One b) Zero
c) Infinity d) None of the above

5) The system output $y(t) = x(t-1)$, if $t = 0$ then the output is dependent on ____.
a) Present input b) Past input
c) Both a and b d) None of the above

6) The relation between $u(t)$ and $sgn(t)$ is _____.
a) $sgn(t) = u(t) - 1$ b) $sgn(t) = 2u(t) - 1$
c) $sgn(t) = 2u(t) + 1$ d) None of the above

7) An LTI system acts as a _____.
a) Filter b) Comparator
c) Integrator d) None of the above

8) The z-transform of $u(-n)$ is _____.
a) $1/z$ b) $1/1 - z$
c) $1/z + 1$ d) None of the above

9) The ZT and DTFT are equal when r is equal to _____.
a) One
b) Zero
c) Infinity
d) None of the above

10) The ROC in z-transform indicated as _____.
a) Square
b) Rectangle
c) Circle
d) None of the above

11) The convolution with impulse property states that _____.
a) $x(t)^{*}\delta(t) = x(t)$
b) $x(t)^{*}\delta(t) = x(-t)$
c) $x(t)^{*}\delta(t) = x(2t)$
d) None of these

12) A discrete signal $x(n)$ is said to be periodic when _____.
a) $x(n) = x(n+N)$
b) $x(n) = x(n-N)$
c) $x(n) = x(nN)$
d) $x(n) = x(2nN)$

13) The condition for time variance is _____.
a) $y(n,k) = y(n-k)$
b) $y(n,k) = y(n+k)$
c) $y(n,k) = y(nk)$
d) None of the above

14) A signal is said to be a power/energy signal if the total energy/power transmitted is _____.
a) One
b) Zero
c) Finite
d) None of the above

Seat No.	

Set **P**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals & Systems (197045604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any four. **16**

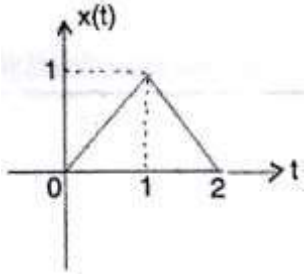
a) Determine the energy and power of the signal $X(t) = 14\sin(2\pi t)$, $-\infty < t < \infty$.

b) Find the convolution sum of signals $x[n] = (1,4,9,16)$ and $h[n] = (3,,1,1,3)$.

c) Describe properties of CT LTI System.
- i) Commutative
- ii) Associative
- iii) Distributive
- v) Time shift

d) Which of the following signals are causal or non-causal?
- i) $x(t) = e^{-3t}\,u(t)$
- ii) $x(t) = u(1-t)$

e) Find even and odd part of given signal.



Q.3 Solve any two. **12**

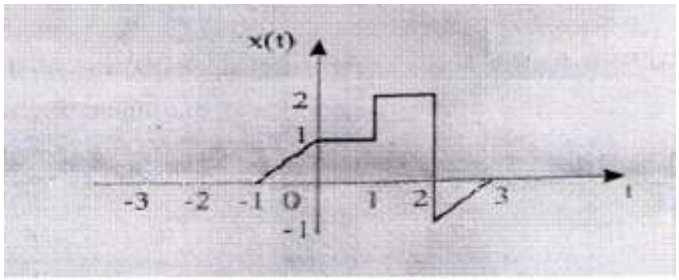
a) Determine convolution sum of two sequences $x[n] = \{2,2,1,2\}$ $h[n] = \{2,2,2,2\}$.

b) Find inverse z-transform of equation using partial fraction expansion method

$$X(z) = \frac{1+2z+3z^2}{2+3z+z^2}$$

c) A continuous time signal $x(t)$ is shown below. Sketch the following transformations.

i) $x(t-2)$ ii) $x(1-t)$ iii) $(2t+2)$



Section – II

Q.4 Solve any four. **16**

a) State the time shifting property of Z transform & determine Z transform of $x[n] = 4[n+8]$

b) Find 4 point DFT of sequence $x[n] = \{2,4,3, \text{and } 9\}$.

c) Find z-transform of signal $x(n) = (0.5)^n\, u(n)$.

d) State & prove the periodicity property of Discrete Time Fourier Transform.

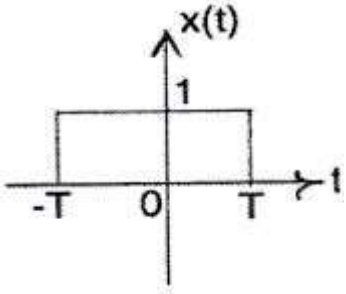
e) Find the Fourier transform of $x[n] = 3^n u[n] - 4^n u[n+3]$

Q.5 Solve any two. **12**

a) Find 8 point DFT of given signal $[n]$ by using DIF-FFT algorithm $x(n) = n + 2$ for $0 \leq n \leq 3$, and $X(n) = n - 2$ for $4 \leq n \leq 7$.

b) Find 8 point DFT of sequence $[n] = \{0.5, 0, 0.5, 0, 0.5, 0, 0.5, 0\}$ by using DITFFTalgorithm.

c) Find Fourier transform of signal shown below.



Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals & Systems (197045604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The z-transform of $u(-n)$ is _____.
a) $1/z$ b) $1/1-z$
c) $1/z+1$ d) None of the above

2) The ZT and DTFT are equal when r is equal to _____.
a) One b) Zero
c) Infinity d) None of the above

3) The ROC in z-transform indicated as _____.
a) Square b) Rectangle
c) Circle d) None of the above

4) The convolution with impulse property states that _____.
a) $x(t)^{*}\delta(t)=x(t)$ b) $x(t)^{*}\delta(t)=x(-t)$
c) $x(t)^{*}\delta(t)=x(2t)$ d) None of these

5) A discrete signal $x(n)$ is said to be periodic when _____.
a) $x(n)=x(n+N)$ b) $x(n)=x(n-N)$
c) $x(n)=x(nN)$ d) $x(n)=x(2nN)$

6) The condition for time variance is _____.
a) $y(n,k)=y(n-k)$ b) $y(n,k)=y(n+k)$
c) $y(n,k)=y(nk)$ d) None of the above

7) A signal is said to be a power/energy signal if the total energy/power transmitted is _____.
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8) The signal operation $(-t+t0)$ is known as _____. (where $t0$ is shifting factor)
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10) Which one is an example of causal systems?
a) $y[n] = x[n] + 1/2x[n-1]$ b) $y[n] = x[n] + 1/2x[n+1]$
c) $y[n] = x[n] + 1/2x[n]$ d) None of the above

11) The energy of power signals is equivalent to _____.
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12) The system output $y(t) = x(t-1)$, if $t = 0$ then the output is dependent on ____.
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13) The relation between $u(t)$ and $sgn(t)$ is _____.
a) $sgn(t) = u(t) - 1$ b) $sgn(t) = 2u(t) - 1$
c) $sgn(t) = 2u(t) + 1$ d) None of the above

14) An LTI system acts as a _____.
a) Filter b) Comparator
c) Integrator d) None of the above

Seat No.	

Set **Q**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals & Systems (197045604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any four. **16**

a) Determine the energy and power of the signal $X(t) = 14\sin(2\pi t)$, $-\infty < t < \infty$.

b) Find the convolution sum of signals $x[n] = (1,4,9,16)$ and $h[n] = (3,,1,1,3)$.

c) Describe properties of CT LTI System.
- i) Commutative
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d) Which of the following signals are causal or non-causal?
- i) $x(t) = e^{-3t}\,u(t)$
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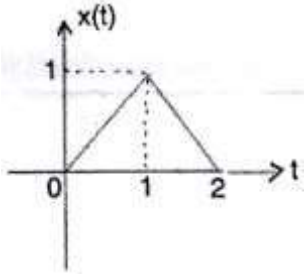
e) Find even and odd part of given signal.



Q.3 Solve any two. **12**

a) Determine convolution sum of two sequences $x[n] = \{2,2,1,2\}$ $h[n] = \{2,2,2,2\}$.

b) Find inverse z-transform of equation using partial fraction expansion method

$$X(z) = \frac{1+2z+3z^2}{2+3z+z^2}$$

c) A continuous time signal $x(t)$ is shown below. Sketch the following transformations.

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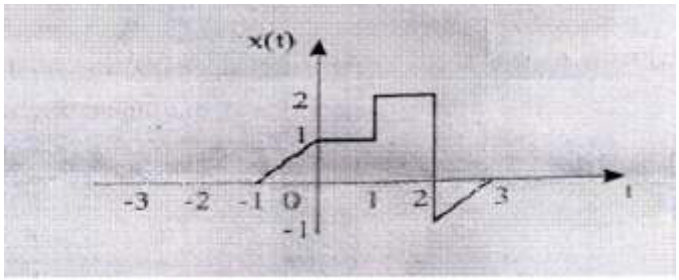


Section – II

Q.4 Solve any four. **16**

a) State the time shifting property of Z transform & determine Z transform of $x[n] = 4[n+8]$

b) Find 4 point DFT of sequence $x[n] = \{2,4,3, \text{and } 9\}$.

c) Find z-transform of signal $x(n) = (0.5)^n\, u(n)$.

d) State & prove the periodicity property of Discrete Time Fourier Transform.

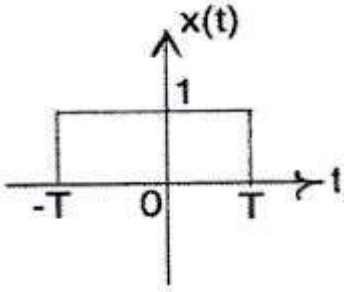
e) Find the Fourier transform of $x[n] = 3^n u[n] - 4^n u[n+3]$

Q.5 Solve any two. **12**

a) Find 8 point DFT of given signal $[n]$ by using DIF-FFT algorithm $x(n) = n + 2$ for $0 \le n \le 3$, and $X(n) = n - 2$ for $4 \le n \le 7$.

b) Find 8 point DFT of sequence $[n] = \{0.5, 0, 0.5, 0, 0.5, 0, 0.5, 0\}$ by using DITFFTalgorithm.

c) Find Fourier transform of signal shown below.



Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals & Systems (197045604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The convolution with impulse property states that _____.
a) $x(t)^*\delta(t) = x(t)$ b) $x(t)^*\delta(t) = x(-t)$
c) $x(t)^*\delta(t) = x(2t)$ d) None of these

2) A discrete signal $x(n)$ is said to be periodic when _____.
a) $x(n) = x(n+N)$ b) $x(n) = x(n-N)$
c) $x(n) = x(nN)$ d) $x(n) = x(2nN)$

3) The condition for time variance is _____.
a) $y(n,k) = y(n-k)$ b) $y(n,k) = y(n+k)$
c) $y(n,k) = y(nk)$ d) None of the above

4) A signal is said to be a power/energy signal if the total energy/power transmitted is _____.
a) One b) Zero
c) Finite d) None of the above

5) The signal operation $(-t + t0)$ is known as _____. (where $t0$ is shifting factor)
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6) The impulse function is _____ when $t = 0$.
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7) Which one is an example of causal systems?
a) $y[n] = x[n] + 1/2x[n-1]$ b) $y[n] = x[n] + 1/2x[n+1]$
c) $y[n] = x[n] + 1/2x[n]$ d) None of the above

8) The energy of power signals is equivalent to _____.
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9) The system output $y(t) = x(t-1)$, if $t = 0$ then the output is dependent on ____.

a) Present input
b) Past input
c) Both a and b
d) None of the above

10) The relation between $u(t)$ and $sgn(t)$ is _____.

a) $sgn(t) = u(t) - 1$
b) $sgn(t) = 2u(t) - 1$
c) $sgn(t) = 2u(t) + 1$
d) None of the above

11) An LTI system acts as a _____.

a) Filter
b) Comparator
c) Integrator
d) None of the above

12) The z-transform of $u(-n)$ is _____.

a) $1/z$
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13) The ZT and DTFT are equal when r is equal to _____.

a) One
b) Zero
c) Infinity
d) None of the above

14) The ROC in z-transform indicated as _____.

a) Square
b) Rectangle
c) Circle
d) None of the above

Seat No.	

Set **R**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals & Systems (197045604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any four. **16**

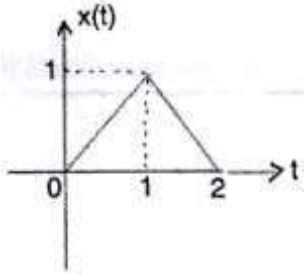
a) Determine the energy and power of the signal $X(t) = 14\sin(2\pi t)$, $-\infty < t < \infty$.

b) Find the convolution sum of signals $x[n] = (1,4,9,16)$ and $h[n] = (3,,1,1,3)$.

c) Describe properties of CT LTI System.
- i) Commutative
- ii) Associative
- iii) Distributive
- v) Time shift

d) Which of the following signals are causal or non-causal?
- i) $x(t) = e^{-3t}\,u(t)$
- ii) $x(t) = u(1-t)$

e) Find even and odd part of given signal.



Q.3 Solve any two. **12**

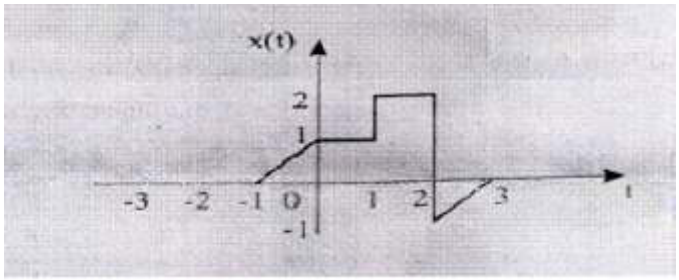
a) Determine convolution sum of two sequences $x[n] = \{2,2,1,2\}$ $h[n] = \{2,2,2,2\}$.

b) Find inverse z-transform of equation using partial fraction expansion method

$$X(z) = \frac{1+2z+3z^2}{2+3z+z^2}$$

c) A continuous time signal $x(t)$ is shown below. Sketch the following transformations.

i) $x(t-2)$ ii) $x(1-t)$ iii) $(2t+2)$



Section – II

Q.4 Solve any four. **16**

a) State the time shifting property of Z transform & determine Z transform of $x[n] = 4[n+8]$

b) Find 4 point DFT of sequence $x[n] = \{2,4,3, \text{and } 9\}$.

c) Find z-transform of signal $x(n) = (0.5)^n\, u(n)$.

d) State & prove the periodicity property of Discrete Time Fourier Transform.

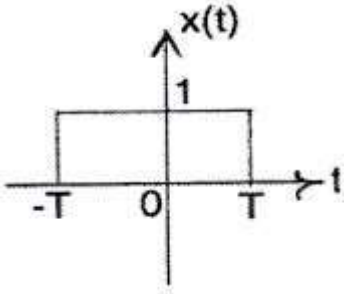
e) Find the Fourier transform of $x[n] = 3^n u[n] - 4^n u[n+3]$

Q.5 Solve any two. **12**

a) Find 8 point DFT of given signal $[n]$ by using DIF-FFT algorithm $x(n) = n + 2$ for $0 \le n \le 3$, and $X(n) = n - 2$ for $4 \le n \le 7$.

b) Find 8 point DFT of sequence $[n] = \{0.5, 0, 0.5, 0, 0.5, 0, 0.5, 0\}$ by using DITFFTalgorithm.

c) Find Fourier transform of signal shown below.



Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals & Systems (197045604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The relation between $u(t)$ and $sgn(t)$ is _____.
a) $sgn(t) = u(t) - 1$ b) $sgn(t) = 2u(t) - 1$
c) $sgn(t) = 2u(t) + 1$ d) None of the above

2) An LTI system acts as a _____.
a) Filter b) Comparator
c) Integrator d) None of the above

3) The z-transform of $u(-n)$ is _____.
a) $1/z$ b) $1/1 - z$
c) $1/z + 1$ d) None of the above

4) The ZT and DTFT are equal when r is equal to _____.
a) One b) Zero
c) Infinity d) None of the above

5) The ROC in z-transform indicated as _____.
a) Square b) Rectangle
c) Circle d) None of the above

6) The convolution with impulse property states that _____.
a) $x(t)^*\delta(t) = x(t)$ b) $x(t)^*\delta(t) = x(-t)$
c) $x(t)^*\delta(t) = x(2t)$ d) None of these

7) A discrete signal $x(n)$ is said to be periodic when _____.
a) $x(n) = x(n + N)$ b) $x(n) = x(n - N)$
c) $x(n) = x(nN)$ d) $x(n) = x(2nN)$

8) The condition for time variance is _____.
a) $y(n, k) = y(n - k)$ b) $y(n, k) = y(n + k)$
c) $y(n, k) = y(nk)$ d) None of the above

9) A signal is said to be a power/energy signal if the total energy/power transmitted is _____.
a) One b) Zero
c) Finite d) None of the above

10) The signal operation $(-t + t0)$ is known as _____. (where $t0$ is shifting factor)
a) Amplitude scaling
b) Time scaling
c) Time shifting
d) Combined time reversal and time shifting

11) The impulse function is _____ when $t = 0$.
a) One
b) Zero
c) Infinity
d) None of the above

12) Which one is an example of causal systems?
a) $y[n] = x[n] + 1/2x[n-1]$
b) $y[n] = x[n] + 1/2x[n+1]$
c) $y[n] = x[n] + 1/2x[n]$
d) None of the above

13) The energy of power signals is equivalent to _____.
a) One
b) Zero
c) Infinity
d) None of the above

14) The system output $y(t) = x(t-1)$, if $t = 0$ then the output is dependent on ____.
a) Present input
b) Past input
c) Both a and b
d) None of the above

Seat No.	

Set **S**

T. Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals & Systems (197045604)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any four. **16**

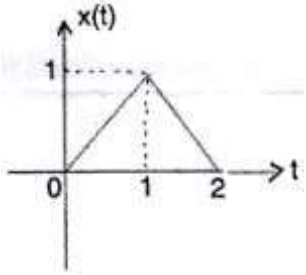
a) Determine the energy and power of the signal $X(t) = 14\sin(2\pi t)$, $-\infty < t < \infty$.

b) Find the convolution sum of signals $x[n] = (1,4,9,16)$ and $h[n] = (3,,1,1,3)$.

c) Describe properties of CT LTI System.
- i) Commutative
- ii) Associative
- iii) Distributive
- v) Time shift

d) Which of the following signals are causal or non-causal?
- i) $x(t) = e^{-3t}\,u(t)$
- ii) $x(t) = u(1-t)$

e) Find even and odd part of given signal.



Q.3 Solve any two. **12**

a) Determine convolution sum of two sequences $x[n] = \{2,2,1,2\}$ $h[n] = \{2,2,2,2\}$.

b) Find inverse z-transform of equation using partial fraction expansion method

$$X(z) = \frac{1+2z+3z^2}{2+3z+z^2}$$

c) A continuous time signal $x(t)$ is shown below. Sketch the following transformations.

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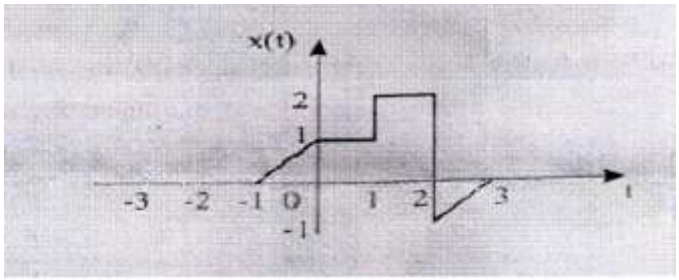


Section – II

Q.4 Solve any four. **16**

a) State the time shifting property of Z transform & determine Z transform of $x[n] = 4[n+8]$

b) Find 4 point DFT of sequence $x[n] = \{2,4,3, \text{and } 9\}$.

c) Find z-transform of signal $x(n) = (0.5)^n\, u(n)$.

d) State & prove the periodicity property of Discrete Time Fourier Transform.

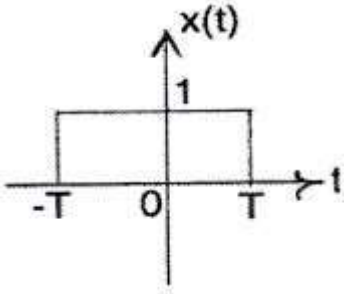
e) Find the Fourier transform of $x[n] = 3^n u[n] - 4^n u[n+3]$

Q.5 Solve any two. **12**

a) Find 8 point DFT of given signal $[n]$ by using DIF-FFT algorithm $x(n) = n + 2$ for $0 \le n \le 3$, and $X(n) = n - 2$ for $4 \le n \le 7$.

b) Find 8 point DFT of sequence $[n] = \{0.5, 0, 0.5, 0, 0.5, 0, 0.5, 0\}$ by using DITFFTalgorithm.

c) Find Fourier transform of signal shown below.



SLR-GF-458

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (197045606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which one of the following errors will be handle by the operating system?
a) lack of paper in printer
b) connection failure in the network
c) power failure
d) all of the mentioned

2) Where is the operating system placed in the memory?
a) either low or high memory (depending on the location of interrupt vector)
b) in the low memory
c) in the high memory
d) none of the mentioned

3) If a process fails, most operating system write the error information to a _____.
a) new file b) another running process
c) log file d) none of the mentioned

4) In operating system, each process has its own _____.
a) open files
b) pending alarms, signals, and signal handlers
c) address space and global variables
d) all of the mentioned

5) The FCFS algorithm is particularly troublesome for _____.
a) operating systems b) multiprocessor systems
c) time sharing systems d) multiprogramming systems

6) A deadlock avoidance algorithm dynamically examines the _____ to ensure that a circular wait condition can never exist.
a) operating system b) resources
c) system storage state d) resource allocation state

7) Swapping _____ be done when a process has pending I/O, or has to execute I/O operations only into operating system buffers.
a) must never b) maybe
c) can d) must

8) The main memory accommodates _____.
a) CPU b) user processes
c) operating system d) all of the mentioned

9) To obtain better memory utilization, dynamic loading is used. With dynamic loading, a routine is not loaded until it is called. For implementing dynamic loading _____.
a) special support from operating system is essential
b) special support from hardware is required
c) user programs can implement dynamic loading without any special support from hardware or operating system
d) special support from both hardware and operating system is essential

10) _____ is a unique tag, usually a number identifies the file within the file system.
a) File identifier b) File name
c) File type d) None of the mentioned

11) What is the mounting of file system?
a) crating of a file system
b) deleting a file system
c) attaching portion of the file system into a directory structure
d) removing the portion of the file system into a directory structure

12) The pager concerns with the _____.
a) individual page of a process b) entire process
c) entire thread d) first page of a process

13) Virtual memory is normally implemented by _____.
a) demand paging b) buses
c) virtualization d) all of the mentioned

14) A page fault occurs when?
a) a page gives inconsistent data
b) a page cannot be accessed due to its absence from memory
c) a page is invisible
d) all of the mentioned

SLR-GF-458

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (197045606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any three. **12**

a) Differentiate between Batch operating system and multi-programmed batch operating systems.
b) Explain CPU I/O burst Cycle.
c) Describe Pre-emptive and Non-preemptive scheduling algorithms.
d) Explain the concept of Process along with PCB.

Q.3 Solve Any Two **16**

a) Explain multilevel queue scheduling algorithm & Multilevel feedback queue scheduling.
b) Explain process scheduling list and explain types of Scheduler.
c) Explain Scheduling algorithm.
1) FCFS
2) SJF

Section – II

Q.4 Solve any Three. **12**

a) Explain Demand paging with neat diagram.
b) Explain Segmentation with paging.
c) Explain the concept of swapping
d) Explain:
1) Safe State
2) Unsafe state

Q.5 Attempt any two. **16**

a) Explain characterization of deadlock.
b) Explain FIFO page replacement Policy with example.
c) Explain
1) Logical and Physical Address
2) i) Best Fit
ii) First Fit
iii) Worst fit
iv) Compaction

SLR-GF-458

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (197045606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The main memory accommodates _____.
a) CPU b) user processes
c) operating system d) all of the mentioned

2) To obtain better memory utilization, dynamic loading is used. With dynamic loading, a routine is not loaded until it is called. For implementing dynamic loading _____.
a) special support from operating system is essential
b) special support from hardware is required
c) user programs can implement dynamic loading without any special support from hardware or operating system
d) special support from both hardware and operating system is essential

3) _____ is a unique tag, usually a number identifies the file within the file system.
a) File identifier b) File name
c) File type d) None of the mentioned

4) What is the mounting of file system?
a) crating of a file system
b) deleting a file system
c) attaching portion of the file system into a directory structure
d) removing the portion of the file system into a directory structure

5) The pager concerns with the _____.
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9) Where is the operating system placed in the memory?
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10) If a process fails, most operating system write the error information to a _____.
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11) In operating system, each process has its own _____.
a) open files
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c) address space and global variables
d) all of the mentioned

12) The FCFS algorithm is particularly troublesome for _____.
a) operating systems
b) multiprocessor systems
c) time sharing systems
d) multiprogramming systems

13) A deadlock avoidance algorithm dynamically examines the _____ to ensure that a circular wait condition can never exist.
a) operating system
b) resources
c) system storage state
d) resource allocation state

14) Swapping _____ be done when a process has pending I/O, or has to execute I/O operations only into operating system buffers.
a) must never
b) maybe
c) can
d) must

SLR-GF-458

Seat No.	

Set Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (197045606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any three. **12**

a) Differentiate between Batch operating system and multi-programmed batch operating systems.
b) Explain CPU I/O burst Cycle.
c) Describe Pre-emptive and Non-preemptive scheduling algorithms.
d) Explain the concept of Process along with PCB.

Q.3 Solve Any Two **16**

a) Explain multilevel queue scheduling algorithm & Multilevel feedback queue scheduling.
b) Explain process scheduling list and explain types of Scheduler.
c) Explain Scheduling algorithm.
1) FCFS
2) SJF

Section – II

Q.4 Solve any Three. **12**

a) Explain Demand paging with neat diagram.
b) Explain Segmentation with paging.
c) Explain the concept of swapping
d) Explain:
1) Safe State
2) Unsafe state

Q.5 Attempt any two. **16**

a) Explain characterization of deadlock.
b) Explain FIFO page replacement Policy with example.
c) Explain
1) Logical and Physical Address
2) i) Best Fit
ii) First Fit
iii) Worst fit
iv) Compaction

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (197045606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What is the mounting of file system?
a) crating of a file system
b) deleting a file system
c) attaching portion of the file system into a directory structure
d) removing the portion of the file system into a directory structure

2) The pager concerns with the _____.
a) individual page of a process b) entire process
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3) Virtual memory is normally implemented by _____.
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b) File name
c) File type
d) None of the mentioned

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (197045606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any three. **12**

a) Differentiate between Batch operating system and multi-programmed batch operating systems.
b) Explain CPU I/O burst Cycle.
c) Describe Pre-emptive and Non-preemptive scheduling algorithms.
d) Explain the concept of Process along with PCB.

Q.3 Solve Any Two **16**

a) Explain multilevel queue scheduling algorithm & Multilevel feedback queue scheduling.
b) Explain process scheduling list and explain types of Scheduler.
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1) FCFS
2) SJF

Section – II

Q.4 Solve any Three. **12**

a) Explain Demand paging with neat diagram.
b) Explain Segmentation with paging.
c) Explain the concept of swapping
d) Explain:
1) Safe State
2) Unsafe state

Q.5 Attempt any two. **16**

a) Explain characterization of deadlock.
b) Explain FIFO page replacement Policy with example.
c) Explain
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2) i) Best Fit
ii) First Fit
iii) Worst fit
iv) Compaction

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (197045606)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A deadlock avoidance algorithm dynamically examines the _____ to ensure that a circular wait condition can never exist.
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13) In operating system, each process has its own _____.
a) open files
b) pending alarms, signals, and signal handlers
c) address space and global variables
d) all of the mentioned

14) The FCFS algorithm is particularly troublesome for _____.
a) operating systems b) multiprocessor systems
c) time sharing systems d) multiprogramming systems

SLR-GF-458

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Operating Systems (197045606)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any three. **12**

a) Differentiate between Batch operating system and multi-programmed batch operating systems.
b) Explain CPU I/O burst Cycle.
c) Describe Pre-emptive and Non-preemptive scheduling algorithms.
d) Explain the concept of Process along with PCB.

Q.3 Solve Any Two **16**

a) Explain multilevel queue scheduling algorithm & Multilevel feedback queue scheduling.
b) Explain process scheduling list and explain types of Scheduler.
c) Explain Scheduling algorithm.
1) FCFS
2) SJF

Section – II

Q.4 Solve any Three. **12**

a) Explain Demand paging with neat diagram.
b) Explain Segmentation with paging.
c) Explain the concept of swapping
d) Explain:
1) Safe State
2) Unsafe state

Q.5 Attempt any two. **16**

a) Explain characterization of deadlock.
b) Explain FIFO page replacement Policy with example.
c) Explain
1) Logical and Physical Address
2) i) Best Fit
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iii) Worst fit
iv) Compaction

SLR-GF-459

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control System (197045607)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of no-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In order to increase the damping of a badly underdamped system, which of following compensator may be used?
a) Phase-Lead b) Phase-Lag
c) Both a) and b) d) None of the above

2) A differentiator is usually not a part of control system because it _____.
a) reduces damping b) reduces the gain margin
c) increases input noise d) increases error

3) In a control system integral error compensation _____ steady state error.
a) increases b) minimizes
c) does not have any effect d) none of the above

4) The TF of a phase-lead compensator is given by $G_c(s) = \frac{1+3Ts}{1+Ts}$ where $T > 0$. The maximum phase shift provided by such a compensator is _____.
a) $\pi/2$ b) $\pi/3$
c) $\pi/4$ d) $\pi/6$

5) Gain margin is the factor by which the gain of the system is increased to make it _____.
a) stable b) unstable
c) oscillatory d) exponential

6) The effect of error rate damping is _____.
a) reduced steady state error b) faster response
c) larger settling time d) both (a) and (b)

7) Due to which of the following reasons excessive bandwidth in control system should be avoided _____.
a) It leads to slow speed of response
b) it leads to low relative stability
c) Noise is proportional to bandwidth
d) None of the above

8) The eigen values of a linear system are the locations of _____.
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9) The state variable description of a linear autonomous system is, $\dot{X} = AX$, where X is the two dimensional state vector and A is the system matrix given by $A = \begin{bmatrix} 0 & 2 \\ 2 & 0 \end{bmatrix}$. The roots of the characteristic equation are _____.
a) -2 and +2 b) -j2 and +j2
c) -2 and -2 d) +2 and +2

10) For an n^{th} order system the state equations will be of the order of _____.
a) n b) 1
c) n/2 d) (n+1)/2

11) _____ is the nonlinearity caused by servomotor.
a) Dead space b) Saturation
c) Backlash d) Static friction

12) If $u(t)$ is the unit step and $\delta(t)$ is the unit impulse function, the inverse z-transform of $F(z) = \frac{1}{z+1}$ for $k > 0$ is _____.
a) $(-1)^k \delta(k)$ b) $\delta(k) - (-1)^k$
c) $(-1)^k u(k)$ d) $u(k) - (-1)^k$

13) The right-hand plane of s-plane, when mapped into z-plane, when the direction of contour is anticlockwise _____.
a) Covers the entire portion of inside of the unit circle
b) Covers the entire portion of outside of the unit circle
c) It falls on the unit circle
d) It covers the entire portion except the unit circle

14) The output of first order hold between two consecutive sampling instants is a _____.
a) constant b) quadratic function
c) ramp function d) exponential function

Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control System (197045607)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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4) Use of no-programmable calculator is allowed.

Section – I

Q.2 Solve any four **16**

a) Write the steps to design lead compensator using root locus technique.

b) Derive the realization of lead compensator circuit.

c) Explain the procedure to design lag compensator using frequency response.

d) Consider a matrix A given below find the eigen values and eigen vector and model matrix.

$$A = \begin{bmatrix} 0 & 1 & 0 \\ 3 & 0 & 2 \\ -12 & -7 & -6 \end{bmatrix}$$

e) Consider a system having state model

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -2 & -3 \\ 4 & 2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 3 \\ 5 \end{bmatrix} u(t): \qquad Y = [1 \quad 1] \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

with $D = 0$. Obtain the Transfer Function.

Q.3 a) Design a suitable lag compensator for a system whose OLTF is $Gc(s) = \frac{k}{s(s+1)(s+4)}$ to meet the following specifications. **06**

1) damping ratio = 0.5
2) settling time = 10 sec
3) $K_v \geq 5$ sec^{-1}

b) The TF of a certain unity negative feedback control system is given by $G(s) = \frac{K}{s(s+2)(s+30)}$. Design a lead compensator to satisfy the following specifications: **06**

1) $\text{PM} \geq 35°$
2) $\text{GM} \geq 20\text{dB}$
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OR

b) The state variable model of a continuous LTI system is **06**

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} 0 & 2 \\ -3 & -5 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u(t)$$

Calculate the time solution of the state vector.

Section – II

Q.4 Solve any four **16**

a) Explain isocline method for construction of phase trajectories.

b) Explain in short friction and dead-zone nonlinearity.

c) Derive the transfer function of zero order hold device.

d) Determine the z-domain transfer function for the following s-domain transfer functions.

$$H(s) = \frac{a}{(s+a)^2}$$

e) Determine the inverse z-transform of z-domain function $F(z) = \frac{3z^2+2z+1}{Z^2-3z+2}$

Q.5 Solve any two **12**

a) Derive the describing function of dead-zone nonlinearity

b) Check the stability of the sampled data control system represented by the equation.

$$z^3 - 0.2z^2 - 0.25z + 0.05 = 0$$

c) A system is described by

$$\begin{bmatrix}\dot{x}_1\\ \dot{x}_2\\ \dot{x}_3\end{bmatrix} = \begin{bmatrix}0 & 1 & 0\\ 0 & 0 & 1\\ 0 & -6 & -5\end{bmatrix}\begin{bmatrix}x_1\\ x_2\\ x_3\end{bmatrix} + \begin{bmatrix}0\\ 0\\ 1\end{bmatrix}u(t)$$

Design a state feedback controller such that the poles are at $(-1+j2), (-1-j2), (-5)$

Seat No.		Set	Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control System (197045607)

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Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The eigen values of a linear system are the locations of _____.
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a) -2 and +2 b) -j2 and +j2
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4) _____ is the nonlinearity caused by servomotor.
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Seat No.		Set	Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control System (197045607)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four **16**

a) Write the steps to design lead compensator using root locus technique.

b) Derive the realization of lead compensator circuit.

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$$A = \begin{bmatrix} 0 & 1 & 0 \\ 3 & 0 & 2 \\ -12 & -7 & -6 \end{bmatrix}$$

e) Consider a system having state model

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -2 & -3 \\ 4 & 2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 3 \\ 5 \end{bmatrix} u(t): \qquad Y = [1 \quad 1] \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

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2) settling time = 10 sec
3) $K_v \geq 5$ sec^{-1}

b) The TF of a certain unity negative feedback control system is given by $G(s) = \frac{K}{s(s+2)(s+30)}$. Design a lead compensator to satisfy the following specifications: **06**

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OR

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Calculate the time solution of the state vector.

Section – II

Q.4 Solve any four **16**

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d) Determine the z-domain transfer function for the following s-domain transfer functions.

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Design a state feedback controller such that the poles are at $(-1+j2), (-1-j2), (-5)$

Seat No.		Set	R

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control System (197045607)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is the nonlinearity caused by servomotor.
a) Dead space b) Saturation
c) Backlash d) Static friction

2) If $u(t)$ is the unit step and $\delta(t)$ is the unit impulse function, the inverse z-transform of $F(z) = \frac{1}{z+1}$ for $k > 0$ is _____.
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5) In order to increase the damping of a badly underdamped system, which of following compensator may be used?
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Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Control System (197045607)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Solve any four **16**

a) Write the steps to design lead compensator using root locus technique.

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Section – II

Q.4 Solve any four **16**

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.		Set	S

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Section – I

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c) Derive the transfer function of zero order hold device.

d) Determine the z-domain transfer function for the following s-domain transfer functions.

$$H(s) = \frac{a}{(s+a)^2}$$

e) Determine the inverse z-transform of z-domain function $F(z) = \frac{3z^2+2z+1}{Z^2-3z+2}$

Q.5 Solve any two **12**

a) Derive the describing function of dead-zone nonlinearity

b) Check the stability of the sampled data control system represented by the equation.

$$z^3 - 0.2z^2 - 0.25z + 0.05 = 0$$

c) A system is described by

$$\begin{bmatrix}\dot{x}_1\\ \dot{x}_2\\ \dot{x}_3\end{bmatrix} = \begin{bmatrix}0 & 1 & 0\\ 0 & 0 & 1\\ 0 & -6 & -5\end{bmatrix}\begin{bmatrix}x_1\\ x_2\\ x_3\end{bmatrix} + \begin{bmatrix}0\\ 0\\ 1\end{bmatrix}u(t)$$

Design a state feedback controller such that the poles are at $(-1+j2), (-1-j2), (-5)$

SLR-GF-460

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Optical Communication (197045608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. 14

1) The performance characteristics of multimode graded index fibers are _____.
a) Better than multimode step index fibers
b) Same as multimode step index fibers
c) Lesser than multimode step index fibers
d) Negligible

2) The light sources used in fibre optics communication are _____.
a) LED's and Lasers b) Phototransistors
c) Xenon lights d) Incandescent

3) The _____ ray passes through the axis of the fiber core.
a) Reflected b) Refracted
c) Meridional d) Shew

4) Light incident on fibers of angles _____ the acceptance angle do not propagate into the fiber.
a) less than b) greater than
c) equal to d) less than and equal to

5) When a ray of light enters one medium from another medium, which quality will not change?
a) Direction b) Frequency
c) Speed d) Wavelength

6) How many mechanisms are there which causes absorption?
a) One b) Three
c) Two d) Four

7) How many types of misalignments occur when joining compatible fiber?
a) One b) Two
c) Five d) Three

8) P-n photodiode is forward biased.
a) True b) False

9) The photocurrent of an optical detector should be _____.
a) less b) more
c) linear d) non-linear

10) How many types of optical detectors are available?
a) One b) Four
c) Two d) Three

11) The mapping of IP frames in SDH/SONET is accomplished in _____ stages.
a) Four b) Two
c) Three d) One

12) _____ is an example of a static circuit-switched network.
a) OXC b) Circuit regenerator
c) Packet resolver d) SDH/SONET

13) WDM stands for?
a) Wave division multiplexing
b) Wavelength division multiplexing
c) Wavelength dependent multiplexing
d) Wave dependent multiplexing

14) Which of the following is not an advantage of time division multiplexing?
a) Signal interference is less
b) More flexible
c) Full channel can be used for every signal
d) Fast data transfer

SLR-GF-460

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Optical Communication (197045608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**
- **a)** Explain advantages and disadvantages of Optical Communication.
- **b)** Explain numerical aperture in Optical Fiber.
- **c)** Explain attenuation in optical fiber.
- **d)** Explain Population Inversion in LASER.
- **e)** Explain the characteristics of LED.

Q.3 Attempt any two. **12**
- **a)** Define Bending losses in optical fiber. What are the types of bending loss and explain it.
- **b)** Explain LED structure. Also explain forward biasing and reverse biasing in LED.
- **c)** What is splicing in optical fiber. Explain fusion splice and mechanical splice in details.

Section – II

Q.4 Attempt any four. **16**
- **a)** Explain the principle of Optical Detector.
- **b)** Explain WDM.
- **c)** Draw and explain photo transistor.
- **d)** Explain optical Time division Multiplexing in details.
- **e)** What are the requirements of optical detectors?

Q.5 Attempt any two. **12**
- **a)** Explain avalanche photo diode with suitable diagram.
- **b)** What is optical networking modes? Explain it.
- **c)** Explain SONET and SDH networks.

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Optical Communication (197045608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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2) Don't forget to mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) P-n photodiode is forward biased.
a) True b) False

2) The photocurrent of an optical detector should be _____.
a) less b) more
c) linear d) non-linear

3) How many types of optical detectors are available?
a) One b) Four
c) Two d) Three

4) The mapping of IP frames in SDH/SONET is accomplished in _____ stages.
a) Four b) Two
c) Three d) One

5) _____ is an example of a static circuit-switched network.
a) OXC b) Circuit regenerator
c) Packet resolver d) SDH/SONET

6) WDM stands for?
a) Wave division multiplexing
b) Wavelength division multiplexing
c) Wavelength dependent multiplexing
d) Wave dependent multiplexing

7) Which of the following is not an advantage of time division multiplexing?
a) Signal interference is less
b) More flexible
c) Full channel can be used for every signal
d) Fast data transfer

8) The performance characteristics of multimode graded index fibers are _____.
a) Better than multimode step index fibers
b) Same as multimode step index fibers
c) Lesser than multimode step index fibers
d) Negligible

9) The light sources used in fibre optics communication are _____.
a) LED's and Lasers b) Phototransistors
c) Xenon lights d) Incandescent

10) The _____ ray passes through the axis of the fiber core.
a) Reflected b) Refracted
c) Meridional d) Shew

11) Light incident on fibers of angles _____ the acceptance angle do not propagate into the fiber.
a) less than b) greater than
c) equal to d) less than and equal to

12) When a ray of light enters one medium from another medium, which quality will not change?
a) Direction b) Frequency
c) Speed d) Wavelength

13) How many mechanisms are there which causes absorption?
a) One b) Three
c) Two d) Four

14) How many types of misalignments occur when joining compatible fiber?
a) One b) Two
c) Five d) Three

Seat No.	

Set **Q**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Optical Communication (197045608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**

a) Explain advantages and disadvantages of Optical Communication.
b) Explain numerical aperture in Optical Fiber.
c) Explain attenuation in optical fiber.
d) Explain Population Inversion in LASER.
e) Explain the characteristics of LED.

Q.3 Attempt any two. **12**

a) Define Bending losses in optical fiber. What are the types of bending loss and explain it.
b) Explain LED structure. Also explain forward biasing and reverse biasing in LED.
c) What is splicing in optical fiber. Explain fusion splice and mechanical splice in details.

Section – II

Q.4 Attempt any four. **16**

a) Explain the principle of Optical Detector.
b) Explain WDM.
c) Draw and explain photo transistor.
d) Explain optical Time division Multiplexing in details.
e) What are the requirements of optical detectors?

Q.5 Attempt any two. **12**

a) Explain avalanche photo diode with suitable diagram.
b) What is optical networking modes? Explain it.
c) Explain SONET and SDH networks.

Seat No.	

Set | R

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Optical Communication (197045608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The mapping of IP frames in SDH/SONET is accomplished in _____ stages.
a) Four b) Two
c) Three d) One

2) _____ is an example of a static circuit-switched network.
a) OXC b) Circuit regenerator
c) Packet resolver d) SDH/SONET

3) WDM stands for?
a) Wave division multiplexing
b) Wavelength division multiplexing
c) Wavelength dependent multiplexing
d) Wave dependent multiplexing

4) Which of the following is not an advantage of time division multiplexing?
a) Signal interference is less
b) More flexible
c) Full channel can be used for every signal
d) Fast data transfer

5) The performance characteristics of multimode graded index fibers are _____.
a) Better than multimode step index fibers
b) Same as multimode step index fibers
c) Lesser than multimode step index fibers
d) Negligible

6) The light sources used in fibre optics communication are _____.
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c) Xenon lights d) Incandescent

7) The _____ ray passes through the axis of the fiber core.
a) Reflected b) Refracted
c) Meridional d) Shew

8) Light incident on fibers of angles _____ the acceptance angle do not propagate into the fiber.

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9) When a ray of light enters one medium from another medium, which quality will not change?

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c) Speed d) Wavelength

10) How many mechanisms are there which causes absorption?

a) One b) Three
c) Two d) Four

11) How many types of misalignments occur when joining compatible fiber?

a) One b) Two
c) Five d) Three

12) P-n photodiode is forward biased.

a) True b) False

13) The photocurrent of an optical detector should be _____.

a) less b) more
c) linear d) non-linear

14) How many types of optical detectors are available?

a) One b) Four
c) Two d) Three

Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Optical Communication (197045608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**

a) Explain advantages and disadvantages of Optical Communication.
b) Explain numerical aperture in Optical Fiber.
c) Explain attenuation in optical fiber.
d) Explain Population Inversion in LASER.
e) Explain the characteristics of LED.

Q.3 Attempt any two. **12**

a) Define Bending losses in optical fiber. What are the types of bending loss and explain it.
b) Explain LED structure. Also explain forward biasing and reverse biasing in LED.
c) What is splicing in optical fiber. Explain fusion splice and mechanical splice in details.

Section – II

Q.4 Attempt any four. **16**

a) Explain the principle of Optical Detector.
b) Explain WDM.
c) Draw and explain photo transistor.
d) Explain optical Time division Multiplexing in details.
e) What are the requirements of optical detectors?

Q.5 Attempt any two. **12**

a) Explain avalanche photo diode with suitable diagram.
b) What is optical networking modes? Explain it.
c) Explain SONET and SDH networks.

Seat No.	

Set | S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Optical Communication (197045608)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) How many mechanisms are there which causes absorption?
a) One b) Three
c) Two d) Four

2) How many types of misalignments occur when joining compatible fiber?
a) One b) Two
c) Five d) Three

3) P-n photodiode is forward biased.
a) True b) False

4) The photocurrent of an optical detector should be _____.
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c) linear d) non-linear

5) How many types of optical detectors are available?
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c) Two d) Three

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a) Four b) Two
c) Three d) One

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c) Wavelength dependent multiplexing
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b) More flexible
c) Full channel can be used for every signal
d) Fast data transfer

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d) Incandescent

12) The _____ ray passes through the axis of the fiber core.
a) Reflected
b) Refracted
c) Meridional
d) Shew

13) Light incident on fibers of angles _____ the acceptance angle do not propagate into the fiber.
a) less than
b) greater than
c) equal to
d) less than and equal to

14) When a ray of light enters one medium from another medium, which quality will not change?
a) Direction
b) Frequency
c) Speed
d) Wavelength

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Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Optical Communication (197045608)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**
- **a)** Explain advantages and disadvantages of Optical Communication.
- **b)** Explain numerical aperture in Optical Fiber.
- **c)** Explain attenuation in optical fiber.
- **d)** Explain Population Inversion in LASER.
- **e)** Explain the characteristics of LED.

Q.3 Attempt any two. **12**
- **a)** Define Bending losses in optical fiber. What are the types of bending loss and explain it.
- **b)** Explain LED structure. Also explain forward biasing and reverse biasing in LED.
- **c)** What is splicing in optical fiber. Explain fusion splice and mechanical splice in details.

Section – II

Q.4 Attempt any four. **16**
- **a)** Explain the principle of Optical Detector.
- **b)** Explain WDM.
- **c)** Draw and explain photo transistor.
- **d)** Explain optical Time division Multiplexing in details.
- **e)** What are the requirements of optical detectors?

Q.5 Attempt any two. **12**
- **a)** Explain avalanche photo diode with suitable diagram.
- **b)** What is optical networking modes? Explain it.
- **c)** Explain SONET and SDH networks.

SLR-GF-461

Seat No.	

Set P

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (197045609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Dead zone of an instrument is _____.
a) The largest change of input quantity for which there is no output of the instrument
b) The time required by an instrument to begin to respond to a change in measurand
c) The unmeasured quantity which exceeds the maximum range of the instrument
d) The time required by an instrument to warm up initial

2) The sensors are classified on the basis of _____.
a) functions b) performance
c) output d) all of the above

3) Which of the following represents the output of Hall Effect transducer?
a) Hall potential b) Emf
c) Applied voltage d) Lorentz Voltage

4) Piezoelectric effect is when materials produce electric charges when _____.
a) voltage is applied b) mechanical stress is applied
c) electric field is applied d) magnetic field is applied

5) The smallest change which a sensor can detect is termed _____.
a) accuracy b) precision
c) resolution d) scale

6) What is signal conditioning?
a) To analyse any signal
b) Conversion or modification is referred to as conditioning
c) Conversion from analog to digital is signal conditioning
d) Conversion from digital to analog is signal conditioning

7) Dynamic range of ADC is depended on _____.
a) resolution b) linearity
c) accuracy d) all of the mentioned

8) Potentiometer as a displacement sensor works on the principle of _____.
a) Mutual Inductance
b) Self Inductance
c) Variable Resistance Transduction
d) Hall Effect

9) Proximity sensor is a _____ type of position sensor.
a) Contact b) Non - Contact
c) Eddy Current d) Resistive

10) In wet etching material is removed by _____.
a) Absorption
b) Sublimation
c) Chemical reaction
d) The force exerted due to flow of solvent

11) What is the main principle of electroplating?
a) Hydrolysis b) Neutralization
c) Esterification d) Saturation

12) The force developed in hydraulic systems is high due to _____.
a) high pressure b) more oil
c) less pressure d) less oil

13) In which type of system does power transmission takes place through compressed air?
a) Fluid power system b) Hydraulic system
c) Pneumatic system d) Stepper motors

14) The direction control valve controls _____.
a) Direction of flow b) Rate of flow
c) Moisture d) Force and motion

Seat No.	

Set **P**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (197045609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Attempt Any Four. **16**

a) Define and explain the sensor with one example.
b) Explain the principle of working of Hall effect sensor.
c) State and explain the methods of data transmission.
d) Explain with neat sketch thermal expansion property of material.
e) What is a voltage follower? Give a practical use of a voltage follower.
f) Give classification of sensor and explain active and passive sensor.

Q.3 Attempt Any Two. **12**

a) Define the temperature and explain the thermal properties of material.
b) State characteristics of sensor and explain the transfer function characteristics.
c) Explain the basic concept of analog to digital converter. Also explain the V/F Analog to digital converter.

Section – II

Q.4 Attempt Any Four. **16**

a) State the different types of pressure sensor and explain any one of them.
b) State the different types of temperature sensor and explain any one of them.
c) With neat sketch explain spin casting method of surface processing.
d) Explain the wet etching MEMS Technology.
e) State and explain the principle of operation of Electrical actuators.
f) Write the Selection criteria of Actuators.

Q.5 Attempt Any Two. **12**

a) State the sensors used for Velocity and Acceleration application and explain any one of them.
b) State the different types of material used for fabrication of sensor and explain any one of them.
c) State and explain the principle of operation of micro and nano actuator with advantages and disadvantages.

Seat No.	

Set | Q

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (197045609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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4) What is the main principle of electroplating?
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5) The force developed in hydraulic systems is high due to _____.
a) high pressure b) more oil
c) less pressure d) less oil

6) In which type of system does power transmission takes place through compressed air?
a) Fluid power system b) Hydraulic system
c) Pneumatic system d) Stepper motors

7) The direction control valve controls _____.
a) Direction of flow b) Rate of flow
c) Moisture d) Force and motion

8) Dead zone of an instrument is _____.
   a) The largest change of input quantity for which there is no output of the instrument
   b) The time required by an instrument to begin to respond to a change in measurand
   c) The unmeasured quantity which exceeds the maximum range of the instrument
   d) The time required by an instrument to warm up initial

9) The sensors are classified on the basis of _____.
   a) functions b) performance
   c) output d) all of the above

10) Which of the following represents the output of Hall Effect transducer?
   a) Hall potential b) Emf
   c) Applied voltage d) Lorentz Voltage

11) Piezoelectric effect is when materials produce electric charges when _____.
   a) voltage is applied b) mechanical stress is applied
   c) electric field is applied d) magnetic field is applied

12) The smallest change which a sensor can detect is termed _____.
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   c) resolution d) scale

13) What is signal conditioning?
   a) To analyse any signal
   b) Conversion or modification is referred to as conditioning
   c) Conversion from analog to digital is signal conditioning
   d) Conversion from digital to analog is signal conditioning

14) Dynamic range of ADC is depended on _____.
   a) resolution b) linearity
   c) accuracy d) all of the mentioned

Seat No.	

Set **Q**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (197045609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Attempt Any Four. **16**

a) Define and explain the sensor with one example.
b) Explain the principle of working of Hall effect sensor.
c) State and explain the methods of data transmission.
d) Explain with neat sketch thermal expansion property of material.
e) What is a voltage follower? Give a practical use of a voltage follower.
f) Give classification of sensor and explain active and passive sensor.

Q.3 Attempt Any Two. **12**

a) Define the temperature and explain the thermal properties of material.
b) State characteristics of sensor and explain the transfer function characteristics.
c) Explain the basic concept of analog to digital converter. Also explain the V/F Analog to digital converter.

Section – II

Q.4 Attempt Any Four. **16**

a) State the different types of pressure sensor and explain any one of them.
b) State the different types of temperature sensor and explain any one of them.
c) With neat sketch explain spin casting method of surface processing.
d) Explain the wet etching MEMS Technology.
e) State and explain the principle of operation of Electrical actuators.
f) Write the Selection criteria of Actuators.

Q.5 Attempt Any Two. **12**

a) State the sensors used for Velocity and Acceleration application and explain any one of them.
b) State the different types of material used for fabrication of sensor and explain any one of them.
c) State and explain the principle of operation of micro and nano actuator with advantages and disadvantages.

Seat No.		Set	R

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (197045609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What is the main principle of electroplating?
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c) Esterification d) Saturation

2) The force developed in hydraulic systems is high due to _____.
a) high pressure b) more oil
c) less pressure d) less oil

3) In which type of system does power transmission takes place through compressed air?
a) Fluid power system b) Hydraulic system
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4) The direction control valve controls _____.
a) Direction of flow b) Rate of flow
c) Moisture d) Force and motion

5) Dead zone of an instrument is _____.
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d) The time required by an instrument to warm up initial

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8) Piezoelectric effect is when materials produce electric charges when _____.
a) voltage is applied b) mechanical stress is applied
c) electric field is applied d) magnetic field is applied

9) The smallest change which a sensor can detect is termed _____.
a) accuracy b) precision
c) resolution d) scale

10) What is signal conditioning?
a) To analyse any signal
b) Conversion or modification is referred to as conditioning
c) Conversion from analog to digital is signal conditioning
d) Conversion from digital to analog is signal conditioning

11) Dynamic range of ADC is depended on _____.
a) resolution b) linearity
c) accuracy d) all of the mentioned

12) Potentiometer as a displacement sensor works on the principle of _____.
a) Mutual Inductance
b) Self Inductance
c) Variable Resistance Transduction
d) Hall Effect

13) Proximity sensor is a _____ type of position sensor.
a) Contact b) Non - Contact
c) Eddy Current d) Resistive

14) In wet etching material is removed by _____.
a) Absorption
b) Sublimation
c) Chemical reaction
d) The force exerted due to flow of solvent

Seat No.	

Set **R**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (197045609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Attempt Any Four. **16**

a) Define and explain the sensor with one example.
b) Explain the principle of working of Hall effect sensor.
c) State and explain the methods of data transmission.
d) Explain with neat sketch thermal expansion property of material.
e) What is a voltage follower? Give a practical use of a voltage follower.
f) Give classification of sensor and explain active and passive sensor.

Q.3 Attempt Any Two. **12**

a) Define the temperature and explain the thermal properties of material.
b) State characteristics of sensor and explain the transfer function characteristics.
c) Explain the basic concept of analog to digital converter. Also explain the V/F Analog to digital converter.

Section – II

Q.4 Attempt Any Four. **16**

a) State the different types of pressure sensor and explain any one of them.
b) State the different types of temperature sensor and explain any one of them.
c) With neat sketch explain spin casting method of surface processing.
d) Explain the wet etching MEMS Technology.
e) State and explain the principle of operation of Electrical actuators.
f) Write the Selection criteria of Actuators.

Q.5 Attempt Any Two. **12**

a) State the sensors used for Velocity and Acceleration application and explain any one of them.
b) State the different types of material used for fabrication of sensor and explain any one of them.
c) State and explain the principle of operation of micro and nano actuator with advantages and disadvantages.

Seat No.	

Set **S**

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (197045609)

Day & Date: Friday, 22-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What is signal conditioning?
a) To analyse any signal
b) Conversion or modification is referred to as conditioning
c) Conversion from analog to digital is signal conditioning
d) Conversion from digital to analog is signal conditioning

2) Dynamic range of ADC is depended on _____.
a) resolution b) linearity
c) accuracy d) all of the mentioned

3) Potentiometer as a displacement sensor works on the principle of _____.
a) Mutual Inductance
b) Self Inductance
c) Variable Resistance Transduction
d) Hall Effect

4) Proximity sensor is a _____ type of position sensor.
a) Contact b) Non - Contact
c) Eddy Current d) Resistive

5) In wet etching material is removed by _____.
a) Absorption
b) Sublimation
c) Chemical reaction
d) The force exerted due to flow of solvent

6) What is the main principle of electroplating?
a) Hydrolysis b) Neutralization
c) Esterification d) Saturation

7) The force developed in hydraulic systems is high due to _____.
a) high pressure b) more oil
c) less pressure d) less oil

8) In which type of system does power transmission takes place through compressed air?
a) Fluid power system b) Hydraulic system
c) Pneumatic system d) Stepper motors

9) The direction control valve controls _____.
a) Direction of flow b) Rate of flow
c) Moisture d) Force and motion

10) Dead zone of an instrument is _____.
a) The largest change of input quantity for which there is no output of the instrument
b) The time required by an instrument to begin to respond to a change in measurand
c) The unmeasured quantity which exceeds the maximum range of the instrument
d) The time required by an instrument to warm up initial

11) The sensors are classified on the basis of _____.
a) functions b) performance
c) output d) all of the above

12) Which of the following represents the output of Hall Effect transducer?
a) Hall potential b) Emf
c) Applied voltage d) Lorentz Voltage

13) Piezoelectric effect is when materials produce electric charges when _____.
a) voltage is applied b) mechanical stress is applied
c) electric field is applied d) magnetic field is applied

14) The smallest change which a sensor can detect is termed _____.
a) accuracy b) precision
c) resolution d) scale

SLR-GF-461

Seat No.		Set	S

T.Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Sensors & Applications (197045609)

Day & Date: Friday, 22-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Attempt Any Four. **16**

a) Define and explain the sensor with one example.
b) Explain the principle of working of Hall effect sensor.
c) State and explain the methods of data transmission.
d) Explain with neat sketch thermal expansion property of material.
e) What is a voltage follower? Give a practical use of a voltage follower.
f) Give classification of sensor and explain active and passive sensor.

Q.3 Attempt Any Two. **12**

a) Define the temperature and explain the thermal properties of material.
b) State characteristics of sensor and explain the transfer function characteristics.
c) Explain the basic concept of analog to digital converter. Also explain the V/F Analog to digital converter.

Section – II

Q.4 Attempt Any Four. **16**

a) State the different types of pressure sensor and explain any one of them.
b) State the different types of temperature sensor and explain any one of them.
c) With neat sketch explain spin casting method of surface processing.
d) Explain the wet etching MEMS Technology.
e) State and explain the principle of operation of Electrical actuators.
f) Write the Selection criteria of Actuators.

Q.5 Attempt Any Two. **12**

a) State the sensors used for Velocity and Acceleration application and explain any one of them.
b) State the different types of material used for fabrication of sensor and explain any one of them.
c) State and explain the principle of operation of micro and nano actuator with advantages and disadvantages.

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Seat No.		Set	P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Special Purpose Machines (197045610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10M**

1) In a three-stack 12/8-pole VR motor, the rotor pole pitch is _____.
a) 15º b) 30º
c) 45º d) 60º

2) For a reluctance motor, the maximum average torque occurs when δ= _____.
a) 45° b) 90°
c) 0° d) 180°

3) If a hybrid stepper motor has a rotor pitch of 36° and a step angle of 9° the number of its phases must be _____.
a) 4 b) 2
c) 3 d) 6

4) Reluctance motor can produce torque at _____.
a) any speed less than synchronous speed
b) synchronous speed only
c) any speed greater than synchronous speed
d) any of the mentioned

5) A stepper motor may be considered as a _____ converter.
a) Dc to dc b) Ac to ac
c) Dc to ac d) Digital-to-analogue

6) During the starting of the 3-phase synchronous motor by damper bars, the field winding is usually short circuited so that starting torque is equal to _____.
a) induction motor torque plus an additional torque produced by short circuited field winding.
b) Induction motor torque
c) Electromagnetic torque saliency
d) Reluctance torque due to rotor

7) In BLDC motor field winding is kept on _____.
a) Stator b) Can be placed anywhere
c) Rotor d) Absent

8) Construction of BLDC is exactly similar to the _____.
a) Conventional DC motor
b) Induction motor
c) Permanent magnet synchronous motor
d) Totally different construction

9) Typical brush less motor doesn't have _____.
a) Commutator
b) Permanent magnet
c) Electronic controller
d) Fixed armature

10) What is the step angle of a permanent-magnet stepper motor having 8 stator poles and 4 rotor poles?
a) 60°
b) 45°
c) 30°
d) 15°

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Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Special Purpose Machines (197045610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Answer Any Five questions. **40**

a) Advantages and disadvantages, Applications of Synchronous Reluctance Motors. **08**

b) Explain principle of micro stepping used for stepper motor. **08**

c) Explain torque-speed characteristics & State advantages and disadvantages also state applications of switched reluctance motors. **08**

d) Explain with neat sketch Vector control of permanent magnet synchronous motor. **08**

e) Write note on classification of stepper motors, explain any one type of stepper motors, application of Stepper Motor. **08**

f) Explain with neat sketch Microprocessor Based Speed control of permanent magnet synchronous motor. **08**

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Special Purpose Machines (197045610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10M**

1) During the starting of the 3-phase synchronous motor by damper bars, the field winding is usually short circuited so that starting torque is equal to _____.
a) induction motor torque plus an additional torque produced by short circuited field winding.
b) Induction motor torque
c) Electromagnetic torque saliency
d) Reluctance torque due to rotor

2) In BLDC motor field winding is kept on _____.
a) Stator b) Can be placed anywhere
c) Rotor d) Absent

3) Construction of BLDC is exactly similar to the _____.
a) Conventional DC motor
b) Induction motor
c) Permanent magnet synchronous motor
d) Totally different construction

4) Typical brush less motor doesn't have _____.
a) Commutator b) Permanent magnet
c) Electronic controller d) Fixed armature

5) What is the step angle of a permanent-magnet stepper motor having 8 stator poles and 4 rotor poles?
a) 60° b) 45°
c) 30° d) 15°

6) In a three-stack 12/8-pole VR motor, the rotor pole pitch is _____.
a) 15º b) 30º
c) 45º d) 60º

7) For a reluctance motor, the maximum average torque occurs when δ= _____.
a) 45° b) 90°
c) 0° d) 180°

8) If a hybrid stepper motor has a rotor pitch of 36° and a step angle of 9° the number of its phases must be _____.

a) 4 b) 2
c) 3 d) 6

9) Reluctance motor can produce torque at _____.

a) any speed less than synchronous speed
b) synchronous speed only
c) any speed greater than synchronous speed
d) any of the mentioned

10) A stepper motor may be considered as a _____ converter.

a) Dc to dc b) Ac to ac
c) Dc to ac d) Digital-to-analogue

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Seat No.		Set	Q

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Special Purpose Machines (197045610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Answer Any Five questions. **40**

a) Advantages and disadvantages, Applications of Synchronous Reluctance Motors. **08**

b) Explain principle of micro stepping used for stepper motor. **08**

c) Explain torque-speed characteristics & State advantages and disadvantages also state applications of switched reluctance motors. **08**

d) Explain with neat sketch Vector control of permanent magnet synchronous motor. **08**

e) Write note on classification of stepper motors, explain any one type of stepper motors, application of Stepper Motor. **08**

f) Explain with neat sketch Microprocessor Based Speed control of permanent magnet synchronous motor. **08**

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Special Purpose Machines (197045610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10M** **10**

1) Typical brush less motor doesn't have _____.
a) Commutator b) Permanent magnet
c) Electronic controller d) Fixed armature

2) What is the step angle of a permanent-magnet stepper motor having 8 stator poles and 4 rotor poles?
a) 60° b) 45°
c) 30° d) 15°

3) In a three-stack 12/8-pole VR motor, the rotor pole pitch is _____.
a) 15º b) 30º
c) 45º d) 60º

4) For a reluctance motor, the maximum average torque occurs when δ= _____.
a) 45° b) 90°
c) 0° d) 180°

5) If a hybrid stepper motor has a rotor pitch of 36° and a step angle of 9° the number of its phases must be _____.
a) 4 b) 2
c) 3 d) 6

6) Reluctance motor can produce torque at _____.
a) any speed less than synchronous speed
b) synchronous speed only
c) any speed greater than synchronous speed
d) any of the mentioned

7) A stepper motor may be considered as a _____ converter.
a) Dc to dc b) Ac to ac
c) Dc to ac d) Digital-to-analogue

8) During the starting of the 3-phase synchronous motor by damper bars, the field winding is usually short circuited so that starting torque is equal to _____.

a) induction motor torque plus an additional torque produced by short circuited field winding.
b) Induction motor torque
c) Electromagnetic torque saliency
d) Reluctance torque due to rotor

9) In BLDC motor field winding is kept on _____.

a) Stator
b) Can be placed anywhere
c) Rotor
d) Absent

10) Construction of BLDC is exactly similar to the _____.

a) Conventional DC motor
b) Induction motor
c) Permanent magnet synchronous motor
d) Totally different construction

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Seat No.	

Set R

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Special Purpose Machines (197045610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Answer Any Five questions. **40**

a) Advantages and disadvantages, Applications of Synchronous Reluctance Motors. **08**

b) Explain principle of micro stepping used for stepper motor. **08**

c) Explain torque-speed characteristics & State advantages and disadvantages also state applications of switched reluctance motors. **08**

d) Explain with neat sketch Vector control of permanent magnet synchronous motor. **08**

e) Write note on classification of stepper motors, explain any one type of stepper motors, application of Stepper Motor. **08**

f) Explain with neat sketch Microprocessor Based Speed control of permanent magnet synchronous motor. **08**

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Special Purpose Machines (197045610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10M** **10**

1) If a hybrid stepper motor has a rotor pitch of 36° and a step angle of 9° the number of its phases must be _____.
a) 4 b) 2
c) 3 d) 6

2) Reluctance motor can produce torque at _____.
a) any speed less than synchronous speed
b) synchronous speed only
c) any speed greater than synchronous speed
d) any of the mentioned

3) A stepper motor may be considered as a _____ converter.
a) Dc to dc b) Ac to ac
c) Dc to ac d) Digital-to-analogue

4) During the starting of the 3-phase synchronous motor by damper bars, the field winding is usually short circuited so that starting torque is equal to _____.
a) induction motor torque plus an additional torque produced by short circuited field winding.
b) Induction motor torque
c) Electromagnetic torque saliency
d) Reluctance torque due to rotor

5) In BLDC motor field winding is kept on _____.
a) Stator b) Can be placed anywhere
c) Rotor d) Absent

6) Construction of BLDC is exactly similar to the _____.
a) Conventional DC motor
b) Induction motor
c) Permanent magnet synchronous motor
d) Totally different construction

7) Typical brush less motor doesn't have _____.

a) Commutator
b) Permanent magnet
c) Electronic controller
d) Fixed armature

8) What is the step angle of a permanent-magnet stepper motor having 8 stator poles and 4 rotor poles?

a) 60°
b) 45°
c) 30°
d) 15°

9) In a three-stack 12/8-pole VR motor, the rotor pole pitch is _____.

a) 15º
b) 30º
c) 45º
d) 60º

10) For a reluctance motor, the maximum average torque occurs when δ= _____.

a) 45°
b) 90°
c) 0°
d) 180°

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Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Special Purpose Machines (197045610)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Answer Any Five questions. **40**

a) Advantages and disadvantages, Applications of Synchronous Reluctance Motors. **08**

b) Explain principle of micro stepping used for stepper motor. **08**

c) Explain torque-speed characteristics & State advantages and disadvantages also state applications of switched reluctance motors. **08**

d) Explain with neat sketch Vector control of permanent magnet synchronous motor. **08**

e) Write note on classification of stepper motors, explain any one type of stepper motors, application of Stepper Motor. **08**

f) Explain with neat sketch Microprocessor Based Speed control of permanent magnet synchronous motor. **08**

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Seat No.	

Set P

T. Y (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (197045611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10**

1) _____distance is the shortest distance between two metallic parts along with the surface of the solid insulator.
a) Clearances b) Creepage
c) Clearances and Creepages d) Safety

2) Clearances is/are provided for _____.
a) to prevent flashover b) to increase safety
c) to follow the standard d) All of these

3) A short thin piece of wire which is heated up and melt by the flowing of electric current in it, is called _____.
a) circuit b) fuse
c) cell d) resistor

4) Which type of fire extinguisher should be used to extinguish fire in electrical cable or equipment?
a) carbon dioxide b) dry powder
c) carbon tetrachloride d) potassium bicarbonate

5) Which step is followed for treating a person from electric shock?
a) Provide water
b) Keep the victim cold
c) Cover the victim with a coat
d) Move the victim to a ventilated place

6) Work performed on an electrical system within reaching distance of energized components is _____ work.
a) Energized b) Essential
c) Safe d) Unavoidable

7) The process of extinguishing a fire by stopping the supply of oxygen by using blanket, sand etc. called as _____.
a) Coolant b) Smothering
c) Blanketing d) Mitigation

8) One of the three generally recognized hazards of electrical work is _____.

a) Arc Flash
b) Cuts
c) Falls
d) Concussion

9) Avoid Electrical working in _____ conditions.

a) Cold
b) Dry
c) Sunny
c) Wet

10) A person qualified to perform electrical work must possess:

a) Skills/techniques to distinguish live parts from other parts of electrical equipment.
b) Skills and techniques to determine the nominal voltage of exposed live parts.
c) Knowledge on the use of PPE, insulating and shielding materials, and insulated tools.
d) All of the above

SLR-GF-463

Seat No.	

Set P

T. Y (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (197045611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Q.2 Answer the five question: - **40**

a) Write the safety precautions to be taken during the operation and maintenance of electrical equipment.
b) Explain in brief types of fire extinguisher.
c) State and explain method of artificial respiration.
d) Explain the effect of electrical shock on human body.
e) Explain the procedure of permit to do the work on electrical equipment.
f) State safety procedure during erection phase, commissioning phase and maintenance phase.

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Seat No.		Set	Q

T. Y (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (197045611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10**

1) Work performed on an electrical system within reaching distance of energized components is _____ work.
a) Energized b) Essential
c) Safe d) Unavoidable

2) The process of extinguishing a fire by stopping the supply of oxygen by using blanket, sand etc. called as _____.
a) Coolant b) Smothering
c) Blanketing d) Mitigation

3) One of the three generally recognized hazards of electrical work is _____.
a) Arc Flash b) Cuts
c) Falls d) Concussion

4) Avoid Electrical working in _____ conditions.
a) Cold b) Dry
c) Sunny c) Wet

5) A person qualified to perform electrical work must possess:
a) Skills/techniques to distinguish live parts from other parts of electrical equipment.
b) Skills and techniques to determine the nominal voltage of exposed live parts.
c) Knowledge on the use of PPE, insulating and shielding materials, and insulated tools.
d) All of the above

6) _____distance is the shortest distance between two metallic parts along with the surface of the solid insulator.
a) Clearances b) Creepage
c) Clearances and Creepages d) Safety

7) Clearances is/are provided for _____.
a) to prevent flashover b) to increase safety
c) to follow the standard d) All of these

8) A short thin piece of wire which is heated up and melt by the flowing of electric current in it, is called _____.

a) circuit b) fuse
c) cell d) resistor

9) Which type of fire extinguisher should be used to extinguish fire in electrical cable or equipment?

a) carbon dioxide b) dry powder
c) carbon tetrachloride d) potassium bicarbonate

10) Which step is followed for treating a person from electric shock?

a) Provide water
b) Keep the victim cold
c) Cover the victim with a coat
d) Move the victim to a ventilated place

SLR-GF-463

Seat No.	

Set Q

T. Y (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (197045611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Q.2 Answer the five question: - **40**

a) Write the safety precautions to be taken during the operation and maintenance of electrical equipment.
b) Explain in brief types of fire extinguisher.
c) State and explain method of artificial respiration.
d) Explain the effect of electrical shock on human body.
e) Explain the procedure of permit to do the work on electrical equipment.
f) State safety procedure during erection phase, commissioning phase and maintenance phase.

Seat No.	

Set **R**

T. Y (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (197045611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10**

1) Avoid Electrical working in _____ conditions.
a) Cold b) Dry
c) Sunny c) Wet

2) A person qualified to perform electrical work must possess:
a) Skills/techniques to distinguish live parts from other parts of electrical equipment.
b) Skills and techniques to determine the nominal voltage of exposed live parts.
c) Knowledge on the use of PPE, insulating and shielding materials, and insulated tools.
d) All of the above

3) _____distance is the shortest distance between two metallic parts along with the surface of the solid insulator.
a) Clearances b) Creepage
c) Clearances and Creepages d) Safety

4) Clearances is/are provided for _____.
a) to prevent flashover b) to increase safety
c) to follow the standard d) All of these

5) A short thin piece of wire which is heated up and melt by the flowing of electric current in it, is called _____.
a) circuit b) fuse
c) cell d) resistor

6) Which type of fire extinguisher should be used to extinguish fire in electrical cable or equipment?
a) carbon dioxide b) dry powder
c) carbon tetrachloride d) potassium bicarbonate

7) Which step is followed for treating a person from electric shock?
a) Provide water
b) Keep the victim cold
c) Cover the victim with a coat
d) Move the victim to a ventilated place

8) Work performed on an electrical system within reaching distance of energized components is _____ work.
a) Energized b) Essential
c) Safe d) Unavoidable

9) The process of extinguishing a fire by stopping the supply of oxygen by using blanket, sand etc. called as _____.
a) Coolant b) Smothering
c) Blanketing d) Mitigation

10) One of the three generally recognized hazards of electrical work is _____.
a) Arc Flash b) Cuts
c) Falls d) Concussion

SLR-GF-463

Seat No.	

Set R

T. Y (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (197045611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Q.2 Answer the five question: - **40**

a) Write the safety precautions to be taken during the operation and maintenance of electrical equipment.
b) Explain in brief types of fire extinguisher.
c) State and explain method of artificial respiration.
d) Explain the effect of electrical shock on human body.
e) Explain the procedure of permit to do the work on electrical equipment.
f) State safety procedure during erection phase, commissioning phase and maintenance phase.

SLR-GF-463

Seat No.	

Set S

T. Y (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (197045611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 20 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks: 10

Q.1 Choose the correct alternatives from the options and rewrite the Sentence. **10**

1) A short thin piece of wire which is heated up and melt by the flowing of electric current in it, is called _____.
a) circuit b) fuse
c) cell d) resistor

2) Which type of fire extinguisher should be used to extinguish fire in electrical cable or equipment?
a) carbon dioxide b) dry powder
c) carbon tetrachloride d) potassium bicarbonate

3) Which step is followed for treating a person from electric shock?
a) Provide water
b) Keep the victim cold
c) Cover the victim with a coat
d) Move the victim to a ventilated place

4) Work performed on an electrical system within reaching distance of energized components is _____ work.
a) Energized b) Essential
c) Safe d) Unavoidable

5) The process of extinguishing a fire by stopping the supply of oxygen by using blanket, sand etc. called as _____.
a) Coolant b) Smothering
c) Blanketing d) Mitigation

6) One of the three generally recognized hazards of electrical work is _____.
a) Arc Flash b) Cuts
c) Falls d) Concussion

7) Avoid Electrical working in _____ conditions.
a) Cold b) Dry
c) Sunny c) Wet

8) A person qualified to perform electrical work must possess:
   a) Skills/techniques to distinguish live parts from other parts of electrical equipment.
   b) Skills and techniques to determine the nominal voltage of exposed live parts.
   c) Knowledge on the use of PPE, insulating and shielding materials, and insulated tools.
   d) All of the above

9) _____distance is the shortest distance between two metallic parts along with the surface of the solid insulator.
   a) Clearances
   b) Creepage
   c) Clearances and Creepages
   d) Safety

10) Clearances is/are provided for _____.
   a) to prevent flashover
   b) to increase safety
   c) to follow the standard
   d) All of these

SLR-GF-463

Seat No.	

Set S

T. Y (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Safety (197045611)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Q.2 Answer the five question: - **40**

a) Write the safety precautions to be taken during the operation and maintenance of electrical equipment.
b) Explain in brief types of fire extinguisher.
c) State and explain method of artificial respiration.
d) Explain the effect of electrical shock on human body.
e) Explain the procedure of permit to do the work on electrical equipment.
f) State safety procedure during erection phase, commissioning phase and maintenance phase.

SLR-GF-464

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design & Installation (197045612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternative from the options. 10

1) For satellite the source of energy is _____.
a) Cryogenic storage b) Battery
c) Solar cell d) Any of the above

2) The output of solar cell is of the order of _____.
a) 1W b) 5W
c) 10W d) 20W

3) Most widely used solar material is _____.
a) Arsenic b) Cadmium
c) Silicon d) Steel

4) Photovoltaic cell or solar cell converts _____.
a) Thermal energy into electricity
b) Electromagnetic radiation directly into electricity
c) Solar radiation into thermal energy
d) Solar radiation into kinetic energy

5) The voltage of a single solar cell is _____.
a) 0.2 v b) 0.5 v
c) 1.0 v d) 2.0 v

6) The term photo voltaic comes from _____.
a) Spanish b) Greek
c) German d) English

7) When the source of light is not sun light then the photo voltaic cell is used as _____.
a) Photo diode b) Photo voltaic cell
c) Photo detector d) Photo transmitter

8) _____ is one of the most important materials is also known as solar grade silicon.
a) Crushed silicon b) Crystalline silicon
c) Powdered silicon d) Silicon

9) _____ photo voltaic devices in the form of thin films.

a) Cadmium Telluroide b) Cadmium oxide
c) Cadmium sulphide d) Cadmium sulphate

10) A module in a solar panel refers to _____.

a) Series arrangement of solar cells.
b) Parallel arrangement of solar cells.
c) Series and parallel arrangement of solar cells.
d) None of the above

SLR-GF-464

Seat No.	

Set P

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design & Installation (197045612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Figures to the right indicate full marks.
2) Solve any four questions.

Q.2 Solve Any Four: **20**

a) Explain the basic principle of energy conversion.
b) Classify the required classification of Inverter.
c) Explain the single line diagram and its specification.
d) Write short note on Interconnection of modules.
e) Explain the factor affecting output of PV module.

Q.3 Solve Any Two: **20**

a) Explain the battery management system.
b) Explain the types of charge controller and selection criteria.
c) Explain the installation of array support structure and mounting of PV modules.

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design & Installation (197045612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternative from the options. **10**

1) The term photo voltaic comes from _____.
a) Spanish b) Greek
c) German d) English

2) When the source of light is not sun light then the photo voltaic cell is used as _____.
a) Photo diode b) Photo voltaic cell
c) Photo detector d) Photo transmitter

3) _____ is one of the most important materials is also known as solar grade silicon.
a) Crushed silicon b) Crystalline silicon
c) Powdered silicon d) Silicon

4) _____ photo voltaic devices in the form of thin films.
a) Cadmium Telluroide b) Cadmium oxide
c) Cadmium sulphide d) Cadmium sulphate

5) A module in a solar panel refers to _____.
a) Series arrangement of solar cells.
b) Parallel arrangement of solar cells.
c) Series and parallel arrangement of solar cells.
d) None of the above

6) For satellite the source of energy is _____.
a) Cryogenic storage b) Battery
c) Solar cell d) Any of the above

7) The output of solar cell is of the order of _____.
a) 1W b) 5W
c) 10W d) 20W

8) Most widely used solar material is _____.
a) Arsenic b) Cadmium
c) Silicon d) Steel

9) Photovoltaic cell or solar cell converts _____.

a) Thermal energy into electricity
b) Electromagnetic radiation directly into electricity
c) Solar radiation into thermal energy
d) Solar radiation into kinetic energy

10) The voltage of a single solar cell is _____.

a) 0.2 v
b) 0.5 v
c) 1.0 v
d) 2.0 v

Seat No.	

Set **Q**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design & Installation (197045612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Figures to the right indicate full marks.
2) Solve any four questions.

Q.2 Solve Any Four: **20**

a) Explain the basic principle of energy conversion.
b) Classify the required classification of Inverter.
c) Explain the single line diagram and its specification.
d) Write short note on Interconnection of modules.
e) Explain the factor affecting output of PV module.

Q.3 Solve Any Two: **20**

a) Explain the battery management system.
b) Explain the types of charge controller and selection criteria.
c) Explain the installation of array support structure and mounting of PV modules.

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design & Installation (197045612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternative from the options. **10**

1) _____ photo voltaic devices in the form of thin films.
a) Cadmium Telluroide b) Cadmium oxide
c) Cadmium sulphide d) Cadmium sulphate

2) A module in a solar panel refers to _____.
a) Series arrangement of solar cells.
b) Parallel arrangement of solar cells.
c) Series and parallel arrangement of solar cells.
d) None of the above

3) For satellite the source of energy is _____.
a) Cryogenic storage b) Battery
c) Solar cell d) Any of the above

4) The output of solar cell is of the order of _____.
a) 1W b) 5W
c) 10W d) 20W

5) Most widely used solar material is _____.
a) Arsenic b) Cadmium
c) Silicon d) Steel

6) Photovoltaic cell or solar cell converts _____.
a) Thermal energy into electricity
b) Electromagnetic radiation directly into electricity
c) Solar radiation into thermal energy
d) Solar radiation into kinetic energy

7) The voltage of a single solar cell is _____.
a) 0.2 v b) 0.5 v
c) 1.0 v d) 2.0 v

8) The term photo voltaic comes from _____.
a) Spanish b) Greek
c) German d) English

9) When the source of light is not sun light then the photo voltaic cell is used as _____.

a) Photo diode
b) Photo voltaic cell
c) Photo detector
d) Photo transmitter

10) _____ is one of the most important materials is also known as solar grade silicon.

a) Crushed silicon
b) Crystalline silicon
c) Powdered silicon
d) Silicon

Seat No.	

Set **R**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design & Installation (197045612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Figures to the right indicate full marks.
2) Solve any four questions.

Q.2 Solve Any Four: **20**

a) Explain the basic principle of energy conversion.
b) Classify the required classification of Inverter.
c) Explain the single line diagram and its specification.
d) Write short note on Interconnection of modules.
e) Explain the factor affecting output of PV module.

Q.3 Solve Any Two: **20**

a) Explain the battery management system.
b) Explain the types of charge controller and selection criteria.
c) Explain the installation of array support structure and mounting of PV modules.

Seat No.	

Set **S**

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design & Installation (197045612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 50
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 20 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternative from the options. **10**

1) Most widely used solar material is _____.
a) Arsenic b) Cadmium
c) Silicon d) Steel

2) Photovoltaic cell or solar cell converts _____.
a) Thermal energy into electricity
b) Electromagnetic radiation directly into electricity
c) Solar radiation into thermal energy
d) Solar radiation into kinetic energy

3) The voltage of a single solar cell is _____.
a) 0.2 v b) 0.5 v
c) 1.0 v d) 2.0 v

4) The term photo voltaic comes from _____.
a) Spanish b) Greek
c) German d) English

5) When the source of light is not sun light then the photo voltaic cell is used as _____.
a) Photo diode b) Photo voltaic cell
c) Photo detector d) Photo transmitter

6) _____ is one of the most important materials is also known as solar grade silicon.
a) Crushed silicon b) Crystalline silicon
c) Powdered silicon d) Silicon

7) _____ photo voltaic devices in the form of thin films.
a) Cadmium Telluroide b) Cadmium oxide
c) Cadmium sulphide d) Cadmium sulphate

8) A module in a solar panel refers to _____.
   a) Series arrangement of solar cells.
   b) Parallel arrangement of solar cells.
   c) Series and parallel arrangement of solar cells.
   d) None of the above

9) For satellite the source of energy is _____.
   a) Cryogenic storage
   b) Battery
   c) Solar cell
   d) Any of the above

10) The output of solar cell is of the order of _____.
   a) 1W
   b) 5W
   c) 10W
   d) 20W

SLR-GF-464

Seat No.		Set	S

T. Y. (B. Tech) (Sem - II) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Solar Photovoltaic System Design & Installation (197045612)

Day & Date: Saturday, 23-12-2023 Max. Marks: 40
Time: 10:00 AM To 01:00 PM

Instructions: 1) Figures to the right indicate full marks.
2) Solve any four questions.

Q.2 Solve Any Four: **20**

a) Explain the basic principle of energy conversion.
b) Classify the required classification of Inverter.
c) Explain the single line diagram and its specification.
d) Write short note on Interconnection of modules.
e) Explain the factor affecting output of PV module.

Q.3 Solve Any Two: **20**

a) Explain the battery management system.
b) Explain the types of charge controller and selection criteria.
c) Explain the installation of array support structure and mounting of PV modules.

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is a set of electrical boundaries that allows a piece of equipment to function in its intended manner without significant loss of performance or life expectancy.
a) Power factor b) Power system
c) Power quality d) Power field

2) _____ indicates the deviation of a periodic wave from its ideal waveform characteristics.
a) Distortion Factor b) Flicker
c) Distortion d) Noise

3) Variation of input voltage sufficient in duration to allow visual observation of a change in electric light source intensity is referred as _____.
a) Flicker b) Noise
c) Distortion d) Harmonics

4) Which one of the following is waveform distortion?
a) DC offset b) Electrical Noise
c) Notching d) All of the above

5) Due to Harmonics in Transformer which of the following losses increases?
a) Hysteresis Loss Only b) Eddy Current Loss Only
c) Both (a) & (b) d) No losses will increase

6) The first step in solving power quality problems is to _____.
a) find out power
b) set up the meter for measurement
c) determine the test location
d) check voltage or current

7) Which of the following sentence is true?
a) Oscilloscope is used for determining high frequency waveform of any control circuit
b) Oscilloscope is also known as CRO
c) CRO is it voltage finding electronic instruments and normally used to find voltage of the waveform
d) all of the above

8) FACTS devices are generally used for to compensate _____ of the transmission line.
a) reactive power b) active power
c) apparent power d) none of above

9) Transmission Interconnection is done for _____.
a) economic reasons
b) to reduce the cost of electricity and
c) to improve reliability of power supply
d) All of these

10) The shunt compensator is functionally a controlled reactive current source which is connected in parallel with the transmission line to control its _____.
a) Voltage b) Current
c) Power d) Transient

11) The series compensator is functionally a controlled voltage source which is connected in series with the transmission line to control its _____.
a) Current b) Voltage
c) Power d) Transient

12) The TSSC could be applied for power flow control and for damping power oscillation where the required speed of response is _____.
a) Slow b) Moderate
c) Fast d) Ultra-fast

13) UPFC allows _____ real power between SSSC and STATCOM
a) Unidirectional b) Bidirectional
c) Separately operated d) None of these

14) Which is the control attributes of UPFC?
a) Damping oscillations b) Voltage stability
c) Fault current limiting d) All the above

SLR-GF-465

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following (Any Four) **16**
- **a)** Explain the concept of sags and swells.
- **b)** Explain in detail inter harmonics.
- **c)** Explain flicker meter.
- **d)** Explain the concept of transients.
- **e)** Which are the harmonic sources from commercial loads?

Q.3 Answer the following (Any Two) **12**
- **a)** Explain short duration variations and long duration variations.
- **b)** Explain and write equations of harmonic indices.
- **c)** What are the different power quality monitoring considerations?

Section – II

Q.4 Answer the following (Any Four) **16**
- **a)** Explain basic types of FACTS controllers.
- **b)** Explain in detail Thyristor Controller Reactor (TCR).
- **c)** Explain the concept of TCSC.
- **d)** Explain the objectives of series compensation.
- **e)** Explain in detail TSC-TCR.

Q.5 Answer the following (Any Two) **12**
- **a)** Explain in detail SSSC.
- **b)** Explain basic operating principles of UPFC.
- **c)** Explain control structure and applications of IPFC.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) FACTS devices are generally used for to compensate _____ of the transmission line.
a) reactive power b) active power
c) apparent power d) none of above

2) Transmission Interconnection is done for _____.
a) economic reasons
b) to reduce the cost of electricity and
c) to improve reliability of power supply
d) All of these

3) The shunt compensator is functionally a controlled reactive current source which is connected in parallel with the transmission line to control its _____.
a) Voltage b) Current
c) Power d) Transient

4) The series compensator is functionally a controlled voltage source which is connected in series with the transmission line to control its _____.
a) Current b) Voltage
c) Power d) Transient

5) The TSSC could be applied for power flow control and for damping power oscillation where the required speed of response is _____.
a) Slow b) Moderate
c) Fast d) Ultra-fast

6) UPFC allows _____ real power between SSSC and STATCOM
a) Unidirectional b) Bidirectional
c) Separately operated d) None of these

7) Which is the control attributes of UPFC?
a) Damping oscillations b) Voltage stability
c) Fault current limiting d) All the above

8) _____ is a set of electrical boundaries that allows a piece of equipment to function in its intended manner without significant loss of performance or life expectancy.
a) Power factor b) Power system
c) Power quality d) Power field

9) _____ indicates the deviation of a periodic wave from its ideal waveform characteristics.
a) Distortion Factor b) Flicker
c) Distortion d) Noise

10) Variation of input voltage sufficient in duration to allow visual observation of a change in electric light source intensity is referred as _____.
a) Flicker b) Noise
c) Distortion d) Harmonics

11) Which one of the following is waveform distortion?
a) DC offset b) Electrical Noise
c) Notching d) All of the above

12) Due to Harmonics in Transformer which of the following losses increases?
a) Hysteresis Loss Only b) Eddy Current Loss Only
c) Both (a) & (b) d) No losses will increase

13) The first step in solving power quality problems is to _____.
a) find out power
b) set up the meter for measurement
c) determine the test location
d) check voltage or current

14) Which of the following sentence is true?
a) Oscilloscope is used for determining high frequency waveform of any control circuit
b) Oscilloscope is also known as CRO
c) CRO is it voltage finding electronic instruments and normally used to find voltage of the waveform
d) all of the above

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following (Any Four) **16**
- **a)** Explain the concept of sags and swells.
- **b)** Explain in detail inter harmonics.
- **c)** Explain flicker meter.
- **d)** Explain the concept of transients.
- **e)** Which are the harmonic sources from commercial loads?

Q.3 Answer the following (Any Two) **12**
- **a)** Explain short duration variations and long duration variations.
- **b)** Explain and write equations of harmonic indices.
- **c)** What are the different power quality monitoring considerations?

Section – II

Q.4 Answer the following (Any Four) **16**
- **a)** Explain basic types of FACTS controllers.
- **b)** Explain in detail Thyristor Controller Reactor (TCR).
- **c)** Explain the concept of TCSC.
- **d)** Explain the objectives of series compensation.
- **e)** Explain in detail TSC-TCR.

Q.5 Answer the following (Any Two) **12**
- **a)** Explain in detail SSSC.
- **b)** Explain basic operating principles of UPFC.
- **c)** Explain control structure and applications of IPFC.

Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The series compensator is functionally a controlled voltage source which is connected in series with the transmission line to control its _____.
a) Current b) Voltage
c) Power d) Transient

2) The TSSC could be applied for power flow control and for damping power oscillation where the required speed of response is _____.
a) Slow b) Moderate
c) Fast d) Ultra-fast

3) UPFC allows _____ real power between SSSC and STATCOM
a) Unidirectional b) Bidirectional
c) Separately operated d) None of these

4) Which is the control attributes of UPFC?
a) Damping oscillations b) Voltage stability
c) Fault current limiting d) All the above

5) _____ is a set of electrical boundaries that allows a piece of equipment to function in its intended manner without significant loss of performance or life expectancy.
a) Power factor b) Power system
c) Power quality d) Power field

6) _____ indicates the deviation of a periodic wave from its ideal waveform characteristics.
a) Distortion Factor b) Flicker
c) Distortion d) Noise

7) Variation of input voltage sufficient in duration to allow visual observation of a change in electric light source intensity is referred as _____.
a) Flicker b) Noise
c) Distortion d) Harmonics

8) Which one of the following is waveform distortion?
a) DC offset b) Electrical Noise
c) Notching d) All of the above

9) Due to Harmonics in Transformer which of the following losses increases?
a) Hysteresis Loss Only
b) Eddy Current Loss Only
c) Both (a) & (b)
d) No losses will increase

10) The first step in solving power quality problems is to _____.
a) find out power
b) set up the meter for measurement
c) determine the test location
d) check voltage or current

11) Which of the following sentence is true?
a) Oscilloscope is used for determining high frequency waveform of any control circuit
b) Oscilloscope is also known as CRO
c) CRO is it voltage finding electronic instruments and normally used to find voltage of the waveform
d) all of the above

12) FACTS devices are generally used for to compensate _____ of the transmission line.
a) reactive power
b) active power
c) apparent power
d) none of above

13) Transmission Interconnection is done for _____.
a) economic reasons
b) to reduce the cost of electricity and
c) to improve reliability of power supply
d) All of these

14) The shunt compensator is functionally a controlled reactive current source which is connected in parallel with the transmission line to control its _____.
a) Voltage
b) Current
c) Power
d) Transient

SLR-GF-465

Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following (Any Four) **16**
- **a)** Explain the concept of sags and swells.
- **b)** Explain in detail inter harmonics.
- **c)** Explain flicker meter.
- **d)** Explain the concept of transients.
- **e)** Which are the harmonic sources from commercial loads?

Q.3 Answer the following (Any Two) **12**
- **a)** Explain short duration variations and long duration variations.
- **b)** Explain and write equations of harmonic indices.
- **c)** What are the different power quality monitoring considerations?

Section – II

Q.4 Answer the following (Any Four) **16**
- **a)** Explain basic types of FACTS controllers.
- **b)** Explain in detail Thyristor Controller Reactor (TCR).
- **c)** Explain the concept of TCSC.
- **d)** Explain the objectives of series compensation.
- **e)** Explain in detail TSC-TCR.

Q.5 Answer the following (Any Two) **12**
- **a)** Explain in detail SSSC.
- **b)** Explain basic operating principles of UPFC.
- **c)** Explain control structure and applications of IPFC.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The first step in solving power quality problems is to _____.
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b) set up the meter for measurement
c) determine the test location
d) check voltage or current

2) Which of the following sentence is true?
a) Oscilloscope is used for determining high frequency waveform of any control circuit
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c) apparent power d) none of above

4) Transmission Interconnection is done for _____.
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d) All of these

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c) Power d) Transient

6) The series compensator is functionally a controlled voltage source which is connected in series with the transmission line to control its _____.
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SLR-GF-465

Seat No.	

Set S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality and FACTS (BTN07701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following (Any Four) **16**
- **a)** Explain the concept of sags and swells.
- **b)** Explain in detail inter harmonics.
- **c)** Explain flicker meter.
- **d)** Explain the concept of transients.
- **e)** Which are the harmonic sources from commercial loads?

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- **a)** Explain short duration variations and long duration variations.
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Section – II

Q.4 Answer the following (Any Four) **16**
- **a)** Explain basic types of FACTS controllers.
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- **d)** Explain the objectives of series compensation.
- **e)** Explain in detail TSC-TCR.

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- **a)** Explain in detail SSSC.
- **b)** Explain basic operating principles of UPFC.
- **c)** Explain control structure and applications of IPFC.

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) The impulse function is _____ when $t = 0$
a) one b) zero
c) infinity d) none of above

2) In a ____ signal, we can't define the value of the signal at any instant of time?
a) Continuous time b) Discrete time
c) both a and b d) none of above

3) Determine the fundamental period of the following signal: $\sin(60\pi t)$.
a) $1/60$ sec b) $1/30$ sec
c) $1/20$ sec d) $1/10$ sec

4) Is the signal $x(t) = e^{at}\, u(t)$ causal?
a) YES b) NO

5) _____ System satisfies the superposition principle.
a) Linear b) Causal
c) Non-linear d) Non-causal

6) For an energy signal _____.
a) $E = O$ b) $P = \infty$
c) $E = \infty$ d) $P = 0$

7) The system output $y(t) = x(t+1)$,if $t = 0$ then the output is dependent on _____.
a) Present b) Past
c) Future d) none

8) The ROC in z-transform indicated as _____.
a) rectangle b) square
c) circle d) none

9) If a sequence is purely left-sided sequence or anti-causal then region of convergence is entire z-plane except at _____.

a) z is equal to 0
b) z is equal to ∞
c) z is equal to 0 and z is equal to ∞
d) None of the above

10) If Periodic signal is odd period function, the Fourier expansion contains _____ terms.

a) DC
b) Sin
c) cosine
d) None

11) Which one is a transformation technique?

a) Fourier transform
b) Fourier series
c) Z transform
d) all of above

12) If $x(n)$ and $X(k)$ are an N-point DFT pair, then $x(n+N) = x(n)$.

a) True
b) False

13) If Fourier transform of $x(t) = X(jw)$, then Fourier transform of $x(t - t_0)$ = ____.

a) $e^{-jwot}x(jw)$
b) $x(jw)$
c) $x(jw/a)$
d) None

14) The Linearity Property in Fourier Transform states that, _____.

a) $F\big(ax_1(t) + bx_2(t)\big) = aX_1(jw) + bX_2(jw)$
b) $F\big(aX_1(t) + bx_2(t)\big) = AY_1(t) + BY_2(t)$
c) $F\big(aX_1(t) + bx_2(t)\big) = ACn + BDn$
d) None

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four **16**

a) Define the terms related to signal- Random Signal, Periodic Signal, Causal Signal, Linear Signal.

b) Draw the Signal
i) $u(t) - u(t+4)$
ii) $u(t) - u(t-4)$

c) Check the given system is causal or not
i) $y[n] = x[n] + 1/x[n-1]$
ii) $y[t] = x(t-2) + x(2-t)$

d) Obtain convolution of two continuous time sequences- $X(t) = e^{-3t}u(t)$ and $h(t) = u(t-1)$

e) Explain the Properties of LTI System.

Q.3 Solve Any Two **12**

a) Find even and odd signals for signals $x(t) = \cos t + \sin t + \cos t \,.\sin t$

b) Explain the representation of Discrete Time (DT) Signal in terms of Impulses.

c) Obtain the convolution of Discrete Time sequence and Sketch the result.
$h[n] = 4$ for, $0 \le n \le 2$
$= 0$ elsewhere
$x[n] = 2$ for, $-2 \le n \le 2$
$= 0$ elsewhere

Section – II

Q.4 Solve Any Four: **16**

a) Find the Fourier Transform of the signal $\delta(t)$.

b) Find the Z-transform and ROC of signal $x(t) = a^n u(n)$

c) Explain the Z- Transform Properties in details.

d) Define the properties for Continuous time Fourier Series-
i) Linearity
ii) Time Shifting
iii) Frequency shifting
iv) Time Differentiation

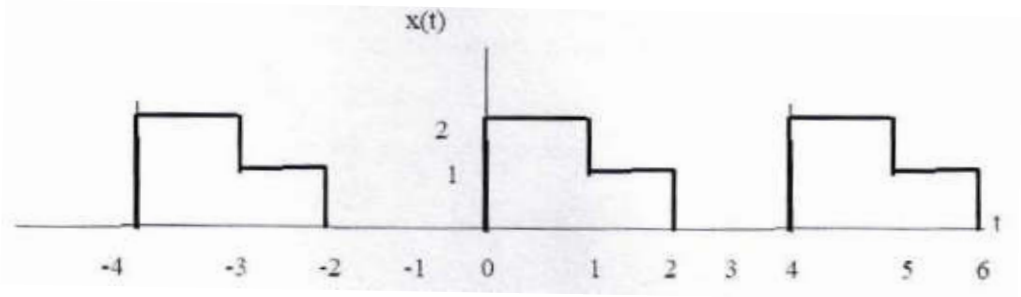
e) What is 4-point DFT for signal $x[n] = \{1,2,3,4\}$

Q.5 Solve Any Two. **12**

a) Calculate the Z- Inverse for the following-

$$X[z] = \frac{1 + 2z^{-1}}{1 - 2z^{-1} + z^{-2}}$$

b) Compute the exponential Fourier Series for following signal



c) Determine the 8-point DFT of the sequence $x(n) = \{1,1,1,1,1,1,0,0\}$

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) The ROC in z-transform indicated as _____.
a) rectangle b) square
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2) If a sequence is purely left-sided sequence or anti-causal then region of convergence is entire z-plane except at _____.
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3) If Periodic signal is odd period function, the Fourier expansion contains _____ terms.
a) DC b) Sin
c) cosine d) None

4) Which one is a transformation technique?
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c) Z transform d) all of above

5) If $x(n)$ and $X(k)$ are an N-point DFT pair, then $x(n+N) = x(n)$.
a) True b) False

6) If Fourier transform of $x(t) = X(jw)$, then Fourier transform of $x(t-t_0)$ = _____.
a) $e^{-jwot}x(jw)$ b) $x(jw)$
c) $x(jw/a)$ d) None

7) The Linearity Property in Fourier Transform states that, _____.
a) $F\big(ax_1(t)+bx_2(t)\big) = aX_1(jw)+bX_2(jw)$
b) $F\big(aX_1(t)+bx_2(t)\big) = AY_1(t)+BY_2(t)$
c) $F\big(aX_1(t)+bx_2(t)\big) = ACn+BDn$
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8) The impulse function is _____ when $t = 0$

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10) Determine the fundamental period of the following signal: $\sin(60\pi t)$.

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11) Is the signal $x(t) = e^{at}\, u(t)$ causal?

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12) _____ System satisfies the superposition principle.

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13) For an energy signal _____.

a) $E = O$ b) $P = \infty$
c) $E = \infty$ d) $P = 0$

14) The system output $y(t) = x(t + 1)$,if $t = 0$ then the output is dependent on _____.

a) Present b) Past
c) Future d) none

Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four **16**

a) Define the terms related to signal- Random Signal, Periodic Signal, Causal Signal, Linear Signal.

b) Draw the Signal
i) $u(t) - u(t+4)$
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c) Check the given system is causal or not
i) $y[n] = x[n] + 1/x[n-1]$
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d) Obtain convolution of two continuous time sequences- $X(t) = e^{-3t}u(t)$ and $h(t) = u(t-1)$

e) Explain the Properties of LTI System.

Q.3 Solve Any Two **12**

a) Find even and odd signals for signals $x(t) = \cos t + \sin t + \cos t \,.\sin t$

b) Explain the representation of Discrete Time (DT) Signal in terms of Impulses.

c) Obtain the convolution of Discrete Time sequence and Sketch the result.
$h[n] = 4$ for, $0 \le n \le 2$
$= 0$ elsewhere
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Section – II

Q.4 Solve Any Four: **16**

a) Find the Fourier Transform of the signal $\delta(t)$.

b) Find the Z-transform and ROC of signal $x(t) = a^n u(n)$

c) Explain the Z- Transform Properties in details.

d) Define the properties for Continuous time Fourier Series-
i) Linearity
ii) Time Shifting
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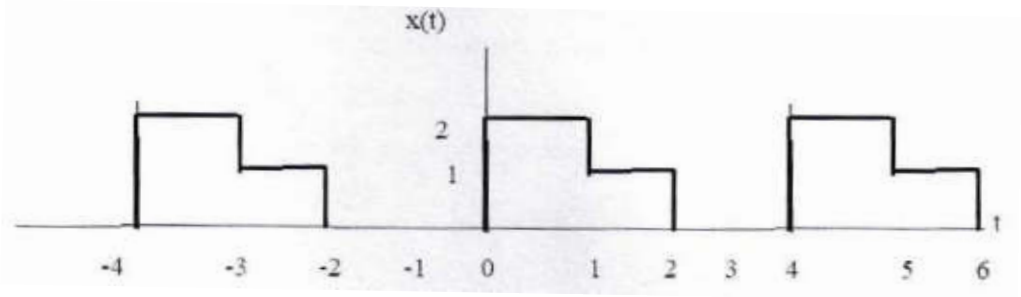
e) What is 4-point DFT for signal $x[n] = \{1,2,3,4\}$

Q.5 Solve Any Two. **12**

a) Calculate the Z- Inverse for the following-

$$X[z] = \frac{1 + 2z^{-1}}{1 - 2z^{-1} + z^{-2}}$$

b) Compute the exponential Fourier Series for following signal



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Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Which one is a transformation technique?
a) Fourier transform b) Fourier series
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2) If $x(n)$ and $X(k)$ are an N-point DFT pair, then $x(n+N) = x(n)$.
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Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
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Section – II

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iv) Time Differentiation

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Q.5 Solve Any Two. **12**

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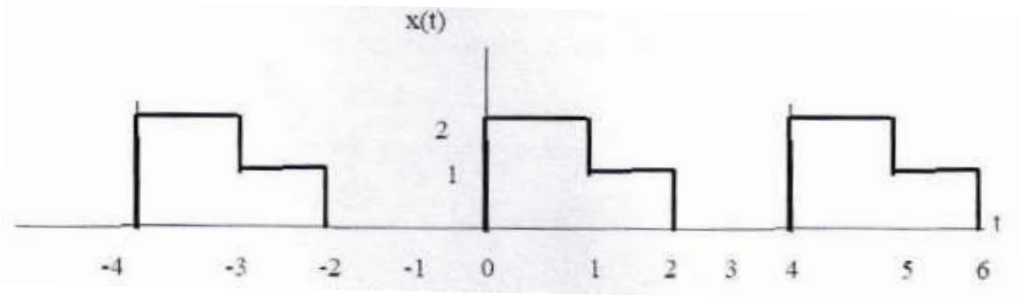

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Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
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Day & Date: Friday, 29-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

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a) rectangle b) square
c) circle d) none

4) If a sequence is purely left-sided sequence or anti-causal then region of convergence is entire z-plane except at _____.
a) z is equal to 0
b) z is equal to ∞
c) z is equal to 0 and z is equal to ∞
d) None of the above

5) If Periodic signal is odd period function, the Fourier expansion contains _____ terms.
a) DC b) Sin
c) cosine d) None

6) Which one is a transformation technique?
a) Fourier transform b) Fourier series
c) Z transform d) all of above

7) If $x(n)$ and $X(k)$ are an N-point DFT pair, then $x(n+N) = x(n)$.
a) True b) False

8) If Fourier transform of $x(t) = X(jw)$, then Fourier transform of $x(t - t_0)$ = ____.
a) $e^{-jwot}x(jw)$ b) $x(jw)$
c) $x(jw/a)$ d) None

9) The Linearity Property in Fourier Transform states that, _____.

a) $F\big(ax_1(t) + bx_2(t)\big) = aX_1(jw) + bX_2(jw)$

b) $F\big(aX_1(t) + bx_2(t)\big) = AY_1(t) + BY_2(t)$

c) $F\big(aX_1(t) + bx_2(t)\big) = ACn + BDn$

d) None

10) The impulse function is _____ when $t = 0$

a) one b) zero

c) infinity d) none of above

11) In a ____ signal, we can't define the value of the signal at any instant of time?

a) Continuous time b) Discrete time

c) both a and b d) none of above

12) Determine the fundamental period of the following signal: $\sin(60\pi t)$.

a) $1/60$ sec b) $1/30$ sec

c) $1/20$ sec d) $1/10$ sec

13) Is the signal $x(t) = e^{at}\, u(t)$ causal?

a) YES b) NO

14) _____ System satisfies the superposition principle.

a) Linear b) Causal

c) Non-linear d) Non-causal

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Signals and System (BTN07702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Solve any four **16**

a) Define the terms related to signal- Random Signal, Periodic Signal, Causal Signal, Linear Signal.

b) Draw the Signal
i) $u(t) - u(t+4)$
ii) $u(t) - u(t-4)$

c) Check the given system is causal or not
i) $y[n] = x[n] + 1/x[n-1]$
ii) $y[t] = x(t-2) + x(2-t)$

d) Obtain convolution of two continuous time sequences- $X(t) = e^{-3t}u(t)$ and $h(t) = u(t-1)$

e) Explain the Properties of LTI System.

Q.3 Solve Any Two **12**

a) Find even and odd signals for signals $x(t) = \cos t + \sin t + \cos t \,.\sin t$

b) Explain the representation of Discrete Time (DT) Signal in terms of Impulses.

c) Obtain the convolution of Discrete Time sequence and Sketch the result.
$h[n] = 4$ for, $0 \le n \le 2$
$= 0$ elsewhere
$x[n] = 2$ for, $-2 \le n \le 2$
$= 0$ elsewhere

Section – II

Q.4 Solve Any Four: **16**

a) Find the Fourier Transform of the signal $\delta(t)$.

b) Find the Z-transform and ROC of signal $x(t) = a^n u(n)$

c) Explain the Z- Transform Properties in details.

d) Define the properties for Continuous time Fourier Series-
i) Linearity
ii) Time Shifting
iii) Frequency shifting
iv) Time Differentiation

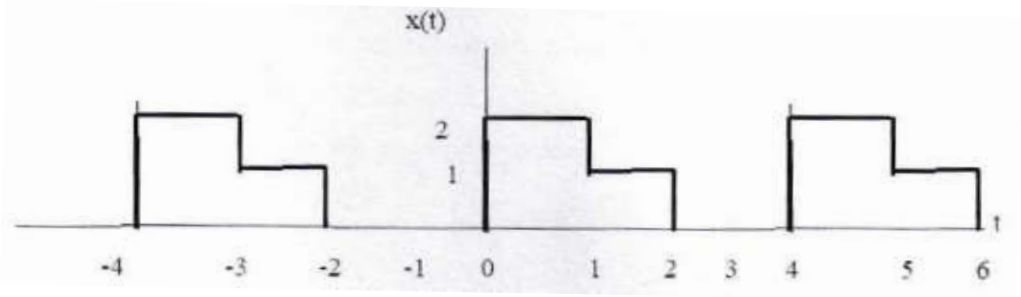
e) What is 4-point DFT for signal $x[n] = \{1,2,3,4\}$

Q.5 Solve Any Two. **12**

a) Calculate the Z- Inverse for the following-

$$X[z] = \frac{1 + 2z^{-1}}{1 - 2z^{-1} + z^{-2}}$$

b) Compute the exponential Fourier Series for following signal



c) Determine the 8-point DFT of the sequence $x(n) = \{1,1,1,1,1,1,0,0\}$

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Seat No.	

Set P

Fourth Year. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer **14**

1) What is the purpose of back up protection?
a) To increase the speed
b) To increase the reach
c) To leave no blind spot
d) To guard against failure of primary

2) Discrimination between main and back up protection is provided by the use of relays which are _____
a) Fact b) Sensitive
c) Slow d) None of the above

3) Protection by fuses is generally not used beyond _____
a) 20 A b) 50 A
c) 100 A d) 200 A

4) H.R.C. fuses provide best protection against _____
a) Overload b) Reverse current
c) Open-circuits d) Short-circuits

5) Earth fault relays are: _____
a) Directional relay b) Non-directional relay
c) Short operate time relay d) Under voltage relay

6) Admittance relay is: _____
a) Non-directional relay b) Directional relay
c) Differential relay d) All of the above

7) _____ relay is preferred for phase fault on short transmission line.
a) Induction type b) Reactance
c) Impedance d) None of the above

8) For which of the following protection from negative sequence currents is provided?
a) Generators b) Motors
c) Transmission line d) Transformers

9) To limit short-circuit current in a power system are used _____.
a) Earth wires b) Isolators
c) H.R.C. fuses d) Reactors

10) Rate of rise of restriking voltage depends on _____.
a) Type of circuit breaker b) Capacitance of the system
c) Inductance of the system d) Both (b) and (c)

11) Why the resistance switching is used in air blast circuit breaker?
a) Reduce the magnitude of fault current
b) Control the CB operating time
c) Damp out the fast transient
d) Change the fault current power factor

12) What is the most important property which makes the SF_6 very efficient medium for circuit breaking?
a) Is nontoxic and non-inflammable
b) Has a high dielectric constant
c) Has a high breakdown strength
d) Is highly electronegative gas

13) The resistance of an electric arc can be increased by _____
a) Increasing the concentration of ionized particles
b) Reducing the arc length
c) Splitting the arc
d) Increasing the arc cross section

14) Why are the isolators used?
a) Break abnormal current
b) Making under fault conditions
c) Breaking the circuit under no load condition
d) None of the above

Seat No.	

Set **P**

Fourth Year. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**

a) What are desirable qualities of protective scheme?
b) Discuss the overcurrent protective scheme for radial and ring main feeder.
c) Explain how impedance relay is used for distance protection with its characteristics.
d) What are the factors affecting for selection of fuse?
e) Explain static overcurrent relay with neat diagram.
f) Explain simple differential relay with neat diagram.

Q.3 Attempt any two. **12**

a) Derive torque equation for induction relay in detail.
b) What different types of fuse? Explain construction and operation of HRC fuse with neat diagram.
c) Describe microprocessor-based impedance relay with block diagram with its flow chart in detail.

Section – II

Q.4 Attempt any four. **16**

a) With neat sketch explain over fluxing protection used for transformer.
b) Explain the phenomenon of current chopping phenomenon in circuit breaker.
c) With suitable diagram explain construction & operation of vacuum circuit breaker.
d) What are the causes of over voltages in power system?
e) Explain construction and operation of minimum oil circuit breaker with neat diagram.
f) Explain protection of induction motor for different faults.

Q.5 Attempt any two. **12**

a) Explain construction & operation of Buchholz relay with neat diagram.
b) Derive an expression of Restriking voltage & RRRV in terms of system voltage, inductance and capacitance.
c) With suitable diagram explain construction & operation of SF6 circuit breaker. Also state its advantages and disadvantages.

Seat No.		Set	Q

Fourth Year. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer **14**

1) For which of the following protection from negative sequence currents is provided?
a) Generators b) Motors
c) Transmission line d) Transformers

2) To limit short-circuit current in a power system are used _____.
a) Earth wires b) Isolators
c) H.R.C. fuses d) Reactors

3) Rate of rise of restriking voltage depends on _____.
a) Type of circuit breaker b) Capacitance of the system
c) Inductance of the system d) Both (b) and (c)

4) Why the resistance switching is used in air blast circuit breaker?
a) Reduce the magnitude of fault current
b) Control the CB operating time
c) Damp out the fast transient
d) Change the fault current power factor

5) What is the most important property which makes the SF_6 very efficient medium for circuit breaking?
a) Is nontoxic and non-inflammable
b) Has a high dielectric constant
c) Has a high breakdown strength
d) Is highly electronegative gas

6) The resistance of an electric arc can be increased by _____
a) Increasing the concentration of ionized particles
b) Reducing the arc length
c) Splitting the arc
d) Increasing the arc cross section

7) Why are the isolators used?
a) Break abnormal current
b) Making under fault conditions
c) Breaking the circuit under no load condition
d) None of the above

8) What is the purpose of back up protection?
a) To increase the speed
b) To increase the reach
c) To leave no blind spot
d) To guard against failure of primary

9) Discrimination between main and back up protection is provided by the use of relays which are _____
a) Fact
b) Sensitive
c) Slow
d) None of the above

10) Protection by fuses is generally not used beyond _____
a) 20 A
b) 50 A
c) 100 A
d) 200 A

11) H.R.C. fuses provide best protection against _____
a) Overload
b) Reverse current
c) Open-circuits
d) Short-circuits

12) Earth fault relays are: _____
a) Directional relay
b) Non-directional relay
c) Short operate time relay
d) Under voltage relay

13) Admittance relay is: _____
a) Non-directional relay
b) Directional relay
c) Differential relay
d) All of the above

14) _____ relay is preferred for phase fault on short transmission line.
a) Induction type
b) Reactance
c) Impedance
d) None of the above

Seat No.	

Set **Q**

Fourth Year. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**

a) What are desirable qualities of protective scheme?
b) Discuss the overcurrent protective scheme for radial and ring main feeder.
c) Explain how impedance relay is used for distance protection with its characteristics.
d) What are the factors affecting for selection of fuse?
e) Explain static overcurrent relay with neat diagram.
f) Explain simple differential relay with neat diagram.

Q.3 Attempt any two. **12**

a) Derive torque equation for induction relay in detail.
b) What different types of fuse? Explain construction and operation of HRC fuse with neat diagram.
c) Describe microprocessor-based impedance relay with block diagram with its flow chart in detail.

Section – II

Q.4 Attempt any four. **16**

a) With neat sketch explain over fluxing protection used for transformer.
b) Explain the phenomenon of current chopping phenomenon in circuit breaker.
c) With suitable diagram explain construction & operation of vacuum circuit breaker.
d) What are the causes of over voltages in power system?
e) Explain construction and operation of minimum oil circuit breaker with neat diagram.
f) Explain protection of induction motor for different faults.

Q.5 Attempt any two. **12**

a) Explain construction & operation of Buchholz relay with neat diagram.
b) Derive an expression of Restriking voltage & RRRV in terms of system voltage, inductance and capacitance.
c) With suitable diagram explain construction & operation of SF6 circuit breaker. Also state its advantages and disadvantages.

Seat No.		Set	R

Fourth Year. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer **14**

1) Why the resistance switching is used in air blast circuit breaker?
a) Reduce the magnitude of fault current
b) Control the CB operating time
c) Damp out the fast transient
d) Change the fault current power factor

2) What is the most important property which makes the SF_6 very efficient medium for circuit breaking?
a) Is nontoxic and non-inflammable
b) Has a high dielectric constant
c) Has a high breakdown strength
d) Is highly electronegative gas

3) The resistance of an electric arc can be increased by _____
a) Increasing the concentration of ionized particles
b) Reducing the arc length
c) Splitting the arc
d) Increasing the arc cross section

4) Why are the isolators used?
a) Break abnormal current
b) Making under fault conditions
c) Breaking the circuit under no load condition
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5) What is the purpose of back up protection?
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13) To limit short-circuit current in a power system are used _____.
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c) H.R.C. fuses d) Reactors

14) Rate of rise of restriking voltage depends on _____.
a) Type of circuit breaker b) Capacitance of the system
c) Inductance of the system d) Both (b) and (c)

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Seat No.	

Set R

Fourth Year. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**

a) What are desirable qualities of protective scheme?
b) Discuss the overcurrent protective scheme for radial and ring main feeder.
c) Explain how impedance relay is used for distance protection with its characteristics.
d) What are the factors affecting for selection of fuse?
e) Explain static overcurrent relay with neat diagram.
f) Explain simple differential relay with neat diagram.

Q.3 Attempt any two. **12**

a) Derive torque equation for induction relay in detail.
b) What different types of fuse? Explain construction and operation of HRC fuse with neat diagram.
c) Describe microprocessor-based impedance relay with block diagram with its flow chart in detail.

Section – II

Q.4 Attempt any four. **16**

a) With neat sketch explain over fluxing protection used for transformer.
b) Explain the phenomenon of current chopping phenomenon in circuit breaker.
c) With suitable diagram explain construction & operation of vacuum circuit breaker.
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f) Explain protection of induction motor for different faults.

Q.5 Attempt any two. **12**

a) Explain construction & operation of Buchholz relay with neat diagram.
b) Derive an expression of Restriking voltage & RRRV in terms of system voltage, inductance and capacitance.
c) With suitable diagram explain construction & operation of SF6 circuit breaker. Also state its advantages and disadvantages.

Seat No.		Set	S

Fourth Year. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer **14**

1) Admittance relay is: _____
a) Non-directional relay b) Directional relay
c) Differential relay d) All of the above

2) _____ relay is preferred for phase fault on short transmission line.
a) Induction type b) Reactance
c) Impedance d) None of the above

3) For which of the following protection from negative sequence currents is provided?
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c) Splitting the arc
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a) Break abnormal current
b) Making under fault conditions
c) Breaking the circuit under no load condition
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10) What is the purpose of back up protection?
a) To increase the speed
b) To increase the reach
c) To leave no blind spot
d) To guard against failure of primary

11) Discrimination between main and back up protection is provided by the use of relays which are _____
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b) Sensitive
c) Slow
d) None of the above

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a) 20 A
b) 50 A
c) 100 A
d) 200 A

13) H.R.C. fuses provide best protection against _____
a) Overload
b) Reverse current
c) Open-circuits
d) Short-circuits

14) Earth fault relays are: _____
a) Directional relay
b) Non-directional relay
c) Short operate time relay
d) Under voltage relay

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Seat No.		Set	S

Fourth Year. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (BTN07703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**

a) What are desirable qualities of protective scheme?
b) Discuss the overcurrent protective scheme for radial and ring main feeder.
c) Explain how impedance relay is used for distance protection with its characteristics.
d) What are the factors affecting for selection of fuse?
e) Explain static overcurrent relay with neat diagram.
f) Explain simple differential relay with neat diagram.

Q.3 Attempt any two. **12**

a) Derive torque equation for induction relay in detail.
b) What different types of fuse? Explain construction and operation of HRC fuse with neat diagram.
c) Describe microprocessor-based impedance relay with block diagram with its flow chart in detail.

Section – II

Q.4 Attempt any four. **16**

a) With neat sketch explain over fluxing protection used for transformer.
b) Explain the phenomenon of current chopping phenomenon in circuit breaker.
c) With suitable diagram explain construction & operation of vacuum circuit breaker.
d) What are the causes of over voltages in power system?
e) Explain construction and operation of minimum oil circuit breaker with neat diagram.
f) Explain protection of induction motor for different faults.

Q.5 Attempt any two. **12**

a) Explain construction & operation of Buchholz relay with neat diagram.
b) Derive an expression of Restriking voltage & RRRV in terms of system voltage, inductance and capacitance.
c) With suitable diagram explain construction & operation of SF6 circuit breaker. Also state its advantages and disadvantages.

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Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (BTN07706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Liquids with solid impurities _____.
a) have higher dielectric strength
b) of large size have higher dielectric strength
c) has lower dielectric strength as compared to pure liquids
d) none of the above

2) The conventional direction of electric field is _____.
a) Positive to negative
b) Negative to positive
c) No specific direction
d) Direction cannot be determined

3) The requirement of gases for insulation purpose is _____.
a) High dielectric strength and thermal stability
b) High dielectric strength only
c) High thermal stability only
d) None of the above

4) For the high voltage conductors at high pressures, if the voltage is positive then the corona appears as a _____.
a) Uniform bluish white sheath b) Reddish glowing spots
c) Uniform greenish spots d) None of these

5) The intrinsic breakdown strength of solid dielectrics is about _____.
a) 50 to 100 kV/mm b) 500 to 1000 kV/mm
c) 5 to 10 kV/mm d) 1 to 5 kV/mm

6) In case of impulse thermal breakdown of solid insulating materials, the critical electric filed is _____.
a) proportional to critical absolute temperature
b) proportional to square of critical absolute temperature
c) proportional to square of T_0
d) None of the above is true

7) As compared to air the relative dielectric strength of Sulphur hexafluoride is nearly _____.

a) 1.5 times b) 2.5 times
c) 4.0 times d) 5.0 times

8) The necessary condition for performing sphere gap test is _____.

a) Should be between 0.7 and 0.8?
b) The length of gap should be smaller than radius of sphere
c) The length of gap should be 4 times greater than radius of sphere
d) An impulse wave of 50000 kV should be applied Wave front time

9) Impulse testing of transformers is done using _____.

a) Full wave standard impulse
b) Chopped wave standard impulse
c) Half wave standard impulse
d) only (a) and (b)

10) In routine test, the cable is tested by applying an ac voltage _____.

a) 2 times the rated value b) 2.5 times the rated value
c) 3 times the rated value d) 3.5 times the rated value

11) Sphere gap is used for measurement of _____.

a) a.c. voltage only
b) d.c. voltage only
c) Impulse voltage of any wave shape
d) Both (a) and (b)

12) While testing transformer oil for dielectric strength the spherical electrodes are placed in _____.

a) horizontal configuration
b) vertical configuration
c) any configuration
d) spherical electrodes are not used

13) For the measurement of radio interference voltages, the detector circuit is provided with a measuring device to measure:

a) Quasi-peak value b) Peak value
c) Average value d) All of the above

14) The velocity of a travelling wave through a cable of relative permittivity 9 is _____.

a) 9×10^8 m/sec b) 3×10^8 m/sec
c) 10^8 m/sec d) 2×10^8 m/sec

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (BTN07706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt Any Four. **16**

a) Write a short note on Gas/Vacuum as insulators.
b) Explain Townsends criterion for break-down with the help of 3 conditions.
c) Write a short note on conduction and breakdown in commercial liquids.
d) Explain surge voltages and their distribution.
e) Explain practical considerations in using gases for insulation purposes.

Q.3 Attempt Any Two. **12**

a) Derive the following expression by using Townsend second ionization coefficient.

$$n = \frac{n_0 e^{ad}}{1 - v(e^{ad} - 1)}$$

b) State & derive Paschen's law and equation along with Explanations of Vand Pd.
c) Explain electromechanical break-down and break-downs of solid dielectrics in practice.

Section - II

Q.4 Attempt Any Four. **16**

a) Write a short note on Hall generators.
b) Explain briefly various tests to be carried out on a bushing.
c) What is the necessary arrangement required for arrangement of insulators for test?
d) Explain resonant transformer its principle and operation.
e) Write a short note on grounding of impulse testing laboratories.

Q.5 Attempt Any Two. **12**

a) Define the terms impulse voltage, impulse flash over voltage, impulse puncture voltage, impulse ratio for flash over, impulse ratio for puncture.
b) Discuss various methods of measuring high d.c. and a.c. currents.
c) Discuss the Test facilities, activity and studies in high voltage laboratories.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (BTN07706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The necessary condition for performing sphere gap test is _____.
a) Should be between 0.7 and 0.8?
b) The length of gap should be smaller than radius of sphere
c) The length of gap should be 4 times greater than radius of sphere
d) An impulse wave of 50000 kV should be applied Wave front time

2) Impulse testing of transformers is done using _____.
a) Full wave standard impulse
b) Chopped wave standard impulse
c) Half wave standard impulse
d) only (a) and (b)

3) In routine test, the cable is tested by applying an ac voltage _____.
a) 2 times the rated value b) 2.5 times the rated value
c) 3 times the rated value d) 3.5 times the rated value

4) Sphere gap is used for measurement of _____.
a) a.c. voltage only
b) d.c. voltage only
c) Impulse voltage of any wave shape
d) Both (a) and (b)

5) While testing transformer oil for dielectric strength the spherical electrodes are placed in _____.
a) horizontal configuration
b) vertical configuration
c) any configuration
d) spherical electrodes are not used

6) For the measurement of radio interference voltages, the detector circuit is provided with a measuring device to measure:
a) Quasi-peak value b) Peak value
c) Average value d) All of the above

7) The velocity of a travelling wave through a cable of relative permittivity 9 is _____.

a) 9×10^8 m/sec
b) 3×10^8 m/sec
c) 10^8 m/sec
d) 2×10^8 m/sec

8) Liquids with solid impurities _____.

a) have higher dielectric strength
b) of large size have higher dielectric strength
c) has lower dielectric strength as compared to pure liquids
d) none of the above

9) The conventional direction of electric field is _____.

a) Positive to negative
b) Negative to positive
c) No specific direction
d) Direction cannot be determined

10) The requirement of gases for insulation purpose is _____.

a) High dielectric strength and thermal stability
b) High dielectric strength only
c) High thermal stability only
d) None of the above

11) For the high voltage conductors at high pressures, if the voltage is positive then the corona appears as a _____.

a) Uniform bluish white sheath
b) Reddish glowing spots
c) Uniform greenish spots
d) None of these

12) The intrinsic breakdown strength of solid dielectrics is about _____.

a) 50 to 100 kV/mm
b) 500 to 1000 kV/mm
c) 5 to 10 kV/mm
d) 1 to 5 kV/mm

13) In case of impulse thermal breakdown of solid insulating materials, the critical electric filed is _____.

a) proportional to critical absolute temperature
b) proportional to square of critical absolute temperature
c) proportional to square of T_0
d) None of the above is true

14) As compared to air the relative dielectric strength of Sulphur hexafluoride is nearly _____.

a) 1.5 times
b) 2.5 times
c) 4.0 times
d) 5.0 times

SLR-GF-468

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (BTN07706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt Any Four. **16**

a) Write a short note on Gas/Vacuum as insulators.
b) Explain Townsends criterion for break-down with the help of 3 conditions.
c) Write a short note on conduction and breakdown in commercial liquids.
d) Explain surge voltages and their distribution.
e) Explain practical considerations in using gases for insulation purposes.

Q.3 Attempt Any Two. **12**

a) Derive the following expression by using Townsend second ionization coefficient.

$$n = \frac{n_0 e^{ad}}{1 - v(e^{ad} - 1)}$$

b) State & derive Paschen's law and equation along with Explanations of Vand Pd.
c) Explain electromechanical break-down and break-downs of solid dielectrics in practice.

Section - II

Q.4 Attempt Any Four. **16**

a) Write a short note on Hall generators.
b) Explain briefly various tests to be carried out on a bushing.
c) What is the necessary arrangement required for arrangement of insulators for test?
d) Explain resonant transformer its principle and operation.
e) Write a short note on grounding of impulse testing laboratories.

Q.5 Attempt Any Two. **12**

a) Define the terms impulse voltage, impulse flash over voltage, impulse puncture voltage, impulse ratio for flash over, impulse ratio for puncture.
b) Discuss various methods of measuring high d.c. and a.c. currents.
c) Discuss the Test facilities, activity and studies in high voltage laboratories.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (BTN07706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Sphere gap is used for measurement of _____.
a) a.c. voltage only
b) d.c. voltage only
c) Impulse voltage of any wave shape
d) Both (a) and (b)

2) While testing transformer oil for dielectric strength the spherical electrodes are placed in _____.
a) horizontal configuration
b) vertical configuration
c) any configuration
d) spherical electrodes are not used

3) For the measurement of radio interference voltages, the detector circuit is provided with a measuring device to measure:
a) Quasi-peak value b) Peak value
c) Average value d) All of the above

4) The velocity of a travelling wave through a cable of relative permittivity 9 is _____.
a) 9×10^8 m/sec b) 3×10^8 m/sec
c) 10^8 m/sec d) 2×10^8 m/sec

5) Liquids with solid impurities _____.
a) have higher dielectric strength
b) of large size have higher dielectric strength
c) has lower dielectric strength as compared to pure liquids
d) none of the above

6) The conventional direction of electric field is _____.
a) Positive to negative
b) Negative to positive
c) No specific direction
d) Direction cannot be determined

7) The requirement of gases for insulation purpose is _____.
a) High dielectric strength and thermal stability
b) High dielectric strength only
c) High thermal stability only
d) None of the above

8) For the high voltage conductors at high pressures, if the voltage is positive then the corona appears as a _____.
a) Uniform bluish white sheath
b) Reddish glowing spots
c) Uniform greenish spots
d) None of these

9) The intrinsic breakdown strength of solid dielectrics is about _____.
a) 50 to 100 kV/mm
b) 500 to 1000 kV/mm
c) 5 to 10 kV/mm
d) 1 to 5 kV/mm

10) In case of impulse thermal breakdown of solid insulating materials, the critical electric filed is _____.
a) proportional to critical absolute temperature
b) proportional to square of critical absolute temperature
c) proportional to square of T_0
d) None of the above is true

11) As compared to air the relative dielectric strength of Sulphur hexafluoride is nearly _____.
a) 1.5 times
b) 2.5 times
c) 4.0 times
d) 5.0 times

12) The necessary condition for performing sphere gap test is _____.
a) Should be between 0.7 and 0.8?
b) The length of gap should be smaller than radius of sphere
c) The length of gap should be 4 times greater than radius of sphere
d) An impulse wave of 50000 kV should be applied Wave front time

13) Impulse testing of transformers is done using _____.
a) Full wave standard impulse
b) Chopped wave standard impulse
c) Half wave standard impulse
d) only (a) and (b)

14) In routine test, the cable is tested by applying an ac voltage _____.
a) 2 times the rated value
b) 2.5 times the rated value
c) 3 times the rated value
d) 3.5 times the rated value

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (BTN07706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt Any Four. **16**

a) Write a short note on Gas/Vacuum as insulators.
b) Explain Townsends criterion for break-down with the help of 3 conditions.
c) Write a short note on conduction and breakdown in commercial liquids.
d) Explain surge voltages and their distribution.
e) Explain practical considerations in using gases for insulation purposes.

Q.3 Attempt Any Two. **12**

a) Derive the following expression by using Townsend second ionization coefficient.

$$n = \frac{n_0 e^{ad}}{1 - v(e^{ad} - 1)}$$

b) State & derive Paschen's law and equation along with Explanations of Vand Pd.
c) Explain electromechanical break-down and break-downs of solid dielectrics in practice.

Section - II

Q.4 Attempt Any Four. **16**

a) Write a short note on Hall generators.
b) Explain briefly various tests to be carried out on a bushing.
c) What is the necessary arrangement required for arrangement of insulators for test?
d) Explain resonant transformer its principle and operation.
e) Write a short note on grounding of impulse testing laboratories.

Q.5 Attempt Any Two. **12**

a) Define the terms impulse voltage, impulse flash over voltage, impulse puncture voltage, impulse ratio for flash over, impulse ratio for puncture.
b) Discuss various methods of measuring high d.c. and a.c. currents.
c) Discuss the Test facilities, activity and studies in high voltage laboratories.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (BTN07706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) In case of impulse thermal breakdown of solid insulating materials, the critical electric filed is _____.
a) proportional to critical absolute temperature
b) proportional to square of critical absolute temperature
c) proportional to square of T_0
d) None of the above is true

2) As compared to air the relative dielectric strength of Sulphur hexafluoride is nearly _____.
a) 1.5 times b) 2.5 times
c) 4.0 times d) 5.0 times

3) The necessary condition for performing sphere gap test is _____.
a) Should be between 0.7 and 0.8?
b) The length of gap should be smaller than radius of sphere
c) The length of gap should be 4 times greater than radius of sphere
d) An impulse wave of 50000 kV should be applied Wave front time

4) Impulse testing of transformers is done using _____.
a) Full wave standard impulse
b) Chopped wave standard impulse
c) Half wave standard impulse
d) only (a) and (b)

5) In routine test, the cable is tested by applying an ac voltage _____.
a) 2 times the rated value b) 2.5 times the rated value
c) 3 times the rated value d) 3.5 times the rated value

6) Sphere gap is used for measurement of _____.
a) a.c. voltage only
b) d.c. voltage only
c) Impulse voltage of any wave shape
d) Both (a) and (b)

7) While testing transformer oil for dielectric strength the spherical electrodes are placed in _____.
a) horizontal configuration
b) vertical configuration
c) any configuration
d) spherical electrodes are not used

8) For the measurement of radio interference voltages, the detector circuit is provided with a measuring device to measure:
a) Quasi-peak value
b) Peak value
c) Average value
d) All of the above

9) The velocity of a travelling wave through a cable of relative permittivity 9 is _____.
a) 9×10^8 m/sec
b) 3×10^8 m/sec
c) 10^8 m/sec
d) 2×10^8 m/sec

10) Liquids with solid impurities _____.
a) have higher dielectric strength
b) of large size have higher dielectric strength
c) has lower dielectric strength as compared to pure liquids
d) none of the above

11) The conventional direction of electric field is _____.
a) Positive to negative
b) Negative to positive
c) No specific direction
d) Direction cannot be determined

12) The requirement of gases for insulation purpose is _____.
a) High dielectric strength and thermal stability
b) High dielectric strength only
c) High thermal stability only
d) None of the above

13) For the high voltage conductors at high pressures, if the voltage is positive then the corona appears as a _____.
a) Uniform bluish white sheath
b) Reddish glowing spots
c) Uniform greenish spots
d) None of these

14) The intrinsic breakdown strength of solid dielectrics is about _____.
a) 50 to 100 kV/mm
b) 500 to 1000 kV/mm
c) 5 to 10 kV/mm
d) 1 to 5 kV/mm

SLR-GF-468

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (BTN07706)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt Any Four. **16**

a) Write a short note on Gas/Vacuum as insulators.
b) Explain Townsends criterion for break-down with the help of 3 conditions.
c) Write a short note on conduction and breakdown in commercial liquids.
d) Explain surge voltages and their distribution.
e) Explain practical considerations in using gases for insulation purposes.

Q.3 Attempt Any Two. **12**

a) Derive the following expression by using Townsend second ionization coefficient.

$$n = \frac{n_0 e^{ad}}{1 - v(e^{ad} - 1)}$$

b) State & derive Paschen's law and equation along with Explanations of Vand Pd.
c) Explain electromechanical break-down and break-downs of solid dielectrics in practice.

Section - II

Q.4 Attempt Any Four. **16**

a) Write a short note on Hall generators.
b) Explain briefly various tests to be carried out on a bushing.
c) What is the necessary arrangement required for arrangement of insulators for test?
d) Explain resonant transformer its principle and operation.
e) Write a short note on grounding of impulse testing laboratories.

Q.5 Attempt Any Two. **12**

a) Define the terms impulse voltage, impulse flash over voltage, impulse puncture voltage, impulse ratio for flash over, impulse ratio for puncture.
b) Discuss various methods of measuring high d.c. and a.c. currents.
c) Discuss the Test facilities, activity and studies in high voltage laboratories.

SLR-GF-469

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions. **14**

1) The real power transfer over a line depends mainly on _____.
a) Power angle b) Sending end voltage V_s
c) Receiving end voltage V_r d) V_s - V_r

2) What is the main cause of voltage instability?
a) Generators b) Transformers
c) Load d) Line losses

3) Why are the series capacitors used?
a) Improve the voltage
b) Reduce the fault level
c) Compensate for line inductive reactance and improve the stability of the power system
d) Improves the power factor

4) Contingency definition gives list of components outages _____.
a) Which includes the contingencies with high probability of occurance
b) Which provide the contingency in decreasing order of severity
c) For outage simulation
d) Any of the above

5) Volatge stability problem normally occurs due to _____.
a) Heavily stressed system b) Medium stressed system
c) Low stressed system d) None of above

6) If a power system observes an accumulated time error, it should correct it by _____.
a) Increasing its own generation
b) Decreasing its own generation
c) Coordinating time error correction with other interconnected systems
d) Any of the above

7) Which among these phenomenon is/are associated with angle stability?
a) Imbalance between the two generator torque
b) Stability or synchronism is lost
c) Surplus energy is stored up in the rotating masses
d) All of these

8) Which among the following factors influence the cost of generation of electric power?
a) Generator efficiency b) Fuel cost
c) Transmission losses d) All of these

9) The most efficient unit is loaded first then the less efficient unit follow, is called _____.
a) Priority ordering b) Dynamic Programming
c) Patton's Security d) None of these

10) For economic operation, the generator with highest positive incremental transmission loss will operate at _____.
a) The lowest positive incremental cost of production
b) The lowest negative incremental cost of production
c) The highest positive incremental cost of production
d) None of the above

11) The rate of drop is frequency control inlet valve due to an increase in generation of power on prime mover is called _____.
a) Speed regulation b) Speed efficiency
c) Governer operation d) None of these

12) How is the voltage and frequency controlled in automatic generation control?
a) By controlling the excitation
b) By controlling the turbine action
c) Turbine speed control for voltage and excitation control for frequency
d) Excitation control for voltage and turbine speed control for voltage

13) In dynamic programming method the cost function F_N (X) represents _____.
a) Minimum Cost in Rs/hr of N MW by X number of unit
b) Minimum Cost in Rs/hr of X MW by N number of unit
c) Minimum Cost in Rs/hr of N MW by X^{th} unit
d) Minimum Cost in Rs/hr of X MW by N^{th} unit

14) What is the result of frequency instability?
a) Voltage collapse b) Frequency swings
c) Tripping of generating units d) Both (b) and (c)

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Solve any four: **16**

a) Explain the different thermal unit constrains.

b) Explain with a mathematical formulation, optimum generation allocation including transmission losses and penalty factor.

c) The incremental cost characteristics of two generators delivering 200 MW are as follows

$$\frac{dF1}{dP1} = 0.1P_1 + 20 \text{Rs/MWhr}$$

$$\frac{dF2}{dP2} = 0.2P_2 + 16 \text{Rs/MWhr}$$

Find out P1 and P2 for economic operation

d) What is mean by unit commitment? Explain the necessity of it.

e) Explain speed governing system with neat sketch.

Q.3 Solve any two. **12**

a) What are methods of unit commitment? With a suitable example explain the priority list method of unit commitment.

b) The fuel input per hour of plant 1& plant 2 are given as follows

$F_1 = 0.2P_1^2 + 40P +_1 120$ Rs/hr

$F_2 = 0.25P_2^2 + 30P +_2 150$ Rs/hr

Determine the economic operating schedule and corresponding cost of generation if the maximum & minimum loading on each unit is 100MW & 25MW.The shared by both units, demand is 180MW and transmission losses neglected. If load is equally shared by both units, determine saving obtained by loading the units as per equal incremental production cost.

c) Explain with illustrative transfer function of the load frequency control of single area system. Draw the block diagram for single area system.

Section-II

Q.4 Solve any four. **16**

a) Explain the different methods of improving voltage stability.

b) Explain specifications of load compensator.

c) Explain the difference between voltage angle and voltage stability.

d) Explain the necessity of reactive power compensation.

e) Explain system state classification with neat diagram.

Q.5 Solve any two. **12**

a) Write the advantages and dis-advantages of different types of compensating equipment for transmission system.

b) Explain the necessity of power system security.

c) Explain effective counter measures to prevent voltage instability & methods of improving voltage stability.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions. **14**

1) Which among the following factors influence the cost of generation of electric power?
a) Generator efficiency b) Fuel cost
c) Transmission losses d) All of these

2) The most efficient unit is loaded first then the less efficient unit follow, is called _____.
a) Priority ordering b) Dynamic Programming
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3) For economic operation, the generator with highest positive incremental transmission loss will operate at _____.
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b) The lowest negative incremental cost of production
c) The highest positive incremental cost of production
d) None of the above

4) The rate of drop is frequency control inlet valve due to an increase in generation of power on prime mover is called _____.
a) Speed regulation b) Speed efficiency
c) Governer operation d) None of these

5) How is the voltage and frequency controlled in automatic generation control?
a) By controlling the excitation
b) By controlling the turbine action
c) Turbine speed control for voltage and excitation control for frequency
d) Excitation control for voltage and turbine speed control for voltage

6) In dynamic programming method the cost function F_N (X) represents _____.
a) Minimum Cost in Rs/hr of N MW by X number of unit
b) Minimum Cost in Rs/hr of X MW by N number of unit
c) Minimum Cost in Rs/hr of N MW by X^{th} unit
d) Minimum Cost in Rs/hr of X MW by N^{th} unit

7) What is the result of frequency instability?
a) Voltage collapse b) Frequency swings
c) Tripping of generating units d) Both (b) and (c)

8) The real power transfer over a line depends mainly on _____.
a) Power angle
b) Sending end voltage V_s
c) Receiving end voltage V_r
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9) What is the main cause of voltage instability?
a) Generators
b) Transformers
c) Load
d) Line losses

10) Why are the series capacitors used?
a) Improve the voltage
b) Reduce the fault level
c) Compensate for line inductive reactance and improve the stability of the power system
d) Improves the power factor

11) Contingency definition gives list of components outages _____.
a) Which includes the contingencies with high probability of occurance
b) Which provide the contingency in decreasing order of severity
c) For outage simulation
d) Any of the above

12) Volatge stability problem normally occurs due to _____.
a) Heavily stressed system
b) Medium stressed system
c) Low stressed system
d) None of above

13) If a power system observes an accumulated time error, it should correct it by _____.
a) Increasing its own generation
b) Decreasing its own generation
c) Coordinating time error correction with other interconnected systems
d) Any of the above

14) Which among these phenomenon is/are associated with angle stability?
a) Imbalance between the two generator torque
b) Stability or synchronism is lost
c) Surplus energy is stored up in the rotating masses
d) All of these

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Solve any four: **16**

a) Explain the different thermal unit constrains.
b) Explain with a mathematical formulation, optimum generation allocation including transmission losses and penalty factor.
c) The incremental cost characteristics of two generators delivering 200 MW are as follows

$$\frac{dF1}{dP1} = 0.1P_1 + 20 \text{Rs/MWhr}$$

$$\frac{dF2}{dP2} = 0.2P_2 + 16 \text{Rs/MWhr}$$

Find out P1 and P2 for economic operation
d) What is mean by unit commitment? Explain the necessity of it.
e) Explain speed governing system with neat sketch.

Q.3 Solve any two. **12**

a) What are methods of unit commitment? With a suitable example explain the priority list method of unit commitment.
b) The fuel input per hour of plant 1& plant 2 are given as follows
$F_1 = 0.2P_1^2 + 40P +_1 120$ Rs/hr
$F_2 = 0.25P_2^2 + 30P +_2 150$ Rs/hr
Determine the economic operating schedule and corresponding cost of generation if the maximum & minimum loading on each unit is 100MW & 25MW.The shared by both units, demand is 180MW and transmission losses neglected. If load is equally shared by both units, determine saving obtained by loading the units as per equal incremental production cost.
c) Explain with illustrative transfer function of the load frequency control of single area system. Draw the block diagram for single area system.

Section-II

Q.4 Solve any four. **16**

a) Explain the different methods of improving voltage stability.
b) Explain specifications of load compensator.
c) Explain the difference between voltage angle and voltage stability.
d) Explain the necessity of reactive power compensation.
e) Explain system state classification with neat diagram.

Q.5 Solve any two. **12**

a) Write the advantages and dis-advantages of different types of compensating equipment for transmission system.

b) Explain the necessity of power system security.

c) Explain effective counter measures to prevent voltage instability & methods of improving voltage stability.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions. **14**

1) The rate of drop is frequency control inlet valve due to an increase in generation of power on prime mover is called _____.
a) Speed regulation b) Speed efficiency
c) Governer operation d) None of these

2) How is the voltage and frequency controlled in automatic generation control?
a) By controlling the excitation
b) By controlling the turbine action
c) Turbine speed control for voltage and excitation control for frequency
d) Excitation control for voltage and turbine speed control for voltage

3) In dynamic programming method the cost function F_N (X) represents _____.
a) Minimum Cost in Rs/hr of N MW by X number of unit
b) Minimum Cost in Rs/hr of X MW by N number of unit
c) Minimum Cost in Rs/hr of N MW by X^{th} unit
d) Minimum Cost in Rs/hr of X MW by N^{th} unit

4) What is the result of frequency instability?
a) Voltage collapse b) Frequency swings
c) Tripping of generating units d) Both (b) and (c)

5) The real power transfer over a line depends mainly on _____.
a) Power angle b) Sending end voltage V_s
c) Receiving end voltage V_r d) V_s - V_r

6) What is the main cause of voltage instability?
a) Generators b) Transformers
c) Load d) Line losses

7) Why are the series capacitors used?
a) Improve the voltage
b) Reduce the fault level
c) Compensate for line inductive reactance and improve the stability of the power system
d) Improves the power factor

8) Contingency definition gives list of components outages _____.
a) Which includes the contingencies with high probability of occurance
b) Which provide the contingency in decreasing order of severity
c) For outage simulation
d) Any of the above

9) Volatge stability problem normally occurs due to _____.
a) Heavily stressed system
b) Medium stressed system
c) Low stressed system
d) None of above

10) If a power system observes an accumulated time error, it should correct it by _____.
a) Increasing its own generation
b) Decreasing its own generation
c) Coordinating time error correction with other interconnected systems
d) Any of the above

11) Which among these phenomenon is/are associated with angle stability?
a) Imbalance between the two generator torque
b) Stability or synchronism is lost
c) Surplus energy is stored up in the rotating masses
d) All of these

12) Which among the following factors influence the cost of generation of electric power?
a) Generator efficiency
b) Fuel cost
c) Transmission losses
d) All of these

13) The most efficient unit is loaded first then the less efficient unit follow, is called _____.
a) Priority ordering
b) Dynamic Programming
c) Patton's Security
d) None of these

14) For economic operation, the generator with highest positive incremental transmission loss will operate at _____.
a) The lowest positive incremental cost of production
b) The lowest negative incremental cost of production
c) The highest positive incremental cost of production
d) None of the above

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Solve any four: **16**

a) Explain the different thermal unit constrains.

b) Explain with a mathematical formulation, optimum generation allocation including transmission losses and penalty factor.

c) The incremental cost characteristics of two generators delivering 200 MW are as follows

$$\frac{dF1}{dP1} = 0.1P_1 + 20 \text{Rs/MWhr}$$

$$\frac{dF2}{dP2} = 0.2P_2 + 16 \text{Rs/MWhr}$$

Find out P1 and P2 for economic operation

d) What is mean by unit commitment? Explain the necessity of it.

e) Explain speed governing system with neat sketch.

Q.3 Solve any two. **12**

a) What are methods of unit commitment? With a suitable example explain the priority list method of unit commitment.

b) The fuel input per hour of plant 1& plant 2 are given as follows

$F_1 = 0.2P_1^2 + 40P +_1 120$ Rs/hr

$F_2 = 0.25P_2^2 + 30P +_2 150$ Rs/hr

Determine the economic operating schedule and corresponding cost of generation if the maximum & minimum loading on each unit is 100MW & 25MW.The shared by both units, demand is 180MW and transmission losses neglected. If load is equally shared by both units, determine saving obtained by loading the units as per equal incremental production cost.

c) Explain with illustrative transfer function of the load frequency control of single area system. Draw the block diagram for single area system.

Section-II

Q.4 Solve any four. **16**

a) Explain the different methods of improving voltage stability.

b) Explain specifications of load compensator.

c) Explain the difference between voltage angle and voltage stability.

d) Explain the necessity of reactive power compensation.

e) Explain system state classification with neat diagram.

Q.5 Solve any two. **12**

a) Write the advantages and dis-advantages of different types of compensating equipment for transmission system.

b) Explain the necessity of power system security.

c) Explain effective counter measures to prevent voltage instability & methods of improving voltage stability.

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions. **14**

1) If a power system observes an accumulated time error, it should correct it by _____.
a) Increasing its own generation
b) Decreasing its own generation
c) Coordinating time error correction with other interconnected systems
d) Any of the above

2) Which among these phenomenon is/are associated with angle stability?
a) Imbalance between the two generator torque
b) Stability or synchronism is lost
c) Surplus energy is stored up in the rotating masses
d) All of these

3) Which among the following factors influence the cost of generation of electric power?
a) Generator efficiency b) Fuel cost
c) Transmission losses d) All of these

4) The most efficient unit is loaded first then the less efficient unit follow, is called _____.
a) Priority ordering b) Dynamic Programming
c) Patton's Security d) None of these

5) For economic operation, the generator with highest positive incremental transmission loss will operate at _____.
a) The lowest positive incremental cost of production
b) The lowest negative incremental cost of production
c) The highest positive incremental cost of production
d) None of the above

6) The rate of drop is frequency control inlet valve due to an increase in generation of power on prime mover is called _____.
a) Speed regulation b) Speed efficiency
c) Governer operation d) None of these

7) How is the voltage and frequency controlled in automatic generation control?
a) By controlling the excitation
b) By controlling the turbine action
c) Turbine speed control for voltage and excitation control for frequency
d) Excitation control for voltage and turbine speed control for voltage

8) In dynamic programming method the cost function F_N (X) represents _____.
a) Minimum Cost in Rs/hr of N MW by X number of unit
b) Minimum Cost in Rs/hr of X MW by N number of unit
c) Minimum Cost in Rs/hr of N MW by X^{th} unit
d) Minimum Cost in Rs/hr of X MW by N^{th} unit

9) What is the result of frequency instability?
a) Voltage collapse
b) Frequency swings
c) Tripping of generating units
d) Both (b) and (c)

10) The real power transfer over a line depends mainly on _____.
a) Power angle
b) Sending end voltage V_s
c) Receiving end voltage V_r
d) V_s - V_r

11) What is the main cause of voltage instability?
a) Generators
b) Transformers
c) Load
d) Line losses

12) Why are the series capacitors used?
a) Improve the voltage
b) Reduce the fault level
c) Compensate for line inductive reactance and improve the stability of the power system
d) Improves the power factor

13) Contingency definition gives list of components outages _____.
a) Which includes the contingencies with high probability of occurance
b) Which provide the contingency in decreasing order of severity
c) For outage simulation
d) Any of the above

14) Volatge stability problem normally occurs due to _____.
a) Heavily stressed system
b) Medium stressed system
c) Low stressed system
d) None of above

SLR-GF-469

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (BTN07707)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Solve any four: **16**

a) Explain the different thermal unit constrains.

b) Explain with a mathematical formulation, optimum generation allocation including transmission losses and penalty factor.

c) The incremental cost characteristics of two generators delivering 200 MW are as follows

$$\frac{dF1}{dP1} = 0.1P_1 + 20 \text{Rs/MWhr}$$

$$\frac{dF2}{dP2} = 0.2P_2 + 16 \text{Rs/MWhr}$$

Find out P1 and P2 for economic operation

d) What is mean by unit commitment? Explain the necessity of it.

e) Explain speed governing system with neat sketch.

Q.3 Solve any two. **12**

a) What are methods of unit commitment? With a suitable example explain the priority list method of unit commitment.

b) The fuel input per hour of plant 1& plant 2 are given as follows

$F_1 = 0.2P_1^2 + 40P +_1 120$ Rs/hr

$F_2 = 0.25P_2^2 + 30P +_2 150$ Rs/hr

Determine the economic operating schedule and corresponding cost of generation if the maximum & minimum loading on each unit is 100MW & 25MW.The shared by both units, demand is 180MW and transmission losses neglected. If load is equally shared by both units, determine saving obtained by loading the units as per equal incremental production cost.

c) Explain with illustrative transfer function of the load frequency control of single area system. Draw the block diagram for single area system.

Section-II

Q.4 Solve any four. **16**

a) Explain the different methods of improving voltage stability.

b) Explain specifications of load compensator.

c) Explain the difference between voltage angle and voltage stability.

d) Explain the necessity of reactive power compensation.

e) Explain system state classification with neat diagram.

Q.5 Solve any two. **12**

a) Write the advantages and dis-advantages of different types of compensating equipment for transmission system.

b) Explain the necessity of power system security.

c) Explain effective counter measures to prevent voltage instability & methods of improving voltage stability.

SLR-GF-470

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (BTN07708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. 14

1) The standard form of RTU is _____.
a) Reverse Terminal Unit b) Remote Terminal Unit
c) Reverse Unit d) None

2) The programmable logic controllers are used in _____.
a) Manufacturing b) Automation
c) Both a and b d) None of the above

3) What are the components that make the programmable logic controller work?
a) Input and output module b) CPU
c) Power supply d) All of the above

4) How many levels does complex SCADA system have?
a) One b) Two
c) Three d) Four

5) In fixed programmable logic controller _____.
a) Input is fixed b) Output is fixed
c) Both a and b d) None of the above

6) The PLC was invented by _____.
a) Bills Gates b) Dick Morley
c) Bill Landis d) Tod Cunningham

7) PLC stands for _____.
a) Programmable Logo Controller
b) Programmed Latching Circuit
c) Programmable Logic Controller
d) Pneumatic Latching Circuit

8) SCADA system is _____.
a) Software
b) Hardware
c) Combination of Software and Hardware
d) None of the above

9) OSI stands for _____.
a) Open system interconnection b) Operating system interface
c) Optical service implementation d) None of these

10) The important function of SCADA is _____.
a) Data Acquisition b) Alarm processing
c) Information Display d) All the above

11) The current generation of SCADA uses _____ architecture.
a) Networked b) Monolithic
c) Distributed d) All of the above

12) PLCs are designed for use in the control of a wide variety of Manufacturing machines and systems _____.
a) Special-Purpose Industrial Computers
b) Personal computers
c) Electromechanical systems
d) All of the above

13) Data Collection and Data Transfer is the function of _____.
a) SCADA software b) SCADA hardware
c) a) and b) d) None of the above

14) _____ who monitor the SCADA system and perform supervisory control functions for the remote plant.
a) Operator b) MTU
c) RTU d) Communications

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (BTN07708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Solve Any Four. **16**
- **a)** Explain the history of PLC.
- **b)** Explain construction of PLC ladder diagram.
- **c)** Explain analog PLC operation.
- **d)** Write a short note on PLC input and output model.
- **e)** Explain advantages and disadvantages of PLC.

Q.3 Solve Any Two. **12**
- **a)** Explain the PID control for continuous process operation with suitable example.
- **b)** Explain the boolean logic and relay logic and analysis of rungs.
- **c)** Explain Power Supplies in PLC also explain selection criteria for PLC.

Section-II

Q.4 Solve Any Four. **16**
- **a)** Explain the definition and basics of SCADA.
- **b)** Explain SCADA Configuration and Energy management system.
- **c)** Explain the overview of Open Systems Interconnections.
- **d)** Explain the SCADA system security issues.
- **e)** Explain desirable properties of SCADA System.

Q.5 Solve Any Two. **12**
- **a)** Write the security implementation of the SCADA protocols.
- **b)** Explain the architecture of Human Machine Interface.
- **c)** Explain SCADA systems in Petroleum Refining Process critical infrastructure.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (BTN07708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) SCADA system is _____.
a) Software
b) Hardware
c) Combination of Software and Hardware
d) None of the above

2) OSI stands for _____.
a) Open system interconnection b) Operating system interface
c) Optical service implementation d) None of these

3) The important function of SCADA is _____.
a) Data Acquisition b) Alarm processing
c) Information Display d) All the above

4) The current generation of SCADA uses _____ architecture.
a) Networked b) Monolithic
c) Distributed d) All of the above

5) PLCs are designed for use in the control of a wide variety of Manufacturing machines and systems _____.
a) Special-Purpose Industrial Computers
b) Personal computers
c) Electromechanical systems
d) All of the above

6) Data Collection and Data Transfer is the function of _____.
a) SCADA software b) SCADA hardware
c) a) and b) d) None of the above

7) _____ who monitor the SCADA system and perform supervisory control functions for the remote plant.
a) Operator b) MTU
c) RTU d) Communications

8) The standard form of RTU is _____.
a) Reverse Terminal Unit b) Remote Terminal Unit
c) Reverse Unit d) None

9) The programmable logic controllers are used in _____.
a) Manufacturing b) Automation
c) Both a and b d) None of the above

10) What are the components that make the programmable logic controller work?
a) Input and output module b) CPU
c) Power supply d) All of the above

11) How many levels does complex SCADA system have?
a) One b) Two
c) Three d) Four

12) In fixed programmable logic controller _____.
a) Input is fixed b) Output is fixed
c) Both a and b d) None of the above

13) The PLC was invented by _____.
a) Bills Gates b) Dick Morley
c) Bill Landis d) Tod Cunningham

14) PLC stands for _____.
a) Programmable Logo Controller
b) Programmed Latching Circuit
c) Programmable Logic Controller
d) Pneumatic Latching Circuit

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (BTN07708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Solve Any Four. **16**
- **a)** Explain the history of PLC.
- **b)** Explain construction of PLC ladder diagram.
- **c)** Explain analog PLC operation.
- **d)** Write a short note on PLC input and output model.
- **e)** Explain advantages and disadvantages of PLC.

Q.3 Solve Any Two. **12**
- **a)** Explain the PID control for continuous process operation with suitable example.
- **b)** Explain the boolean logic and relay logic and analysis of rungs.
- **c)** Explain Power Supplies in PLC also explain selection criteria for PLC.

Section-II

Q.4 Solve Any Four. **16**
- **a)** Explain the definition and basics of SCADA.
- **b)** Explain SCADA Configuration and Energy management system.
- **c)** Explain the overview of Open Systems Interconnections.
- **d)** Explain the SCADA system security issues.
- **e)** Explain desirable properties of SCADA System.

Q.5 Solve Any Two. **12**
- **a)** Write the security implementation of the SCADA protocols.
- **b)** Explain the architecture of Human Machine Interface.
- **c)** Explain SCADA systems in Petroleum Refining Process critical infrastructure.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (BTN07708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) The current generation of SCADA uses _____ architecture.
a) Networked b) Monolithic
c) Distributed d) All of the above

2) PLCs are designed for use in the control of a wide variety of Manufacturing machines and systems _____.
a) Special-Purpose Industrial Computers
b) Personal computers
c) Electromechanical systems
d) All of the above

3) Data Collection and Data Transfer is the function of _____.
a) SCADA software b) SCADA hardware
c) a) and b) d) None of the above

4) _____ who monitor the SCADA system and perform supervisory control functions for the remote plant.
a) Operator b) MTU
c) RTU d) Communications

5) The standard form of RTU is _____.
a) Reverse Terminal Unit b) Remote Terminal Unit
c) Reverse Unit d) None

6) The programmable logic controllers are used in _____.
a) Manufacturing b) Automation
c) Both a and b d) None of the above

7) What are the components that make the programmable logic controller work?
a) Input and output module b) CPU
c) Power supply d) All of the above

8) How many levels does complex SCADA system have?
a) One b) Two
c) Three d) Four

9) In fixed programmable logic controller _____.
a) Input is fixed
b) Output is fixed
c) Both a and b
d) None of the above

10) The PLC was invented by _____.
a) Bills Gates
b) Dick Morley
c) Bill Landis
d) Tod Cunningham

11) PLC stands for _____.
a) Programmable Logo Controller
b) Programmed Latching Circuit
c) Programmable Logic Controller
d) Pneumatic Latching Circuit

12) SCADA system is _____.
a) Software
b) Hardware
c) Combination of Software and Hardware
d) None of the above

13) OSI stands for _____.
a) Open system interconnection
b) Operating system interface
c) Optical service implementation
d) None of these

14) The important function of SCADA is _____.
a) Data Acquisition
b) Alarm processing
c) Information Display
d) All the above

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (BTN07708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Solve Any Four. **16**
- **a)** Explain the history of PLC.
- **b)** Explain construction of PLC ladder diagram.
- **c)** Explain analog PLC operation.
- **d)** Write a short note on PLC input and output model.
- **e)** Explain advantages and disadvantages of PLC.

Q.3 Solve Any Two. **12**
- **a)** Explain the PID control for continuous process operation with suitable example.
- **b)** Explain the boolean logic and relay logic and analysis of rungs.
- **c)** Explain Power Supplies in PLC also explain selection criteria for PLC.

Section-II

Q.4 Solve Any Four. **16**
- **a)** Explain the definition and basics of SCADA.
- **b)** Explain SCADA Configuration and Energy management system.
- **c)** Explain the overview of Open Systems Interconnections.
- **d)** Explain the SCADA system security issues.
- **e)** Explain desirable properties of SCADA System.

Q.5 Solve Any Two. **12**
- **a)** Write the security implementation of the SCADA protocols.
- **b)** Explain the architecture of Human Machine Interface.
- **c)** Explain SCADA systems in Petroleum Refining Process critical infrastructure.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (BTN07708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) The PLC was invented by _____.
a) Bills Gates b) Dick Morley
c) Bill Landis d) Tod Cunningham

2) PLC stands for _____.
a) Programmable Logo Controller
b) Programmed Latching Circuit
c) Programmable Logic Controller
d) Pneumatic Latching Circuit

3) SCADA system is _____.
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b) Hardware
c) Combination of Software and Hardware
d) None of the above

4) OSI stands for _____.
a) Open system interconnection b) Operating system interface
c) Optical service implementation d) None of these

5) The important function of SCADA is _____.
a) Data Acquisition b) Alarm processing
c) Information Display d) All the above

6) The current generation of SCADA uses _____ architecture.
a) Networked b) Monolithic
c) Distributed d) All of the above

7) PLCs are designed for use in the control of a wide variety of Manufacturing machines and systems _____.
a) Special-Purpose Industrial Computers
b) Personal computers
c) Electromechanical systems
d) All of the above

8) Data Collection and Data Transfer is the function of _____.
a) SCADA software b) SCADA hardware
c) a) and b) d) None of the above

9) _____ who monitor the SCADA system and perform supervisory control functions for the remote plant.
a) Operator b) MTU
c) RTU d) Communications

10) The standard form of RTU is _____.
a) Reverse Terminal Unit b) Remote Terminal Unit
c) Reverse Unit d) None

11) The programmable logic controllers are used in _____.
a) Manufacturing b) Automation
c) Both a and b d) None of the above

12) What are the components that make the programmable logic controller work?
a) Input and output module b) CPU
c) Power supply d) All of the above

13) How many levels does complex SCADA system have?
a) One b) Two
c) Three d) Four

14) In fixed programmable logic controller _____.
a) Input is fixed b) Output is fixed
c) Both a and b d) None of the above

SLR-GF-470

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (BTN07708)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section-I

Q.2 Solve Any Four. **16**
- **a)** Explain the history of PLC.
- **b)** Explain construction of PLC ladder diagram.
- **c)** Explain analog PLC operation.
- **d)** Write a short note on PLC input and output model.
- **e)** Explain advantages and disadvantages of PLC.

Q.3 Solve Any Two. **12**
- **a)** Explain the PID control for continuous process operation with suitable example.
- **b)** Explain the boolean logic and relay logic and analysis of rungs.
- **c)** Explain Power Supplies in PLC also explain selection criteria for PLC.

Section-II

Q.4 Solve Any Four. **16**
- **a)** Explain the definition and basics of SCADA.
- **b)** Explain SCADA Configuration and Energy management system.
- **c)** Explain the overview of Open Systems Interconnections.
- **d)** Explain the SCADA system security issues.
- **e)** Explain desirable properties of SCADA System.

Q.5 Solve Any Two. **12**
- **a)** Write the security implementation of the SCADA protocols.
- **b)** Explain the architecture of Human Machine Interface.
- **c)** Explain SCADA systems in Petroleum Refining Process critical infrastructure.

SLR-GF-471

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (BTN07709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) A temperature control system is known as _____.
a) Process control system b) Servomechanism
c) Cascade control system d) None of the above

2) Which of the following work is done by General purpose robot?
a) Part picking b) Welding
c) Spray painting d) All of the above

3) The following drive is used for lighter class of Robot _____.
a) Pneumatic drive b) Hydraulic drive
c) Electric drive d) All of the above

4) State model representation is possible using _____.
a) Physical variable b) Phase variables
c) Canonical state variables d) All of the mentioned

5) What is a cascade control system?
a) A control system that uses multiple controllers to manage the process
b) A control system that uses a single controller to manage the process
c) A control system that operates without input
d) A control system that uses predetermined settings to adjust the process

6) In the modem controller, derivative action is applied only to the:
a) Error b) Measurement
c) Setpoint d) Integral circuit

7) What is a split-range control system?
a) A control system that uses multiple sensors to measure the process variable
b) A control system that uses a single controller to manage multiple processes
c) A control system that uses multiple controllers to manage the process
d) A control system that uses a single controller to manage multiple variables

8) The basic components of robot are:
a) The mechanical linkage
b) Sensors and controllers
c) User interface and power conversion unit
d) All of the mentioned

9) Automatic controllers operate on the difference between set point and measurement, which is called _____.
a) Offset b) Bias
c) Error d) Feedback

10) The main objective of a process control is _____.
a) to control physical parameters
b) to control mechanical parameters
c) to control optical parameters
d) to control electrical parameters

11) The input of a controller is _____.
a) Sensed signal
b) Error signal
c) Desired variable value
d) Signal of fixed amplitude not dependent on desired variable value

12) A properly designed feedforward control system:
a) Should be applied to every process
b) Should be employed when its use can be justified economically and technologically
c) Is always easier to adjust than a feedback system
d) Will always result in more economical process operation

13) Smallest change which a sensor can detect is _____.
a) Resolution b) Accuracy
c) Precision d) Scale

14) Motors used for electronic actuator drives _____.
a) AC servo motors b) DC servo motors
c) Stepper motors d) All of the mentioned

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (BTN07709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain Ratio control with neat sketch.
b) Explain operation of PI control with neat sketch.
c) Explain overriding control with block diagram.
d) Explain selective control with block diagram.
e) Write a note on Controller Tuning.

Q.3 Attempt any two of the following. **12**

a) Explain cascade control and split range control with block diagram.
b) What are the different methods available for tuning of PID controller? Explain relay feedback method in details.
c) Explain Control of Systems with Inverse Response.

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain laws of robotics.
b) Write a short note on Inverse kinematics of constrained and Redundant robots.
c) Write in detail History and Terminology of Robotics.
d) Explain proximity and distance measuring sensors with neat sketch.
e) Explain advantages & dis-advantages of robot.

Q.5 Attempt any two of the following **12**

a) What is purpose of sensors? Explain internal and external sensors.
b) Explain in details Tractrix based approach for fixed and free robots and multi- body system
c) List different types of Actuators and Explain any two in details.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (BTN07709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The basic components of robot are:
a) The mechanical linkage
b) Sensors and controllers
c) User interface and power conversion unit
d) All of the mentioned

2) Automatic controllers operate on the difference between set point and measurement, which is called _____.
a) Offset b) Bias
c) Error d) Feedback

3) The main objective of a process control is _____.
a) to control physical parameters
b) to control mechanical parameters
c) to control optical parameters
d) to control electrical parameters

4) The input of a controller is _____.
a) Sensed signal
b) Error signal
c) Desired variable value
d) Signal of fixed amplitude not dependent on desired variable value

5) A properly designed feedforward control system:
a) Should be applied to every process
b) Should be employed when its use can be justified economically and technologically
c) Is always easier to adjust than a feedback system
d) Will always result in more economical process operation

6) Smallest change which a sensor can detect is _____.
a) Resolution b) Accuracy
c) Precision d) Scale

7) Motors used for electronic actuator drives _____.
a) AC servo motors b) DC servo motors
c) Stepper motors d) All of the mentioned

8) A temperature control system is known as _____.
a) Process control system b) Servomechanism
c) Cascade control system d) None of the above

9) Which of the following work is done by General purpose robot?
a) Part picking b) Welding
c) Spray painting d) All of the above

10) The following drive is used for lighter class of Robot _____.
a) Pneumatic drive b) Hydraulic drive
c) Electric drive d) All of the above

11) State model representation is possible using _____.
a) Physical variable b) Phase variables
c) Canonical state variables d) All of the mentioned

12) What is a cascade control system?
a) A control system that uses multiple controllers to manage the process
b) A control system that uses a single controller to manage the process
c) A control system that operates without input
d) A control system that uses predetermined settings to adjust the process

13) In the modem controller, derivative action is applied only to the:
a) Error b) Measurement
c) Setpoint d) Integral circuit

14) What is a split-range control system?
a) A control system that uses multiple sensors to measure the process variable
b) A control system that uses a single controller to manage multiple processes
c) A control system that uses multiple controllers to manage the process
d) A control system that uses a single controller to manage multiple variables

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (BTN07709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain Ratio control with neat sketch.
b) Explain operation of PI control with neat sketch.
c) Explain overriding control with block diagram.
d) Explain selective control with block diagram.
e) Write a note on Controller Tuning.

Q.3 Attempt any two of the following. **12**

a) Explain cascade control and split range control with block diagram.
b) What are the different methods available for tuning of PID controller? Explain relay feedback method in details.
c) Explain Control of Systems with Inverse Response.

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain laws of robotics.
b) Write a short note on Inverse kinematics of constrained and Redundant robots.
c) Write in detail History and Terminology of Robotics.
d) Explain proximity and distance measuring sensors with neat sketch.
e) Explain advantages & dis-advantages of robot.

Q.5 Attempt any two of the following **12**

a) What is purpose of sensors? Explain internal and external sensors.
b) Explain in details Tractrix based approach for fixed and free robots and multi- body system
c) List different types of Actuators and Explain any two in details.

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Seat No.		Set	R

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (BTN07709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The input of a controller is _____.
a) Sensed signal
b) Error signal
c) Desired variable value
d) Signal of fixed amplitude not dependent on desired variable value

2) A properly designed feedforward control system:
a) Should be applied to every process
b) Should be employed when its use can be justified economically and technologically
c) Is always easier to adjust than a feedback system
d) Will always result in more economical process operation

3) Smallest change which a sensor can detect is _____.
a) Resolution b) Accuracy
c) Precision d) Scale

4) Motors used for electronic actuator drives _____.
a) AC servo motors b) DC servo motors
c) Stepper motors d) All of the mentioned

5) A temperature control system is known as _____.
a) Process control system b) Servomechanism
c) Cascade control system d) None of the above

6) Which of the following work is done by General purpose robot?
a) Part picking b) Welding
c) Spray painting d) All of the above

7) The following drive is used for lighter class of Robot _____.
a) Pneumatic drive b) Hydraulic drive
c) Electric drive d) All of the above

8) State model representation is possible using _____.
a) Physical variable b) Phase variables
c) Canonical state variables d) All of the mentioned

9) What is a cascade control system?
- a) A control system that uses multiple controllers to manage the process
- b) A control system that uses a single controller to manage the process
- c) A control system that operates without input
- d) A control system that uses predetermined settings to adjust the process

10) In the modem controller, derivative action is applied only to the:
- a) Error
- b) Measurement
- c) Setpoint
- d) Integral circuit

11) What is a split-range control system?
- a) A control system that uses multiple sensors to measure the process variable
- b) A control system that uses a single controller to manage multiple processes
- c) A control system that uses multiple controllers to manage the process
- d) A control system that uses a single controller to manage multiple variables

12) The basic components of robot are:
- a) The mechanical linkage
- b) Sensors and controllers
- c) User interface and power conversion unit
- d) All of the mentioned

13) Automatic controllers operate on the difference between set point and measurement, which is called _____.
- a) Offset
- b) Bias
- c) Error
- d) Feedback

14) The main objective of a process control is _____.
- a) to control physical parameters
- b) to control mechanical parameters
- c) to control optical parameters
- d) to control electrical parameters

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (BTN07709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following. **16**

a) Explain Ratio control with neat sketch.
b) Explain operation of PI control with neat sketch.
c) Explain overriding control with block diagram.
d) Explain selective control with block diagram.
e) Write a note on Controller Tuning.

Q.3 Attempt any two of the following. **12**

a) Explain cascade control and split range control with block diagram.
b) What are the different methods available for tuning of PID controller? Explain relay feedback method in details.
c) Explain Control of Systems with Inverse Response.

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain laws of robotics.
b) Write a short note on Inverse kinematics of constrained and Redundant robots.
c) Write in detail History and Terminology of Robotics.
d) Explain proximity and distance measuring sensors with neat sketch.
e) Explain advantages & dis-advantages of robot.

Q.5 Attempt any two of the following **12**

a) What is purpose of sensors? Explain internal and external sensors.
b) Explain in details Tractrix based approach for fixed and free robots and multi- body system
c) List different types of Actuators and Explain any two in details.

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (BTN07709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) In the modem controller, derivative action is applied only to the:
a) Error b) Measurement
c) Setpoint d) Integral circuit

2) What is a split-range control system?
a) A control system that uses multiple sensors to measure the process variable
b) A control system that uses a single controller to manage multiple processes
c) A control system that uses multiple controllers to manage the process
d) A control system that uses a single controller to manage multiple variables

3) The basic components of robot are:
a) The mechanical linkage
b) Sensors and controllers
c) User interface and power conversion unit
d) All of the mentioned

4) Automatic controllers operate on the difference between set point and measurement, which is called _____.
a) Offset b) Bias
c) Error d) Feedback

5) The main objective of a process control is _____.
a) to control physical parameters
b) to control mechanical parameters
c) to control optical parameters
d) to control electrical parameters

6) The input of a controller is _____.
a) Sensed signal
b) Error signal
c) Desired variable value
d) Signal of fixed amplitude not dependent on desired variable value

7) A properly designed feedforward control system:
- a) Should be applied to every process
- b) Should be employed when its use can be justified economically and technologically
- c) Is always easier to adjust than a feedback system
- d) Will always result in more economical process operation

8) Smallest change which a sensor can detect is _____.
- a) Resolution
- b) Accuracy
- c) Precision
- d) Scale

9) Motors used for electronic actuator drives _____.
- a) AC servo motors
- b) DC servo motors
- c) Stepper motors
- d) All of the mentioned

10) A temperature control system is known as _____.
- a) Process control system
- b) Servomechanism
- c) Cascade control system
- d) None of the above

11) Which of the following work is done by General purpose robot?
- a) Part picking
- b) Welding
- c) Spray painting
- d) All of the above

12) The following drive is used for lighter class of Robot _____.
- a) Pneumatic drive
- b) Hydraulic drive
- c) Electric drive
- d) All of the above

13) State model representation is possible using _____.
- a) Physical variable
- b) Phase variables
- c) Canonical state variables
- d) All of the mentioned

14) What is a cascade control system?
- a) A control system that uses multiple controllers to manage the process
- b) A control system that uses a single controller to manage the process
- c) A control system that operates without input
- d) A control system that uses predetermined settings to adjust the process

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Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (BTN07709)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following. **16**
- **a)** Explain Ratio control with neat sketch.
- **b)** Explain operation of PI control with neat sketch.
- **c)** Explain overriding control with block diagram.
- **d)** Explain selective control with block diagram.
- **e)** Write a note on Controller Tuning.

Q.3 Attempt any two of the following. **12**
- **a)** Explain cascade control and split range control with block diagram.
- **b)** What are the different methods available for tuning of PID controller? Explain relay feedback method in details.
- **c)** Explain Control of Systems with Inverse Response.

Section – II

Q.4 Attempt any four of the following. **16**
- **a)** Explain laws of robotics.
- **b)** Write a short note on Inverse kinematics of constrained and Redundant robots.
- **c)** Write in detail History and Terminology of Robotics.
- **d)** Explain proximity and distance measuring sensors with neat sketch.
- **e)** Explain advantages & dis-advantages of robot.

Q.5 Attempt any two of the following **12**
- **a)** What is purpose of sensors? Explain internal and external sensors.
- **b)** Explain in details Tractrix based approach for fixed and free robots and multi- body system
- **c)** List different types of Actuators and Explain any two in details.

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
ELECTRICAL ENGINEERING
Neural Networks & Fuzzy Logic Control (BTN07710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Consider data when, if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Fuzzy logic is usually represented as _____.
a) IF-THEN-ELSE rules
b) IF-THEN rules
c) Both IF-THEN-ELSE rules & IF-THEN rules
d) None of the mentioned

2) Fuzzy Logic can be implemented in?
a) Hardware b) Software
c) Both a & b d) None of above

3) What is ART in neural networks?
a) automatic resonance theory b) artificial resonance theory
c) adaptive resonance theory d) none of the mentioned

4) Positive sign of weight indicates?
a) excitatory input
b) inhibitory input
c) can be either excitatory or inhibitory as such
d) none of the mentioned

5) What is true regarding backpropagation rule?
a) it is also called generalized delta rule
b) error in output is propagated backwards only to determine weight updates
c) there is no feedback of signal at any stage
d) all of the mentioned

6) Heteroassociative memory is also known as?
a) unidirectional memory
b) bidirectional memory
c) multidirectional associative memory
d) temporal associative memory

7) What consist of Boltzmann machine?
a) fully connected network with both hidden and visible units
b) asynchronous operation
c) stochastic update
d) all of the mentioned

8) What is the nature of general feedback given in competitive neural networks?
a) self excitatory
b) self inhibitory
c) self excitatory or self inhibitory
d) none of the mentioned

9) In Hopfield network with symmetric weights, energy at each state may?
a) Increase b) decrease
c) decrease or remain same d) decrease or increase

10) Which of the following is perceptron?
a) a neural network that contains feedback
b) an auto-associative neural network
c) a double layer auto-associative neural network
d) a single layer feed-forward neural network with pre-processing

11) What is auto association task in neural networks?
a) predicting the future inputs
b) related to storage & recall task
c) find relation between 2 consecutive inputs
d) all of the above

12) $A \cup (A \cap B) = A$ represents
a) Law of excluded middle b) Law of absorption
c) Demorgans law d) Law of contradiction

13) Which of the following is true for neural networks?
a) It has a set of nodes and connections
b) Each node computes it's weighted input
c) A node could be in an excited state or non-excited state
d) All of these

14) The output at each node is called _____.
a) Node value b) weight
c) Neurons d) axons

Seat No.	

Set **P**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
ELECTRICAL ENGINEERING
Neural Networks & Fuzzy Logic Control (BTN07710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Consider data whenever necessary.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Describe McCulloch-Pitts neuron model in detail.
b) Compare & Contrast the difference between biological neuron & artificial neural network?
c) State & Prove perceptron convergence theorem?
d) Explain in detail any application of neural network.
e) Differentiate between fuzzy sets and crisp sets.

Q.3 Attempt the following (Any Two) **12**

a) Explain the working of a Hopfield network with a neat sketch of its architecture?
b) Explain Boltzmann machine.
c) Explain in detail about Hetero-Associative memory & Auto-Associative memory?

Section – II

Q.4 Attempt the following (Any Four) **16**

a) Explain fuzzy system architecture.
b) Differentiate fuzzy and neural systems.
c) Draw and explain basic architecture of adaptive resonance theory.
d) Explain briefly the back propagation technique.
e) Explain Neocognitron in neural network in detail.

Q.5 Attempt the following (Any Two) **12**

a) What is associative memory? Explain associative memory with example?
b) What are counter propagation networks (CPN)? Explain any one application.
c) Explain Kohonen- self organizing maps.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
ELECTRICAL ENGINEERING
Neural Networks & Fuzzy Logic Control (BTN07710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Consider data when, if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What is the nature of general feedback given in competitive neural networks?
a) self excitatory
b) self inhibitory
c) self excitatory or self inhibitory
d) none of the mentioned

2) In Hopfield network with symmetric weights, energy at each state may?
a) Increase b) decrease
c) decrease or remain same d) decrease or increase

3) Which of the following is perceptron?
a) a neural network that contains feedback
b) an auto-associative neural network
c) a double layer auto-associative neural network
d) a single layer feed-forward neural network with pre-processing

4) What is auto association task in neural networks?
a) predicting the future inputs
b) related to storage & recall task
c) find relation between 2 consecutive inputs
d) all of the above

5) $A \cup (A \cap B) = A$ represents
a) Law of excluded middle b) Law of absorption
c) Demorgans law d) Law of contradiction

6) Which of the following is true for neural networks?
a) It has a set of nodes and connections
b) Each node computes it's weighted input
c) A node could be in an excited state or non-excited state
d) All of these

7) The output at each node is called _____.
a) Node value b) weight
c) Neurons d) axons

8) Fuzzy logic is usually represented as _____.
a) IF-THEN-ELSE rules
b) IF-THEN rules
c) Both IF-THEN-ELSE rules & IF-THEN rules
d) None of the mentioned

9) Fuzzy Logic can be implemented in?
a) Hardware
b) Software
c) Both a & b
d) None of above

10) What is ART in neural networks?
a) automatic resonance theory
b) artificial resonance theory
c) adaptive resonance theory
d) none of the mentioned

11) Positive sign of weight indicates?
a) excitatory input
b) inhibitory input
c) can be either excitatory or inhibitory as such
d) none of the mentioned

12) What is true regarding backpropagation rule?
a) it is also called generalized delta rule
b) error in output is propagated backwards only to determine weight updates
c) there is no feedback of signal at any stage
d) all of the mentioned

13) Heteroassociative memory is also known as?
a) unidirectional memory
b) bidirectional memory
c) multidirectional associative memory
d) temporal associative memory

14) What consist of Boltzmann machine?
a) fully connected network with both hidden and visible units
b) asynchronous operation
c) stochastic update
d) all of the mentioned

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Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
ELECTRICAL ENGINEERING
Neural Networks & Fuzzy Logic Control (BTN07710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Consider data whenever necessary.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Describe McCulloch-Pitts neuron model in detail.
b) Compare & Contrast the difference between biological neuron & artificial neural network?
c) State & Prove perceptron convergence theorem?
d) Explain in detail any application of neural network.
e) Differentiate between fuzzy sets and crisp sets.

Q.3 Attempt the following (Any Two) **12**

a) Explain the working of a Hopfield network with a neat sketch of its architecture?
b) Explain Boltzmann machine.
c) Explain in detail about Hetero-Associative memory & Auto-Associative memory?

Section – II

Q.4 Attempt the following (Any Four) **16**

a) Explain fuzzy system architecture.
b) Differentiate fuzzy and neural systems.
c) Draw and explain basic architecture of adaptive resonance theory.
d) Explain briefly the back propagation technique.
e) Explain Neocognitron in neural network in detail.

Q.5 Attempt the following (Any Two) **12**

a) What is associative memory? Explain associative memory with example?
b) What are counter propagation networks (CPN)? Explain any one application.
c) Explain Kohonen- self organizing maps.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
ELECTRICAL ENGINEERING
Neural Networks & Fuzzy Logic Control (BTN07710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Consider data when, if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) What is auto association task in neural networks?
a) predicting the future inputs
b) related to storage & recall task
c) find relation between 2 consecutive inputs
d) all of the above

2) $A \cup (A \cap B) = A$ represents
a) Law of excluded middle b) Law of absorption
c) Demorgans law d) Law of contradiction

3) Which of the following is true for neural networks?
a) It has a set of nodes and connections
b) Each node computes it's weighted input
c) A node could be in an excited state or non-excited state
d) All of these

4) The output at each node is called _____.
a) Node value b) weight
c) Neurons d) axons

5) Fuzzy logic is usually represented as _____.
a) IF-THEN-ELSE rules
b) IF-THEN rules
c) Both IF-THEN-ELSE rules & IF-THEN rules
d) None of the mentioned

6) Fuzzy Logic can be implemented in?
a) Hardware b) Software
c) Both a & b d) None of above

7) What is ART in neural networks?
a) automatic resonance theory b) artificial resonance theory
c) adaptive resonance theory d) none of the mentioned

8) Positive sign of weight indicates?
a) excitatory input
b) inhibitory input
c) can be either excitatory or inhibitory as such
d) none of the mentioned

9) What is true regarding backpropagation rule?
a) it is also called generalized delta rule
b) error in output is propagated backwards only to determine weight updates
c) there is no feedback of signal at any stage
d) all of the mentioned

10) Heteroassociative memory is also known as?
a) unidirectional memory
b) bidirectional memory
c) multidirectional associative memory
d) temporal associative memory

11) What consist of Boltzmann machine?
a) fully connected network with both hidden and visible units
b) asynchronous operation
c) stochastic update
d) all of the mentioned

12) What is the nature of general feedback given in competitive neural networks?
a) self excitatory
b) self inhibitory
c) self excitatory or self inhibitory
d) none of the mentioned

13) In Hopfield network with symmetric weights, energy at each state may?
a) Increase
b) decrease
c) decrease or remain same
d) decrease or increase

14) Which of the following is perceptron?
a) a neural network that contains feedback
b) an auto-associative neural network
c) a double layer auto-associative neural network
d) a single layer feed-forward neural network with pre-processing

SLR-GF-472

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
ELECTRICAL ENGINEERING
Neural Networks & Fuzzy Logic Control (BTN07710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Consider data whenever necessary.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Describe McCulloch-Pitts neuron model in detail.
b) Compare & Contrast the difference between biological neuron & artificial neural network?
c) State & Prove perceptron convergence theorem?
d) Explain in detail any application of neural network.
e) Differentiate between fuzzy sets and crisp sets.

Q.3 Attempt the following (Any Two) **12**

a) Explain the working of a Hopfield network with a neat sketch of its architecture?
b) Explain Boltzmann machine.
c) Explain in detail about Hetero-Associative memory & Auto-Associative memory?

Section – II

Q.4 Attempt the following (Any Four) **16**

a) Explain fuzzy system architecture.
b) Differentiate fuzzy and neural systems.
c) Draw and explain basic architecture of adaptive resonance theory.
d) Explain briefly the back propagation technique.
e) Explain Neocognitron in neural network in detail.

Q.5 Attempt the following (Any Two) **12**

a) What is associative memory? Explain associative memory with example?
b) What are counter propagation networks (CPN)? Explain any one application.
c) Explain Kohonen- self organizing maps.

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
ELECTRICAL ENGINEERING
Neural Networks & Fuzzy Logic Control (BTN07710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Consider data when, if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Heteroassociative memory is also known as?
a) unidirectional memory
b) bidirectional memory
c) multidirectional associative memory
d) temporal associative memory

2) What consist of Boltzmann machine?
a) fully connected network with both hidden and visible units
b) asynchronous operation
c) stochastic update
d) all of the mentioned

3) What is the nature of general feedback given in competitive neural networks?
a) self excitatory
b) self inhibitory
c) self excitatory or self inhibitory
d) none of the mentioned

4) In Hopfield network with symmetric weights, energy at each state may?
a) Increase b) decrease
c) decrease or remain same d) decrease or increase

5) Which of the following is perceptron?
a) a neural network that contains feedback
b) an auto-associative neural network
c) a double layer auto-associative neural network
d) a single layer feed-forward neural network with pre-processing

6) What is auto association task in neural networks?
a) predicting the future inputs
b) related to storage & recall task
c) find relation between 2 consecutive inputs
d) all of the above

7) $A \cup (A \cap B) = A$ represents
a) Law of excluded middle
b) Law of absorption
c) Demorgans law
d) Law of contradiction

8) Which of the following is true for neural networks?
a) It has a set of nodes and connections
b) Each node computes it's weighted input
c) A node could be in an excited state or non-excited state
d) All of these

9) The output at each node is called _____.
a) Node value
b) weight
c) Neurons
d) axons

10) Fuzzy logic is usually represented as _____.
a) IF-THEN-ELSE rules
b) IF-THEN rules
c) Both IF-THEN-ELSE rules & IF-THEN rules
d) None of the mentioned

11) Fuzzy Logic can be implemented in?
a) Hardware
b) Software
c) Both a & b
d) None of above

12) What is ART in neural networks?
a) automatic resonance theory
b) artificial resonance theory
c) adaptive resonance theory
d) none of the mentioned

13) Positive sign of weight indicates?
a) excitatory input
b) inhibitory input
c) can be either excitatory or inhibitory as such
d) none of the mentioned

14) What is true regarding backpropagation rule?
a) it is also called generalized delta rule
b) error in output is propagated backwards only to determine weight updates
c) there is no feedback of signal at any stage
d) all of the mentioned

SLR-GF-472

Seat No.	

Set S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
ELECTRICAL ENGINEERING
Neural Networks & Fuzzy Logic Control (BTN07710)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Consider data whenever necessary.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) Describe McCulloch-Pitts neuron model in detail.
b) Compare & Contrast the difference between biological neuron & artificial neural network?
c) State & Prove perceptron convergence theorem?
d) Explain in detail any application of neural network.
e) Differentiate between fuzzy sets and crisp sets.

Q.3 Attempt the following (Any Two) **12**

a) Explain the working of a Hopfield network with a neat sketch of its architecture?
b) Explain Boltzmann machine.
c) Explain in detail about Hetero-Associative memory & Auto-Associative memory?

Section – II

Q.4 Attempt the following (Any Four) **16**

a) Explain fuzzy system architecture.
b) Differentiate fuzzy and neural systems.
c) Draw and explain basic architecture of adaptive resonance theory.
d) Explain briefly the back propagation technique.
e) Explain Neocognitron in neural network in detail.

Q.5 Attempt the following (Any Two) **12**

a) What is associative memory? Explain associative memory with example?
b) What are counter propagation networks (CPN)? Explain any one application.
c) Explain Kohonen- self organizing maps.

SLR-GF-473

Seat No.		Set	P

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following is not the characteristic of the existing grid?
a) Manual Monitoring b) Failures and Blackout
c) Self-healing d) One way communication

2) Which of the following is not the characteristic of the existing grid?
a) Automated Metering Instrument
b) Alternate Metering Instrument
c) Advance Metering Infrastructure
d) Advance Metering Instalment

3) Which of the following types of loading pattern are prone to cause voltage Instability in the micro grid?
a) Constant power loads b) Voltage dependent loads
c) Frequency dependent loads d) All of the above

4) The control of Micro grid is performed by the _____.
a) SCADA System b) PLC System
c) Smart grid System d) None of the above

5) The data retrieval from smart meters and decision making should be as quick as possible by using which software?
a) ETAP b) EMS
c) SCADA d) PWA

6) The following types of inverter may not be suitable for grid connected mode _____.
a) Grid feeding converters b) Grid forming converters
c) Grid supporting converters d) None of the above

7) Smart Grid goals include all but the following:
a) Potentially Reducing Our Carbon Foot-print
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures to become American
d) Maintaining Grid Affordability

8) The transmission network is typically operated by _____.
a) Load Dispatch Centers
b) Distribution Company
c) Regional Load Dispatch Center
d) Generation Company

9) The Main difference between Conventional Grid & Smart Grid.
a) Unidirectional Flow of Power
b) Unidirectional and bidirectional flow of power and information respectively.
c) Bidirectional flow of information
d) Bidirectional & Unidirectional flow of power

10) Energy Services Interface (ESI) communicates with other domain via:
a) AMI infrastructure or Internet
b) Home Area Network
c) Local Area Network
d) None of the above

11) How much power is lost in the grid due to resistance?
a) 2-5 %
b) 7-10%
c) 11-14%
d) 15-18%

12) The simplest form of conventional grid is _____.
a) Smart grid
b) Radial grid
c) Linear grid
d) Interconnected grid

13) PQM stands for _____.
a) Power Quantity Management
b) Power Quality Management
c) Power Quantity Measurement
d) Power Quality Measurement

14) Smart meter is an important element in building the smart grid. These advanced meters _____.
a) Measure electricity usage in real time.
b) Can send data to and from electric companies and their customers,
c) Allows companies to give customers more information about their electricity usage and communicate current electricity prices.
d) All of the above

SLR-GF-473

Seat No.	

Set P

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any four of the following. **16**

a) Define Smart Grid and Give its Functions.
b) Explain Working of IED with Diagram.
c) Explain PMU and its importance in Smart Grid.
d) What are the Challenge Being faced for electrifying India's rural Community?
e) What are the Six Key Component of Smart Grid.

Q.3 Solve any two of the following. **12**

a) What is a Virtual Power Plant? How can a virtual power plant system contribute to a more sustainable world?
b) What is Geographic Information System (GIS)? Explain the components of GIS.
c) Describe the opportunities and challenges relate to smart grid.

Section - II

Q.4 Solve any four of the following. **16**

a) Describe the power quality issues of grid connected renewable energy resources.
b) Write a note on 'Web based Power Quality Monitoring'.
c) What is Difference between OMS and DMS?
d) Why power electronics technology is important in the grid connected system?
e) What are the methods of energy management?

Q.5 Solve any two of the following. **12**

a) What are the Visualization Techniques used in Smart Grid system?
b) What is the difference between smart grid and power grid?
c) Describe the concept of power quality conditioners related to smart grid.

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Seat No.		Set	Q

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The transmission network is typically operated by _____.
a) Load Dispatch Centers
b) Distribution Company
c) Regional Load Dispatch Center
d) Generation Company

2) The Main difference between Conventional Grid & Smart Grid.
a) Unidirectional Flow of Power
b) Unidirectional and bidirectional flow of power and information respectively.
c) Bidirectional flow of information
d) Bidirectional & Unidirectional flow of power

3) Energy Services Interface (ESI) communicates with other domain via:
a) AMI infrastructure or Internet b) Home Area Network
c) Local Area Network d) None of the above

4) How much power is lost in the grid due to resistance?
a) 2-5 % b) 7-10%
c) 11-14% d) 15-18%

5) The simplest form of conventional grid is _____.
a) Smart grid b) Radial grid
c) Linear grid d) Interconnected grid

6) PQM stands for _____.
a) Power Quantity Management b) Power Quality Management
c) Power Quantity Measurement d) Power Quality Measurement

7) Smart meter is an important element in building the smart grid. These advanced meters _____.
a) Measure electricity usage in real time.
b) Can send data to and from electric companies and their customers,
c) Allows companies to give customers more information about their electricity usage and communicate current electricity prices.
d) All of the above

8) Which of the following is not the characteristic of the existing grid?
a) Manual Monitoring
b) Failures and Blackout
c) Self-healing
d) One way communication

9) Which of the following is not the characteristic of the existing grid?
a) Automated Metering Instrument
b) Alternate Metering Instrument
c) Advance Metering Infrastructure
d) Advance Metering Instalment

10) Which of the following types of loading pattern are prone to cause voltage Instability in the micro grid?
a) Constant power loads
b) Voltage dependent loads
c) Frequency dependent loads
d) All of the above

11) The control of Micro grid is performed by the _____.
a) SCADA System
b) PLC System
c) Smart grid System
d) None of the above

12) The data retrieval from smart meters and decision making should be as quick as possible by using which software?
a) ETAP
b) EMS
c) SCADA
d) PWA

13) The following types of inverter may not be suitable for grid connected mode _____.
a) Grid feeding converters
b) Grid forming converters
c) Grid supporting converters
d) None of the above

14) Smart Grid goals include all but the following:
a) Potentially Reducing Our Carbon Foot-print
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures to become American
d) Maintaining Grid Affordability

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Seat No.	

Set Q

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Tuesday, 02-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any four of the following. **16**

a) Define Smart Grid and Give its Functions.
b) Explain Working of IED with Diagram.
c) Explain PMU and its importance in Smart Grid.
d) What are the Challenge Being faced for electrifying India's rural Community?
e) What are the Six Key Component of Smart Grid.

Q.3 Solve any two of the following. **12**

a) What is a Virtual Power Plant? How can a virtual power plant system contribute to a more sustainable world?
b) What is Geographic Information System (GIS)? Explain the components of GIS.
c) Describe the opportunities and challenges relate to smart grid.

Section - II

Q.4 Solve any four of the following. **16**

a) Describe the power quality issues of grid connected renewable energy resources.
b) Write a note on 'Web based Power Quality Monitoring'.
c) What is Difference between OMS and DMS?
d) Why power electronics technology is important in the grid connected system?
e) What are the methods of energy management?

Q.5 Solve any two of the following. **12**

a) What are the Visualization Techniques used in Smart Grid system?
b) What is the difference between smart grid and power grid?
c) Describe the concept of power quality conditioners related to smart grid.

Seat No.	

Set **R**

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) How much power is lost in the grid due to resistance?
a) 2-5 % b) 7-10%
c) 11-14% d) 15-18%

2) The simplest form of conventional grid is _____.
a) Smart grid b) Radial grid
c) Linear grid d) Interconnected grid

3) PQM stands for _____.
a) Power Quantity Management b) Power Quality Management
c) Power Quantity Measurement d) Power Quality Measurement

4) Smart meter is an important element in building the smart grid. These advanced meters _____.
a) Measure electricity usage in real time.
b) Can send data to and from electric companies and their customers,
c) Allows companies to give customers more information about their electricity usage and communicate current electricity prices.
d) All of the above

5) Which of the following is not the characteristic of the existing grid?
a) Manual Monitoring b) Failures and Blackout
c) Self-healing d) One way communication

6) Which of the following is not the characteristic of the existing grid?
a) Automated Metering Instrument
b) Alternate Metering Instrument
c) Advance Metering Infrastructure
d) Advance Metering Instalment

7) Which of the following types of loading pattern are prone to cause voltage Instability in the micro grid?
a) Constant power loads b) Voltage dependent loads
c) Frequency dependent loads d) All of the above

8) The control of Micro grid is performed by the _____.
a) SCADA System b) PLC System
c) Smart grid System d) None of the above

9) The data retrieval from smart meters and decision making should be as quick as possible by using which software?
a) ETAP b) EMS
c) SCADA d) PWA

10) The following types of inverter may not be suitable for grid connected mode _____.
a) Grid feeding converters b) Grid forming converters
c) Grid supporting converters d) None of the above

11) Smart Grid goals include all but the following:
a) Potentially Reducing Our Carbon Foot-print
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures to become American
d) Maintaining Grid Affordability

12) The transmission network is typically operated by _____.
a) Load Dispatch Centers
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c) Regional Load Dispatch Center
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13) The Main difference between Conventional Grid & Smart Grid.
a) Unidirectional Flow of Power
b) Unidirectional and bidirectional flow of power and information respectively.
c) Bidirectional flow of information
d) Bidirectional & Unidirectional flow of power

14) Energy Services Interface (ESI) communicates with other domain via:
a) AMI infrastructure or Internet b) Home Area Network
c) Local Area Network d) None of the above

Seat No.	

Set **R**

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Tuesday, 02-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any four of the following. **16**

a) Define Smart Grid and Give its Functions.
b) Explain Working of IED with Diagram.
c) Explain PMU and its importance in Smart Grid.
d) What are the Challenge Being faced for electrifying India's rural Community?
e) What are the Six Key Component of Smart Grid.

Q.3 Solve any two of the following. **12**

a) What is a Virtual Power Plant? How can a virtual power plant system contribute to a more sustainable world?
b) What is Geographic Information System (GIS)? Explain the components of GIS.
c) Describe the opportunities and challenges relate to smart grid.

Section - II

Q.4 Solve any four of the following. **16**

a) Describe the power quality issues of grid connected renewable energy resources.
b) Write a note on 'Web based Power Quality Monitoring'.
c) What is Difference between OMS and DMS?
d) Why power electronics technology is important in the grid connected system?
e) What are the methods of energy management?

Q.5 Solve any two of the following. **12**

a) What are the Visualization Techniques used in Smart Grid system?
b) What is the difference between smart grid and power grid?
c) Describe the concept of power quality conditioners related to smart grid.

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Seat No.		Set	S

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The following types of inverter may not be suitable for grid connected mode _____.
a) Grid feeding converters b) Grid forming converters
c) Grid supporting converters d) None of the above

2) Smart Grid goals include all but the following:
a) Potentially Reducing Our Carbon Foot-print
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures to become American
d) Maintaining Grid Affordability

3) The transmission network is typically operated by _____.
a) Load Dispatch Centers
b) Distribution Company
c) Regional Load Dispatch Center
d) Generation Company

4) The Main difference between Conventional Grid & Smart Grid.
a) Unidirectional Flow of Power
b) Unidirectional and bidirectional flow of power and information respectively.
c) Bidirectional flow of information
d) Bidirectional & Unidirectional flow of power

5) Energy Services Interface (ESI) communicates with other domain via:
a) AMI infrastructure or Internet b) Home Area Network
c) Local Area Network d) None of the above

6) How much power is lost in the grid due to resistance?
a) 2-5 % b) 7-10%
c) 11-14% d) 15-18%

7) The simplest form of conventional grid is _____.
a) Smart grid b) Radial grid
c) Linear grid d) Interconnected grid

8) PQM stands for _____.
a) Power Quantity Management b) Power Quality Management
c) Power Quantity Measurement d) Power Quality Measurement

9) Smart meter is an important element in building the smart grid. These advanced meters _____.
a) Measure electricity usage in real time.
b) Can send data to and from electric companies and their customers,
c) Allows companies to give customers more information about their electricity usage and communicate current electricity prices.
d) All of the above

10) Which of the following is not the characteristic of the existing grid?
a) Manual Monitoring b) Failures and Blackout
c) Self-healing d) One way communication

11) Which of the following is not the characteristic of the existing grid?
a) Automated Metering Instrument
b) Alternate Metering Instrument
c) Advance Metering Infrastructure
d) Advance Metering Instalment

12) Which of the following types of loading pattern are prone to cause voltage Instability in the micro grid?
a) Constant power loads b) Voltage dependent loads
c) Frequency dependent loads d) All of the above

13) The control of Micro grid is performed by the _____.
a) SCADA System b) PLC System
c) Smart grid System d) None of the above

14) The data retrieval from smart meters and decision making should be as quick as possible by using which software?
a) ETAP b) EMS
c) SCADA d) PWA

SLR-GF-473

Seat No.		Set	S

Fourth Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (BTN07721)

Day & Date: Tuesday, 02-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Solve any four of the following. **16**
- **a)** Define Smart Grid and Give its Functions.
- **b)** Explain Working of IED with Diagram.
- **c)** Explain PMU and its importance in Smart Grid.
- **d)** What are the Challenge Being faced for electrifying India's rural Community?
- **e)** What are the Six Key Component of Smart Grid.

Q.3 Solve any two of the following. **12**
- **a)** What is a Virtual Power Plant? How can a virtual power plant system contribute to a more sustainable world?
- **b)** What is Geographic Information System (GIS)? Explain the components of GIS.
- **c)** Describe the opportunities and challenges relate to smart grid.

Section - II

Q.4 Solve any four of the following. **16**
- **a)** Describe the power quality issues of grid connected renewable energy resources.
- **b)** Write a note on 'Web based Power Quality Monitoring'.
- **c)** What is Difference between OMS and DMS?
- **d)** Why power electronics technology is important in the grid connected system?
- **e)** What are the methods of energy management?

Q.5 Solve any two of the following. **12**
- **a)** What are the Visualization Techniques used in Smart Grid system?
- **b)** What is the difference between smart grid and power grid?
- **c)** Describe the concept of power quality conditioners related to smart grid.

SLR-GF-474

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The load forecasting is method to predict _____.
a) Past loads b) Present loads
c) Future loads d) None of these

2) Depending upon chosen time period of study load forecasting may be classified as _____.
a) Short term b) Medium term
c) Long term d) All of these

3) Factors affecting load forecasting are _____.
a) Weather condition b) Special events
c) Class of customers d) All of these

4) Load forecasting methods are
a) Extrapolation b) Correlation
c) Combination of a and b d) All of the above

5) The extrapolation method is based on the _____.
a) Curve fitting to present data
b) Extrapolation of past data
c) Extrapolation of present data
d) Curve fitting to previous data available

6) Distribution SCADA means _____.
a) data acquisition b) man - machine interface
c) data archiving d) all of the above

7) Distribution Automation means _____.
a) substation Automation b) feeder Automation
c) consumer side Automation d) all of the above

8) Distribution automation (DA) is a family of technologies, including _____.
   a) sensors
   b) processors
   c) information and communication networks
   d) All of above

9) In order to have a lower cost of electrical energy generation
   a) The load factor and diversity factor should be low
   b) The load factor should be low but diversity factor should be high
   c) The load factor should be high but diversity factor should be low
   d) The load factor and diversity factor should be high

10) The objectives of energy management includes _____.
   a) Minimising energy costs
   b) Minimising waste
   c) Minimising environmental degradation
   d) All the above

11) The demand side management can be achieved by the technique of ____
   a) Time of day pricing and metering
   b) Multi - utility power exchange model
   c) Load management
   d) All of these

12) Planning for power systems is essentially a projection of _____.
   a) how the system should grow over a specific period of time
   b) judgment about the future loads and the size of investment in generating capacity additions
   c) transmission facilities expansion and reinforcements
   d) All above

13) Transmission efficiency of line increases with the _____.
   a) Decrease in power factor and voltage
   b) Increase in power factor and voltage
   c) Increase in power factor but Decrease in voltage
   d) Increase in Voltage but Decrease in power factor

14) Energy conservation means _____.
   a) Using Energy more efficiently
   b) Reducing wastage of Energy
   c) New investment in more efficient equipment's
   d) All above

SLR-GF-474

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Define Load Forecasting and Explain the factors affecting load forecasting.
b) Describe different methodologies used for load forecasting.
c) Elaborate weather sensitive forecasting.
d) What are the Objectives of system planning and Explain factors affecting the system planning.
e) Explain Long term Planning.

Q.3 Solve any two **12**

a) What do you mean by Distribution Automation? Explain tools of distribution automation.
b) Explain Integrated resource planning.
c) Explain What do you mean by system planning State the objectives of system planning.

Section – II

Q.4 Solve any four **16**

a) What are the Objectives of transmission planning?
b) Explain system and load point indices for composite system reliability.
c) Explain the Data required for Composite System Reliability and quality.
d) Discuss the possibilities of energy conservation in various sectors.
e) Describe the following terms of load control
i) Peak clipping
ii) Valley filling
iii) Load shedding
iv) Strategic energy conservation

Q.5 Solve any two. **12**

a) Explain New algorithms and methods relating to Load Forecasting.
b) Explain New algorithms and methods relating to DSM.
c) Explain the concept of demand side management. Discuss the steps involved in DSM planning.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Distribution automation (DA) is a family of technologies, including _____.
a) sensors
b) processors
c) information and communication networks
d) All of above

2) In order to have a lower cost of electrical energy generation
a) The load factor and diversity factor should be low
b) The load factor should be low but diversity factor should be high
c) The load factor should be high but diversity factor should be low
d) The load factor and diversity factor should be high

3) The objectives of energy management includes _____.
a) Minimising energy costs
b) Minimising waste
c) Minimising environmental degradation
d) All the above

4) The demand side management can be achieved by the technique of ____
a) Time of day pricing and metering
b) Multi - utility power exchange model
c) Load management
d) All of these

5) Planning for power systems is essentially a projection of _____.
a) how the system should grow over a specific period of time
b) judgment about the future loads and the size of investment in generating capacity additions
c) transmission facilities expansion and reinforcements
d) All above

6) Transmission efficiency of line increases with the _____.
a) Decrease in power factor and voltage
b) Increase in power factor and voltage
c) Increase in power factor but Decrease in voltage
d) Increase in Voltage but Decrease in power factor

7) Energy conservation means _____.
a) Using Energy more efficiently
b) Reducing wastage of Energy
c) New investment in more efficient equipment's
d) All above

8) The load forecasting is method to predict _____.
a) Past loads b) Present loads
c) Future loads d) None of these

9) Depending upon chosen time period of study load forecasting may be classified as _____.
a) Short term b) Medium term
c) Long term d) All of these

10) Factors affecting load forecasting are _____.
a) Weather condition b) Special events
c) Class of customers d) All of these

11) Load forecasting methods are
a) Extrapolation b) Correlation
c) Combination of a and b d) All of the above

12) The extrapolation method is based on the _____.
a) Curve fitting to present data
b) Extrapolation of past data
c) Extrapolation of present data
d) Curve fitting to previous data available

13) Distribution SCADA means _____.
a) data acquisition b) man - machine interface
c) data archiving d) all of the above

14) Distribution Automation means _____.
a) substation Automation b) feeder Automation
c) consumer side Automation d) all of the above

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Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Define Load Forecasting and Explain the factors affecting load forecasting.
b) Describe different methodologies used for load forecasting.
c) Elaborate weather sensitive forecasting.
d) What are the Objectives of system planning and Explain factors affecting the system planning.
e) Explain Long term Planning.

Q.3 Solve any two **12**

a) What do you mean by Distribution Automation? Explain tools of distribution automation.
b) Explain Integrated resource planning.
c) Explain What do you mean by system planning State the objectives of system planning.

Section – II

Q.4 Solve any four **16**

a) What are the Objectives of transmission planning?
b) Explain system and load point indices for composite system reliability.
c) Explain the Data required for Composite System Reliability and quality.
d) Discuss the possibilities of energy conservation in various sectors.
e) Describe the following terms of load control
i) Peak clipping
ii) Valley filling
iii) Load shedding
iv) Strategic energy conservation

Q.5 Solve any two. **12**

a) Explain New algorithms and methods relating to Load Forecasting.
b) Explain New algorithms and methods relating to DSM.
c) Explain the concept of demand side management. Discuss the steps involved in DSM planning.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The demand side management can be achieved by the technique of ____
a) Time of day pricing and metering
b) Multi - utility power exchange model
c) Load management
d) All of these

2) Planning for power systems is essentially a projection of _____.
a) how the system should grow over a specific period of time
b) judgment about the future loads and the size of investment in generating capacity additions
c) transmission facilities expansion and reinforcements
d) All above

3) Transmission efficiency of line increases with the _____.
a) Decrease in power factor and voltage
b) Increase in power factor and voltage
c) Increase in power factor but Decrease in voltage
d) Increase in Voltage but Decrease in power factor

4) Energy conservation means _____.
a) Using Energy more efficiently
b) Reducing wastage of Energy
c) New investment in more efficient equipment's
d) All above

5) The load forecasting is method to predict _____.
a) Past loads b) Present loads
c) Future loads d) None of these

6) Depending upon chosen time period of study load forecasting may be classified as _____.
a) Short term b) Medium term
c) Long term d) All of these

7) Factors affecting load forecasting are _____.
a) Weather condition b) Special events
c) Class of customers d) All of these

8) Load forecasting methods are
a) Extrapolation b) Correlation
c) Combination of a and b d) All of the above

9) The extrapolation method is based on the _____.
a) Curve fitting to present data
b) Extrapolation of past data
c) Extrapolation of present data
d) Curve fitting to previous data available

10) Distribution SCADA means _____.
a) data acquisition b) man - machine interface
c) data archiving d) all of the above

11) Distribution Automation means _____.
a) substation Automation b) feeder Automation
c) consumer side Automation d) all of the above

12) Distribution automation (DA) is a family of technologies, including _____.
a) sensors
b) processors
c) information and communication networks
d) All of above

13) In order to have a lower cost of electrical energy generation
a) The load factor and diversity factor should be low
b) The load factor should be low but diversity factor should be high
c) The load factor should be high but diversity factor should be low
d) The load factor and diversity factor should be high

14) The objectives of energy management includes _____.
a) Minimising energy costs
b) Minimising waste
c) Minimising environmental degradation
d) All the above

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Define Load Forecasting and Explain the factors affecting load forecasting.
b) Describe different methodologies used for load forecasting.
c) Elaborate weather sensitive forecasting.
d) What are the Objectives of system planning and Explain factors affecting the system planning.
e) Explain Long term Planning.

Q.3 Solve any two **12**

a) What do you mean by Distribution Automation? Explain tools of distribution automation.
b) Explain Integrated resource planning.
c) Explain What do you mean by system planning State the objectives of system planning.

Section – II

Q.4 Solve any four **16**

a) What are the Objectives of transmission planning?
b) Explain system and load point indices for composite system reliability.
c) Explain the Data required for Composite System Reliability and quality.
d) Discuss the possibilities of energy conservation in various sectors.
e) Describe the following terms of load control
i) Peak clipping
ii) Valley filling
iii) Load shedding
iv) Strategic energy conservation

Q.5 Solve any two. **12**

a) Explain New algorithms and methods relating to Load Forecasting.
b) Explain New algorithms and methods relating to DSM.
c) Explain the concept of demand side management. Discuss the steps involved in DSM planning.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Distribution SCADA means _____.
a) data acquisition b) man - machine interface
c) data archiving d) all of the above

2) Distribution Automation means _____.
a) substation Automation b) feeder Automation
c) consumer side Automation d) all of the above

3) Distribution automation (DA) is a family of technologies, including _____.
a) sensors
b) processors
c) information and communication networks
d) All of above

4) In order to have a lower cost of electrical energy generation
a) The load factor and diversity factor should be low
b) The load factor should be low but diversity factor should be high
c) The load factor should be high but diversity factor should be low
d) The load factor and diversity factor should be high

5) The objectives of energy management includes _____.
a) Minimising energy costs
b) Minimising waste
c) Minimising environmental degradation
d) All the above

6) The demand side management can be achieved by the technique of ____
a) Time of day pricing and metering
b) Multi - utility power exchange model
c) Load management
d) All of these

7) Planning for power systems is essentially a projection of _____.
a) how the system should grow over a specific period of time
b) judgment about the future loads and the size of investment in generating capacity additions
c) transmission facilities expansion and reinforcements
d) All above

8) Transmission efficiency of line increases with the _____.
a) Decrease in power factor and voltage
b) Increase in power factor and voltage
c) Increase in power factor but Decrease in voltage
d) Increase in Voltage but Decrease in power factor

9) Energy conservation means _____.
a) Using Energy more efficiently
b) Reducing wastage of Energy
c) New investment in more efficient equipment's
d) All above

10) The load forecasting is method to predict _____.
a) Past loads b) Present loads
c) Future loads d) None of these

11) Depending upon chosen time period of study load forecasting may be classified as _____.
a) Short term b) Medium term
c) Long term d) All of these

12) Factors affecting load forecasting are _____.
a) Weather condition b) Special events
c) Class of customers d) All of these

13) Load forecasting methods are
a) Extrapolation b) Correlation
c) Combination of a and b d) All of the above

14) The extrapolation method is based on the _____.
a) Curve fitting to present data
b) Extrapolation of past data
c) Extrapolation of present data
d) Curve fitting to previous data available

SLR-GF-474

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (BTN07711)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Define Load Forecasting and Explain the factors affecting load forecasting.
b) Describe different methodologies used for load forecasting.
c) Elaborate weather sensitive forecasting.
d) What are the Objectives of system planning and Explain factors affecting the system planning.
e) Explain Long term Planning.

Q.3 Solve any two **12**

a) What do you mean by Distribution Automation? Explain tools of distribution automation.
b) Explain Integrated resource planning.
c) Explain What do you mean by system planning State the objectives of system planning.

Section – II

Q.4 Solve any four **16**

a) What are the Objectives of transmission planning?
b) Explain system and load point indices for composite system reliability.
c) Explain the Data required for Composite System Reliability and quality.
d) Discuss the possibilities of energy conservation in various sectors.
e) Describe the following terms of load control
i) Peak clipping
ii) Valley filling
iii) Load shedding
iv) Strategic energy conservation

Q.5 Solve any two. **12**

a) Explain New algorithms and methods relating to Load Forecasting.
b) Explain New algorithms and methods relating to DSM.
c) Explain the concept of demand side management. Discuss the steps involved in DSM planning.

SLR-GF-475

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Third mode of propagation is called as _____.
a) Line to ground b) Phase to phase
c) Homopolar d) Inter-phase

2) For Aeolian vibration the frequency of vibration is usually limited to _____ Hz and the amplitudes less than _____ cm.
a) 20 Hz, 2.5 cm b) 25 Hz, 2.5 cm
c) 50 Hz, 2.5 cm d) 50 Hz, 3.5 cm

3) The positive sequence reactance per phase in ohms/km in 750 kV transmission line is _____.
a) 0.272 b) 0.227
c) 0.722 d) None of these

4) Operating 750KV line gives AN at a level of _____.
a) 50 dB b) 55.4 dB
c) 52 dB d) 58.5 dB

5) The allowable noise level at one MHz is _____.
a) 22 dB b) 26 dB
c) 30 dB d) 32 dB

6) Voltage gradient on a transmission line conductor is highest _____.
a) at the surface of the conductor
b) at the centre of the conductor
c) at the distance of one radius from the surface
d) none of these

7) Refraction coefficient of current (J_T) is given by _____.
a) $\frac{2Z_0}{Z_0 + Z_t}$ b) $\frac{Z_0 - Z_t}{Z_0 + Z_t}$
c) $\frac{2Z_t}{Z_0 + Z_t}$ d) $\frac{Z_t - Z_0}{Z_0 + Z_t}$

8) Refraction coefficient of voltage (K_T) for open ended line _____.
a) +2 b) 1
c) -1 d) 0

9) Voltage control in a power transmission line is achieved by _____.
a) Booster transformer b) Tap-changing transformer
c) Injection of reactive power d) All of these

10) The over-voltage surges in power systems may be caused by _____.
a) lightning b) switching
c) resonance d) any of the above

11) The entire line performance can be determined by _____.
a) Sending end power circle diagram
b) Receiving end power circle diagram
c) Universal power circle diagram
d) a or c

12) The dimensions of constants B and C are respectively _____ and _____.
a) Ohm, Siemens b) Mho, Siemens
c) Both are dimensionless d) Siemens, Ohm

13) Why are the conductors used for higher voltage transmission stranded?
a) Ease of handling b) Cheaper cost
c) Reduced resistivity d) Increase in tensile strength

14) Insulation of the modern EHV lines is designed based on _____.
a) Lighting voltage b) Switching voltage
c) Corona d) RI

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve Any Four **16**

a) Explain in detail advantages and disadvantages of high voltage.
b) Explain the relation between temperature rise and current carrying capacity of EHVAC line.
c) Explain the limits for radio interference.
d) Derive expression for distribution of voltage gradient on sub-conductors of bundle.
e) Explain reflection and refraction of travelling waves.
f) Derive equation for line energization with trapped charge voltage.

Q.3 Solve Any Two **12**

a) Explain the different mechanical considerations in EHV line performance?
b) What is standing wave? Derive equation for open ended line double exponential response.
c) Derive the charge potential relations of multi-conductor lines.

Section – II

Q.4 Solve Any Four **16**

a) Explain the ferro-resonance over voltages.
b) State and explain sources of over voltages.
c) Describe static reactive compensating system.
d) Explain the term power circle diagram and its use.
e) Explain conductor-tower, conductor-ground and conductor-conductor clearances.
f) Explain the factors under steady state in design of EHV lines.

Q.5 Solve Any Two **12**

a) Explain the term sinusoidal excitation lumped parameter circuit.
b) A 100 MVA 230kV 50 Hz transformer has $x_t = 12\%$ and is connected to a line 200 km long which has an inductance of 1 mH/km. The filter, connected to the LV 33 kV side of the transformer, is required to suppress the 5^{th} harmonic generated by the TCR to 1% of I_n. Calculate the value of filter capacitor if the filter inductance used is 2mH.
c) Explain line insulation design based upon transient overvoltages in detail.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Refraction coefficient of voltage (K_T) for open ended line _____.
a) +2 b) 1
c) -1 d) 0

2) Voltage control in a power transmission line is achieved by _____.
a) Booster transformer b) Tap-changing transformer
c) Injection of reactive power d) All of these

3) The over-voltage surges in power systems may be caused by _____.
a) lightning b) switching
c) resonance d) any of the above

4) The entire line performance can be determined by _____.
a) Sending end power circle diagram
b) Receiving end power circle diagram
c) Universal power circle diagram
d) a or c

5) The dimensions of constants B and C are respectively _____ and _____.
a) Ohm, Siemens b) Mho, Siemens
c) Both are dimensionless d) Siemens, Ohm

6) Why are the conductors used for higher voltage transmission stranded?
a) Ease of handling b) Cheaper cost
c) Reduced resistivity d) Increase in tensile strength

7) Insulation of the modern EHV lines is designed based on _____.
a) Lighting voltage b) Switching voltage
c) Corona d) RI

8) Third mode of propagation is called as _____.
a) Line to ground b) Phase to phase
c) Homopolar d) Inter-phase

9) For Aeolian vibration the frequency of vibration is usually limited to _____ Hz and the amplitudes less than _____ cm.
a) 20 Hz, 2.5 cm b) 25 Hz, 2.5 cm
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10) The positive sequence reactance per phase in ohms/km in 750 kV transmission line is _____.

a) 0.272 b) 0.227
c) 0.722 d) None of these

11) Operating 750KV line gives AN at a level of _____.

a) 50 dB b) 55.4 dB
c) 52 dB d) 58.5 dB

12) The allowable noise level at one MHz is _____.

a) 22 dB b) 26 dB
c) 30 dB d) 32 dB

13) Voltage gradient on a transmission line conductor is highest _____.

a) at the surface of the conductor
b) at the centre of the conductor
c) at the distance of one radius from the surface
d) none of these

14) Refraction coefficient of current (J_T) is given by _____.

a) $\frac{2Z_0}{Z_0 + Z_t}$ b) $\frac{Z_0 - Z_t}{Z_0 + Z_t}$
c) $\frac{2Z_t}{Z_0 + Z_t}$ d) $\frac{Z_t - Z_0}{Z_0 + Z_t}$

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve Any Four **16**

a) Explain in detail advantages and disadvantages of high voltage.
b) Explain the relation between temperature rise and current carrying capacity of EHVAC line.
c) Explain the limits for radio interference.
d) Derive expression for distribution of voltage gradient on sub-conductors of bundle.
e) Explain reflection and refraction of travelling waves.
f) Derive equation for line energization with trapped charge voltage.

Q.3 Solve Any Two **12**

a) Explain the different mechanical considerations in EHV line performance?
b) What is standing wave? Derive equation for open ended line double exponential response.
c) Derive the charge potential relations of multi-conductor lines.

Section – II

Q.4 Solve Any Four **16**

a) Explain the ferro-resonance over voltages.
b) State and explain sources of over voltages.
c) Describe static reactive compensating system.
d) Explain the term power circle diagram and its use.
e) Explain conductor-tower, conductor-ground and conductor-conductor clearances.
f) Explain the factors under steady state in design of EHV lines.

Q.5 Solve Any Two **12**

a) Explain the term sinusoidal excitation lumped parameter circuit.
b) A 100 MVA 230kV 50 Hz transformer has $x_t = 12\%$ and is connected to a line 200 km long which has an inductance of 1 mH/km. The filter, connected to the LV 33 kV side of the transformer, is required to suppress the 5^{th} harmonic generated by the TCR to 1% of I_n. Calculate the value of filter capacitor if the filter inductance used is 2mH.
c) Explain line insulation design based upon transient overvoltages in detail.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The entire line performance can be determined by _____.
a) Sending end power circle diagram
b) Receiving end power circle diagram
c) Universal power circle diagram
d) a or c

2) The dimensions of constants B and C are respectively _____ and _____.
a) Ohm, Siemens b) Mho, Siemens
c) Both are dimensionless d) Siemens, Ohm

3) Why are the conductors used for higher voltage transmission stranded?
a) Ease of handling b) Cheaper cost
c) Reduced resistivity d) Increase in tensile strength

4) Insulation of the modern EHV lines is designed based on _____.
a) Lighting voltage b) Switching voltage
c) Corona d) RI

5) Third mode of propagation is called as _____.
a) Line to ground b) Phase to phase
c) Homopolar d) Inter-phase

6) For Aeolian vibration the frequency of vibration is usually limited to _____ Hz and the amplitudes less than _____ cm.
a) 20 Hz, 2.5 cm b) 25 Hz, 2.5 cm
c) 50 Hz, 2.5 cm d) 50 Hz, 3.5 cm

7) The positive sequence reactance per phase in ohms/km in 750 kV transmission line is _____.
a) 0.272 b) 0.227
c) 0.722 d) None of these

8) Operating 750KV line gives AN at a level of _____.
a) 50 dB b) 55.4 dB
c) 52 dB d) 58.5 dB

9) The allowable noise level at one MHz is _____.

a) 22 dB b) 26 dB

c) 30 dB d) 32 dB

10) Voltage gradient on a transmission line conductor is highest _____.

a) at the surface of the conductor

b) at the centre of the conductor

c) at the distance of one radius from the surface

d) none of these

11) Refraction coefficient of current (J_T) is given by _____.

a) $\frac{2Z_0}{Z_0 + Z_t}$ b) $\frac{Z_0 - Z_t}{Z_0 + Z_t}$

c) $\frac{2Z_t}{Z_0 + Z_t}$ d) $\frac{Z_t - Z_0}{Z_0 + Z_t}$

12) Refraction coefficient of voltage (K_T) for open ended line _____.

a) +2 b) 1

c) -1 d) 0

13) Voltage control in a power transmission line is achieved by _____.

a) Booster transformer b) Tap-changing transformer

c) Injection of reactive power d) All of these

14) The over-voltage surges in power systems may be caused by _____.

a) lightning b) switching

c) resonance d) any of the above

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve Any Four **16**

a) Explain in detail advantages and disadvantages of high voltage.
b) Explain the relation between temperature rise and current carrying capacity of EHVAC line.
c) Explain the limits for radio interference.
d) Derive expression for distribution of voltage gradient on sub-conductors of bundle.
e) Explain reflection and refraction of travelling waves.
f) Derive equation for line energization with trapped charge voltage.

Q.3 Solve Any Two **12**

a) Explain the different mechanical considerations in EHV line performance?
b) What is standing wave? Derive equation for open ended line double exponential response.
c) Derive the charge potential relations of multi-conductor lines.

Section – II

Q.4 Solve Any Four **16**

a) Explain the ferro-resonance over voltages.
b) State and explain sources of over voltages.
c) Describe static reactive compensating system.
d) Explain the term power circle diagram and its use.
e) Explain conductor-tower, conductor-ground and conductor-conductor clearances.
f) Explain the factors under steady state in design of EHV lines.

Q.5 Solve Any Two **12**

a) Explain the term sinusoidal excitation lumped parameter circuit.
b) A 100 MVA 230kV 50 Hz transformer has $x_t = 12\%$ and is connected to a line 200 km long which has an inductance of 1 mH/km. The filter, connected to the LV 33 kV side of the transformer, is required to suppress the 5^{th} harmonic generated by the TCR to 1% of I_n. Calculate the value of filter capacitor if the filter inductance used is 2mH.
c) Explain line insulation design based upon transient overvoltages in detail.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Voltage gradient on a transmission line conductor is highest _____.
a) at the surface of the conductor
b) at the centre of the conductor
c) at the distance of one radius from the surface
d) none of these

2) Refraction coefficient of current (J_T) is given by _____.
a) $\frac{2Z_0}{Z_0 + Z_t}$ b) $\frac{Z_0 - Z_t}{Z_0 + Z_t}$
c) $\frac{2Z_t}{Z_0 + Z_t}$ d) $\frac{Z_t - Z_0}{Z_0 + Z_t}$

3) Refraction coefficient of voltage (K_T) for open ended line _____.
a) +2 b) 1
c) -1 d) 0

4) Voltage control in a power transmission line is achieved by _____.
a) Booster transformer b) Tap-changing transformer
c) Injection of reactive power d) All of these

5) The over-voltage surges in power systems may be caused by _____.
a) lightning b) switching
c) resonance d) any of the above

6) The entire line performance can be determined by _____.
a) Sending end power circle diagram
b) Receiving end power circle diagram
c) Universal power circle diagram
d) a or c

7) The dimensions of constants B and C are respectively _____ and _____.
a) Ohm, Siemens b) Mho, Siemens
c) Both are dimensionless d) Siemens, Ohm

8) Why are the conductors used for higher voltage transmission stranded?
a) Ease of handling b) Cheaper cost
c) Reduced resistivity d) Increase in tensile strength

9) Insulation of the modern EHV lines is designed based on _____.
a) Lighting voltage b) Switching voltage
c) Corona d) RI

10) Third mode of propagation is called as _____.
a) Line to ground b) Phase to phase
c) Homopolar d) Inter-phase

11) For Aeolian vibration the frequency of vibration is usually limited to _____ Hz and the amplitudes less than _____ cm.
a) 20 Hz, 2.5 cm b) 25 Hz, 2.5 cm
c) 50 Hz, 2.5 cm d) 50 Hz, 3.5 cm

12) The positive sequence reactance per phase in ohms/km in 750 kV transmission line is _____.
a) 0.272 b) 0.227
c) 0.722 d) None of these

13) Operating 750KV line gives AN at a level of _____.
a) 50 dB b) 55.4 dB
c) 52 dB d) 58.5 dB

14) The allowable noise level at one MHz is _____.
a) 22 dB b) 26 dB
c) 30 dB d) 32 dB

SLR-GF-475

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (BTN07712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Solve Any Four **16**

a) Explain in detail advantages and disadvantages of high voltage.
b) Explain the relation between temperature rise and current carrying capacity of EHVAC line.
c) Explain the limits for radio interference.
d) Derive expression for distribution of voltage gradient on sub-conductors of bundle.
e) Explain reflection and refraction of travelling waves.
f) Derive equation for line energization with trapped charge voltage.

Q.3 Solve Any Two **12**

a) Explain the different mechanical considerations in EHV line performance?
b) What is standing wave? Derive equation for open ended line double exponential response.
c) Derive the charge potential relations of multi-conductor lines.

Section – II

Q.4 Solve Any Four **16**

a) Explain the ferro-resonance over voltages.
b) State and explain sources of over voltages.
c) Describe static reactive compensating system.
d) Explain the term power circle diagram and its use.
e) Explain conductor-tower, conductor-ground and conductor-conductor clearances.
f) Explain the factors under steady state in design of EHV lines.

Q.5 Solve Any Two **12**

a) Explain the term sinusoidal excitation lumped parameter circuit.
b) A 100 MVA 230kV 50 Hz transformer has $x_t = 12\%$ and is connected to a line 200 km long which has an inductance of 1 mH/km. The filter, connected to the LV 33 kV side of the transformer, is required to suppress the 5^{th} harmonic generated by the TCR to 1% of I_n. Calculate the value of filter capacitor if the filter inductance used is 2mH.
c) Explain line insulation design based upon transient overvoltages in detail.

SLR-GF-477

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Noc-2023
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) For high frequency choppers the device that is preferred is _____.
a) Thyristor b) TRIAC
c) Transistor d) GTO

2) A four quadrant operation requires _____.
a) Two full converters in series
b) Two full converters connected in parallel
c) Two full converter connected in back to back
d) Two semi converters connected in back to back

3) The operating speed of a synchronous motor can be changed to new fixed value by _____.
a) Changing the load b) Changing the supply voltage
c) Changing frequency d) Using brakes

4) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?
a) Short Time duty
b) Intermittent duty
c) Intermittent duty with starting
d) Intermittent duty with starting and braking

5) During the starting of a slip ring induction motor using rotor resistance starter, the insertion of resistance in the rotor circuit causes:_____.
a) Stator current to increase and torque to decrease
b) Stator current to decrease and torque to increase
c) Stators current to increase and power factor to decrease
d) Power factor to decrease and torque to increase

6) The slip of an induction motor normally does not depends on _____.
a) rotor speed b) synchronous speed
c) both a) and b) d) None of these

7) Speed control by variation of field flux results in_____.
a) Constant power drive b) Constant torque drive
c) Variable power drive d) None of the above

8) Efficiency by using rotor resistance control in IM is _____.
a) High b) Low
c) Very high d) Very Low

9) Full-converter can be used in DC motor for regenerative braking in _____.
a) Constant Operation b) Variable Operation
c) Inversion Operation d) Opposite Operation

10) Reluctance motor is a _____.
a) Variable torque motor
b) Low torque variable speed motor
c) Self starting type synchronous motor
d) Low noise, slow speed motor

11) Cycloconverter drive has applications in _____.
a) Low power and low speed operations
b) High power and high speed operations
c) Low power and high speed operations
d) High power and low speed operations

12) Which of the following method is employed when regenerative braking is necessary?
a) DC Chopper b) Variable Resistor
c) Inverter Rectifier d) Motor-generator

13) Applications of dc motor is restricted to a few load speed applications because of _____.
a) cost of motor is high
b) mechanical commutation problems
c) maintenance problem
d) all of above

14) Stepper motor is popular for _____.
a) Speed control b) Position control
c) Torque control d) Both a and b

SLR-GF-477

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Noc-2023
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four. **16**

a) Describe in details Characteristics of DC motors.
b) Describe in details dynamics of Electric Drives?
c) Explain the working of phase controlled converter fed DC drives.
d) Explain the chopper fed DC separately excited motor in motoring mode.
e) Explain stator voltage control of an induction motor with speed torque characteristics.

Q.3 Solve any Two. **12**

a) Explain the static Kramer method and static schrebius method of speed control of three phase induction motor.
b) Derive fundamental torque equations and components of load torque.
c) Describe in details dual-converter control of DC drive.

Section – II

Q.4 Solve any Four. **16**

a) Draw and explain variable frequency control for synchronous motors.
b) Explain Losses in electrical drive system.
c) Explain with circuit diagram converter circuit for switched reluctance motor.
d) Describe in details Energy efficient operation of drives
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Solve any Two. **12**

a) With neat sketch explain VSI feed induction motor drive also draw block diagram for closed loop control
b) Draw a neat diagram & explain the Cycloconverter control for synchronous motors.
c) Describe in details improvement of power factor and quality of supply.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Noc-2023
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Efficiency by using rotor resistance control in IM is _____.

a) High b) Low
c) Very high d) Very Low

2) Full-converter can be used in DC motor for regenerative braking in _____.

a) Constant Operation b) Variable Operation
c) Inversion Operation d) Opposite Operation

3) Reluctance motor is a _____.

a) Variable torque motor
b) Low torque variable speed motor
c) Self starting type synchronous motor
d) Low noise, slow speed motor

4) Cycloconverter drive has applications in _____.

a) Low power and low speed operations
b) High power and high speed operations
c) Low power and high speed operations
d) High power and low speed operations

5) Which of the following method is employed when regenerative braking is necessary?

a) DC Chopper b) Variable Resistor
c) Inverter Rectifier d) Motor-generator

6) Applications of dc motor is restricted to a few load speed applications because of _____.

a) cost of motor is high
b) mechanical commutation problems
c) maintenance problem
d) all of above

7) Stepper motor is popular for _____.

a) Speed control b) Position control
c) Torque control d) Both a and b

8) For high frequency choppers the device that is preferred is _____.
a) Thyristor b) TRIAC
c) Transistor d) GTO

9) A four quadrant operation requires _____.
a) Two full converters in series
b) Two full converters connected in parallel
c) Two full converter connected in back to back
d) Two semi converters connected in back to back

10) The operating speed of a synchronous motor can be changed to new fixed value by _____.
a) Changing the load b) Changing the supply voltage
c) Changing frequency d) Using brakes

11) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?
a) Short Time duty
b) Intermittent duty
c) Intermittent duty with starting
d) Intermittent duty with starting and braking

12) During the starting of a slip ring induction motor using rotor resistance starter, the insertion of resistance in the rotor circuit causes:_____.
a) Stator current to increase and torque to decrease
b) Stator current to decrease and torque to increase
c) Stators current to increase and power factor to decrease
d) Power factor to decrease and torque to increase

13) The slip of an induction motor normally does not depends on _____.
a) rotor speed b) synchronous speed
c) both a) and b) d) None of these

14) Speed control by variation of field flux results in_____.
a) Constant power drive b) Constant torque drive
c) Variable power drive d) None of the above

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Noc-2023
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four. **16**

a) Describe in details Characteristics of DC motors.
b) Describe in details dynamics of Electric Drives?
c) Explain the working of phase controlled converter fed DC drives.
d) Explain the chopper fed DC separately excited motor in motoring mode.
e) Explain stator voltage control of an induction motor with speed torque characteristics.

Q.3 Solve any Two. **12**

a) Explain the static Kramer method and static schrebius method of speed control of three phase induction motor.
b) Derive fundamental torque equations and components of load torque.
c) Describe in details dual-converter control of DC drive.

Section – II

Q.4 Solve any Four. **16**

a) Draw and explain variable frequency control for synchronous motors.
b) Explain Losses in electrical drive system.
c) Explain with circuit diagram converter circuit for switched reluctance motor.
d) Describe in details Energy efficient operation of drives
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Solve any Two. **12**

a) With neat sketch explain VSI feed induction motor drive also draw block diagram for closed loop control
b) Draw a neat diagram & explain the Cycloconverter control for synchronous motors.
c) Describe in details improvement of power factor and quality of supply.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Noc-2023
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Cycloconverter drive has applications in _____.
a) Low power and low speed operations
b) High power and high speed operations
c) Low power and high speed operations
d) High power and low speed operations

2) Which of the following method is employed when regenerative braking is necessary?
a) DC Chopper b) Variable Resistor
c) Inverter Rectifier d) Motor-generator

3) Applications of dc motor is restricted to a few load speed applications because of _____.
a) cost of motor is high
b) mechanical commutation problems
c) maintenance problem
d) all of above

4) Stepper motor is popular for _____.
a) Speed control b) Position control
c) Torque control d) Both a and b

5) For high frequency choppers the device that is preferred is _____.
a) Thyristor b) TRIAC
c) Transistor d) GTO

6) A four quadrant operation requires _____.
a) Two full converters in series
b) Two full converters connected in parallel
c) Two full converter connected in back to back
d) Two semi converters connected in back to back

7) The operating speed of a synchronous motor can be changed to new fixed value by _____.
a) Changing the load b) Changing the supply voltage
c) Changing frequency d) Using brakes

8) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?
a) Short Time duty
b) Intermittent duty
c) Intermittent duty with starting
d) Intermittent duty with starting and braking

9) During the starting of a slip ring induction motor using rotor resistance starter, the insertion of resistance in the rotor circuit causes:_____.
a) Stator current to increase and torque to decrease
b) Stator current to decrease and torque to increase
c) Stators current to increase and power factor to decrease
d) Power factor to decrease and torque to increase

10) The slip of an induction motor normally does not depends on _____.
a) rotor speed
b) synchronous speed
c) both a) and b)
d) None of these

11) Speed control by variation of field flux results in_____.
a) Constant power drive
b) Constant torque drive
c) Variable power drive
d) None of the above

12) Efficiency by using rotor resistance control in IM is _____.
a) High
b) Low
c) Very high
d) Very Low

13) Full-converter can be used in DC motor for regenerative braking in _____.
a) Constant Operation
b) Variable Operation
c) Inversion Operation
d) Opposite Operation

14) Reluctance motor is a _____.
a) Variable torque motor
b) Low torque variable speed motor
c) Self starting type synchronous motor
d) Low noise, slow speed motor

SLR-GF-477

Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Noc-2023
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four. **16**

a) Describe in details Characteristics of DC motors.
b) Describe in details dynamics of Electric Drives?
c) Explain the working of phase controlled converter fed DC drives.
d) Explain the chopper fed DC separately excited motor in motoring mode.
e) Explain stator voltage control of an induction motor with speed torque characteristics.

Q.3 Solve any Two. **12**

a) Explain the static Kramer method and static schrebius method of speed control of three phase induction motor.
b) Derive fundamental torque equations and components of load torque.
c) Describe in details dual-converter control of DC drive.

Section – II

Q.4 Solve any Four. **16**

a) Draw and explain variable frequency control for synchronous motors.
b) Explain Losses in electrical drive system.
c) Explain with circuit diagram converter circuit for switched reluctance motor.
d) Describe in details Energy efficient operation of drives
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Solve any Two. **12**

a) With neat sketch explain VSI feed induction motor drive also draw block diagram for closed loop control
b) Draw a neat diagram & explain the Cycloconverter control for synchronous motors.
c) Describe in details improvement of power factor and quality of supply.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Noc-2023
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The slip of an induction motor normally does not depends on _____.
a) rotor speed b) synchronous speed
c) both a) and b) d) None of these

2) Speed control by variation of field flux results in_____.
a) Constant power drive b) Constant torque drive
c) Variable power drive d) None of the above

3) Efficiency by using rotor resistance control in IM is _____.
a) High b) Low
c) Very high d) Very Low

4) Full-converter can be used in DC motor for regenerative braking in _____.
a) Constant Operation b) Variable Operation
c) Inversion Operation d) Opposite Operation

5) Reluctance motor is a _____.
a) Variable torque motor
b) Low torque variable speed motor
c) Self starting type synchronous motor
d) Low noise, slow speed motor

6) Cycloconverter drive has applications in _____.
a) Low power and low speed operations
b) High power and high speed operations
c) Low power and high speed operations
d) High power and low speed operations

7) Which of the following method is employed when regenerative braking is necessary?
a) DC Chopper b) Variable Resistor
c) Inverter Rectifier d) Motor-generator

8) Applications of dc motor is restricted to a few load speed applications because of _____.
a) cost of motor is high
b) mechanical commutation problems
c) maintenance problem
d) all of above

9) Stepper motor is popular for _____.
a) Speed control
b) Position control
c) Torque control
d) Both a and b

10) For high frequency choppers the device that is preferred is _____.
a) Thyristor
b) TRIAC
c) Transistor
d) GTO

11) A four quadrant operation requires _____.
a) Two full converters in series
b) Two full converters connected in parallel
c) Two full converter connected in back to back
d) Two semi converters connected in back to back

12) The operating speed of a synchronous motor can be changed to new fixed value by _____.
a) Changing the load
b) Changing the supply voltage
c) Changing frequency
d) Using brakes

13) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?
a) Short Time duty
b) Intermittent duty
c) Intermittent duty with starting
d) Intermittent duty with starting and braking

14) During the starting of a slip ring induction motor using rotor resistance starter, the insertion of resistance in the rotor circuit causes:_____.
a) Stator current to increase and torque to decrease
b) Stator current to decrease and torque to increase
c) Stators current to increase and power factor to decrease
d) Power factor to decrease and torque to increase

SLR-GF-477

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Noc-2023
ELECTRICAL ENGINEERING
Advanced Electrical Drives (BTN07714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four. **16**

a) Describe in details Characteristics of DC motors.
b) Describe in details dynamics of Electric Drives?
c) Explain the working of phase controlled converter fed DC drives.
d) Explain the chopper fed DC separately excited motor in motoring mode.
e) Explain stator voltage control of an induction motor with speed torque characteristics.

Q.3 Solve any Two. **12**

a) Explain the static Kramer method and static schrebius method of speed control of three phase induction motor.
b) Derive fundamental torque equations and components of load torque.
c) Describe in details dual-converter control of DC drive.

Section – II

Q.4 Solve any Four. **16**

a) Draw and explain variable frequency control for synchronous motors.
b) Explain Losses in electrical drive system.
c) Explain with circuit diagram converter circuit for switched reluctance motor.
d) Describe in details Energy efficient operation of drives
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Solve any Two. **12**

a) With neat sketch explain VSI feed induction motor drive also draw block diagram for closed loop control
b) Draw a neat diagram & explain the Cycloconverter control for synchronous motors.
c) Describe in details improvement of power factor and quality of supply.

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) In a forced or active solar water heating system, how is water circulated through the collector and storage tank?
a) By natural convection b) Using a pump or circulator
c) Through a heat exchanger d) Through a photovoltaic panel

2) In a passive solar heating system, what is the role of south-facing windows?
a) To minimize solar heat gain b) To maximize solar heat gain
c) To provide ventilation d) To generate electricity

3) In a box-type dryer, what role does the fan play in the drying process?
a) Temperature control b) Humidity regulation
c) Air circulation d) Product color enhancement

4) What is Net Metering in the context of solar PV systems?
a) Meter reading at night
b) Exchanging old meters for new ones
c) Billing method that credits excess energy back to the grid
d) Meter calibration process

5) To prevent freezing in a solar water heating system, what type of fluid is often used in the collector loop?
a) Water b) Antifreeze solution
c) Oil d) Air

6) In a Solar Vapour Compression Refrigeration system, what is the role of the compressor?
a) To absorb heat from the surroundings
b) To generate solar energy.
c) To pressurize the refrigerant, making it hot
d) To circulate cold air.

7) What is the primary advantage of using a rack-type dryer over other drying methods?
a) Lower energy efficiency
b) Faster drying times
c) Limited capacity
d) Minimal control over the drying process

8) What is Tri-ethylene Glycol primarily used for?
a) As a refrigerant to cool the air
b) As a fuel to generate heat.
c) As an absorbent to capture heat from the solar collectors.
d) As a coolant for the solar panels.

9) What is the role of the desiccant material?
a) To heat the incoming air
b) To absorb and remove moisture from the incoming air
c) To cool the indoor air
d) To filter the air

10) How does a wick-type solar still function?
a) By using mirrors to concentrate sunlight
b) By absorbing sunlight with photovoltaic cells
c) By using a wick to transport water for evaporation
d) By converting sunlight into heat directly

11) In food processing, hot air is often used for:
a) Freezing
b) Sterilization
c) Fermentation
d) Dehydration

12) In industrial processes, hot air is commonly used for:
a) Electricity generation
b) Water purification
c) Space heating
d) Metal casting

13) Which factor is crucial for determining the efficiency of a solar PV rooftop system?
a) Roof color
b) Panel Orientation
c) Building height
d) Local population density

14) In a passive solar building, what is the primary purpose of shading devices?
a) To block all sunlight from entering the building
b) To reduce glare
c) To control heat gain and prevent overheating
d) To create a dark interior environment

Seat No.	

Set | P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**

a) Explain
i) Freezing
ii) Scaling
b) Describe the “Direct Gain” in passive solar design.
c) Explain the concept of “Solar Vapour Compression Refrigeration.”
d) Discuss with neat diagram working of the Thermal storage wall.

Q.3 Attempt Any Two. **16**

a) Explain
i) Natural circulation water heating
ii) Forced circulation water heating.
b) Explain any two methods of passive cooling of a building.
c) What is an Intermittent absorption refrigeration system?

Section – II

Q.4 Attempt Any Three. **12**

a) Explain simple solar still.
b) Describe the Box type of solar dryer.
c) What is net metering in a rooftop system?
d) Discuss material problems in solar still.

Q.5 Attempt Any Two. **16**

a) Explain the concept of wick-type solar still and active solar still.
b) Explain the Bin type of grain dryer and solar timber drying.
c) Describe the concept of a solar water pumping system with its advantages.

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) What is Tri-ethylene Glycol primarily used for?
a) As a refrigerant to cool the air
b) As a fuel to generate heat.
c) As an absorbent to capture heat from the solar collectors.
d) As a coolant for the solar panels.

2) What is the role of the desiccant material?
a) To heat the incoming air
b) To absorb and remove moisture from the incoming air
c) To cool the indoor air
d) To filter the air

3) How does a wick-type solar still function?
a) By using mirrors to concentrate sunlight
b) By absorbing sunlight with photovoltaic cells
c) By using a wick to transport water for evaporation
d) By converting sunlight into heat directly

4) In food processing, hot air is often used for:
a) Freezing b) Sterilization
c) Fermentation d) Dehydration

5) In industrial processes, hot air is commonly used for:
a) Electricity generation b) Water purification
c) Space heating d) Metal casting

6) Which factor is crucial for determining the efficiency of a solar PV rooftop system?
a) Roof color b) Panel Orientation
c) Building height d) Local population density

7) In a passive solar building, what is the primary purpose of shading devices?
a) To block all sunlight from entering the building
b) To reduce glare
c) To control heat gain and prevent overheating
d) To create a dark interior environment

8) In a forced or active solar water heating system, how is water circulated through the collector and storage tank?
a) By natural convection
b) Using a pump or circulator
c) Through a heat exchanger
d) Through a photovoltaic panel

9) In a passive solar heating system, what is the role of south-facing windows?
a) To minimize solar heat gain
b) To maximize solar heat gain
c) To provide ventilation
d) To generate electricity

10) In a box-type dryer, what role does the fan play in the drying process?
a) Temperature control
b) Humidity regulation
c) Air circulation
d) Product color enhancement

11) What is Net Metering in the context of solar PV systems?
a) Meter reading at night
b) Exchanging old meters for new ones
c) Billing method that credits excess energy back to the grid
d) Meter calibration process

12) To prevent freezing in a solar water heating system, what type of fluid is often used in the collector loop?
a) Water
b) Antifreeze solution
c) Oil
d) Air

13) In a Solar Vapour Compression Refrigeration system, what is the role of the compressor?
a) To absorb heat from the surroundings
b) To generate solar energy.
c) To pressurize the refrigerant, making it hot
d) To circulate cold air.

14) What is the primary advantage of using a rack-type dryer over other drying methods?
a) Lower energy efficiency
b) Faster drying times
c) Limited capacity
d) Minimal control over the drying process

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**

a) Explain
i) Freezing
ii) Scaling

b) Describe the “Direct Gain” in passive solar design.

c) Explain the concept of “Solar Vapour Compression Refrigeration.”

d) Discuss with neat diagram working of the Thermal storage wall.

Q.3 Attempt Any Two. **16**

a) Explain
i) Natural circulation water heating
ii) Forced circulation water heating.

b) Explain any two methods of passive cooling of a building.

c) What is an Intermittent absorption refrigeration system?

Section – II

Q.4 Attempt Any Three. **12**

a) Explain simple solar still.

b) Describe the Box type of solar dryer.

c) What is net metering in a rooftop system?

d) Discuss material problems in solar still.

Q.5 Attempt Any Two. **16**

a) Explain the concept of wick-type solar still and active solar still.

b) Explain the Bin type of grain dryer and solar timber drying.

c) Describe the concept of a solar water pumping system with its advantages.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) In food processing, hot air is often used for:
a) Freezing b) Sterilization
c) Fermentation d) Dehydration

2) In industrial processes, hot air is commonly used for:
a) Electricity generation b) Water purification
c) Space heating d) Metal casting

3) Which factor is crucial for determining the efficiency of a solar PV rooftop system?
a) Roof color b) Panel Orientation
c) Building height d) Local population density

4) In a passive solar building, what is the primary purpose of shading devices?
a) To block all sunlight from entering the building
b) To reduce glare
c) To control heat gain and prevent overheating
d) To create a dark interior environment

5) In a forced or active solar water heating system, how is water circulated through the collector and storage tank?
a) By natural convection b) Using a pump or circulator
c) Through a heat exchanger d) Through a photovoltaic panel

6) In a passive solar heating system, what is the role of south-facing windows?
a) To minimize solar heat gain b) To maximize solar heat gain
c) To provide ventilation d) To generate electricity

7) In a box-type dryer, what role does the fan play in the drying process?
a) Temperature control b) Humidity regulation
c) Air circulation d) Product color enhancement

8) What is Net Metering in the context of solar PV systems?
a) Meter reading at night
b) Exchanging old meters for new ones
c) Billing method that credits excess energy back to the grid
d) Meter calibration process

9) To prevent freezing in a solar water heating system, what type of fluid is often used in the collector loop?

a) Water
b) Antifreeze solution
c) Oil
d) Air

10) In a Solar Vapour Compression Refrigeration system, what is the role of the compressor?

a) To absorb heat from the surroundings
b) To generate solar energy.
c) To pressurize the refrigerant, making it hot
d) To circulate cold air.

11) What is the primary advantage of using a rack-type dryer over other drying methods?

a) Lower energy efficiency
b) Faster drying times
c) Limited capacity
d) Minimal control over the drying process

12) What is Tri-ethylene Glycol primarily used for?

a) As a refrigerant to cool the air
b) As a fuel to generate heat.
c) As an absorbent to capture heat from the solar collectors.
d) As a coolant for the solar panels.

13) What is the role of the desiccant material?

a) To heat the incoming air
b) To absorb and remove moisture from the incoming air
c) To cool the indoor air
d) To filter the air

14) How does a wick-type solar still function?

a) By using mirrors to concentrate sunlight
b) By absorbing sunlight with photovoltaic cells
c) By using a wick to transport water for evaporation
d) By converting sunlight into heat directly

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**

a) Explain
i) Freezing
ii) Scaling
b) Describe the “Direct Gain” in passive solar design.
c) Explain the concept of “Solar Vapour Compression Refrigeration.”
d) Discuss with neat diagram working of the Thermal storage wall.

Q.3 Attempt Any Two. **16**

a) Explain
i) Natural circulation water heating
ii) Forced circulation water heating.
b) Explain any two methods of passive cooling of a building.
c) What is an Intermittent absorption refrigeration system?

Section – II

Q.4 Attempt Any Three. **12**

a) Explain simple solar still.
b) Describe the Box type of solar dryer.
c) What is net metering in a rooftop system?
d) Discuss material problems in solar still.

Q.5 Attempt Any Two. **16**

a) Explain the concept of wick-type solar still and active solar still.
b) Explain the Bin type of grain dryer and solar timber drying.
c) Describe the concept of a solar water pumping system with its advantages.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) In a Solar Vapour Compression Refrigeration system, what is the role of the compressor?
a) To absorb heat from the surroundings
b) To generate solar energy.
c) To pressurize the refrigerant, making it hot
d) To circulate cold air.

2) What is the primary advantage of using a rack-type dryer over other drying methods?
a) Lower energy efficiency
b) Faster drying times
c) Limited capacity
d) Minimal control over the drying process

3) What is Tri-ethylene Glycol primarily used for?
a) As a refrigerant to cool the air
b) As a fuel to generate heat.
c) As an absorbent to capture heat from the solar collectors.
d) As a coolant for the solar panels.

4) What is the role of the desiccant material?
a) To heat the incoming air
b) To absorb and remove moisture from the incoming air
c) To cool the indoor air
d) To filter the air

5) How does a wick-type solar still function?
a) By using mirrors to concentrate sunlight
b) By absorbing sunlight with photovoltaic cells
c) By using a wick to transport water for evaporation
d) By converting sunlight into heat directly

6) In food processing, hot air is often used for:
a) Freezing b) Sterilization
c) Fermentation d) Dehydration

7) In industrial processes, hot air is commonly used for:
a) Electricity generation b) Water purification
c) Space heating d) Metal casting

8) Which factor is crucial for determining the efficiency of a solar PV rooftop system?
a) Roof color b) Panel Orientation
c) Building height d) Local population density

9) In a passive solar building, what is the primary purpose of shading devices?
a) To block all sunlight from entering the building
b) To reduce glare
c) To control heat gain and prevent overheating
d) To create a dark interior environment

10) In a forced or active solar water heating system, how is water circulated through the collector and storage tank?
a) By natural convection b) Using a pump or circulator
c) Through a heat exchanger d) Through a photovoltaic panel

11) In a passive solar heating system, what is the role of south-facing windows?
a) To minimize solar heat gain b) To maximize solar heat gain
c) To provide ventilation d) To generate electricity

12) In a box-type dryer, what role does the fan play in the drying process?
a) Temperature control b) Humidity regulation
c) Air circulation d) Product color enhancement

13) What is Net Metering in the context of solar PV systems?
a) Meter reading at night
b) Exchanging old meters for new ones
c) Billing method that credits excess energy back to the grid
d) Meter calibration process

14) To prevent freezing in a solar water heating system, what type of fluid is often used in the collector loop?
a) Water b) Antifreeze solution
c) Oil d) Air

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced Applications in Solar Energy Technology (BTN07715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Three. **12**

a) Explain
i) Freezing
ii) Scaling

b) Describe the “Direct Gain” in passive solar design.

c) Explain the concept of “Solar Vapour Compression Refrigeration.”

d) Discuss with neat diagram working of the Thermal storage wall.

Q.3 Attempt Any Two. **16**

a) Explain
i) Natural circulation water heating
ii) Forced circulation water heating.

b) Explain any two methods of passive cooling of a building.

c) What is an Intermittent absorption refrigeration system?

Section – II

Q.4 Attempt Any Three. **12**

a) Explain simple solar still.

b) Describe the Box type of solar dryer.

c) What is net metering in a rooftop system?

d) Discuss material problems in solar still.

Q.5 Attempt Any Two. **16**

a) Explain the concept of wick-type solar still and active solar still.

b) Explain the Bin type of grain dryer and solar timber drying.

c) Describe the concept of a solar water pumping system with its advantages.

SLR-GF-480

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Industrial Drives Control (197045701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ drive is also called as Line shaft drive.
a) Individual drive b) Multi motor drive
c) Group Drive d) None of the above

2) An Electrical drive having _____ number of components.
a) 6 b) 4
c) 3 d) 2

3) If one motor is driving the number of machines is called _____.
a) Individual drive b) Group drive
c) DC drives d) AC drives

4) _____ duty cycle consists of frequent on load and off-load period.
a) Continuous Duty with constant Load
b) Continuous Duty With the variable load
c) Short Time duty
d) Intermittent duty

5) Which type of drive can be used for Textile Industry?
a) DC Motor
b) Squirrel cage Induction Motor
c) Cumulative Compound Motor
d) Synchronous Motor

6) For particular application the type of electric and control gear is determined by which of the following considerations?
a) Starting torque
b) Speed control range and its nature
c) Limitation on starting torque
d) All of the above

7) As per IS: 4722-1968 Classes of Motor Duty in Electrical Drives are _____.
a) 6 b) 9
c) 8 d) 3

8) To save energy during braking _____.
a) Dynamic b) Plugging
c) Regenerative d) All of the above

9) Dynamic torque is present only during _____.
a) Steady state operations only b) During starting only
c) During braking only d) Both b & c

10) An elevator drive is required to operate in _____.
a) One quadrant only b) Two quadrants
c) Three quadrants d) Four quadrants

11) Three phase fully controlled rectifier fed DC Motor operates in _____.
a) First quadrant only
b) Second quadrant only
c) First and Second quadrant only
d) First and Fourth quadrant only

12) The method which can be used for the speed control of induction motor from stator side is _____.
a) V / f control
b) Controlling number of stator poles to control Ns
c) Adding rheostats in stator circuit
d) All of these

13) Due to low inertia, BLDC motors have _____.
a) Faster acceleration b) Slower acceleration
c) High-cost d) Low cost

14) A stepper motor having a resolution of 300 steps/rev and running at 2400 rpm has a pulse rate of _____ pps.
a) 4000 b) 8000
c) 6000 d) 10000

SLR-GF-480

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Industrial Drives Control (197045701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Answer the following (Any four) **16**

a) Write factors on which choice of electric drive depends.
b) What is AC drive and DC drive? Compare AC & DC drives.
c) With neat sketch explain closed loop control of multi motor drive.
d) Explain the step-up chopper fed DC separately excited motor with derivation.
e) With neat sketch & waveform explain single phase Half controlled converter fed separately excited D.C. motor drive.

Q.3 Answer the following (Any Two) **12**

a) What are the parts of Electrical Drives and explain each one?
b) Classify the load torques and explain.
c) A 200 V, 875 rpm, 150 A, separately excited dc motor has an armature resistance of 0.06Ω It is fed from a single phase fully controlled rectifier with an ac source voltage of 220 V, 50 Hz. Assuming continuous conduction calculate.
1) Firing angle for the rated torque and 750 rpm
2) Motor speed for firing angle = 160° and rated torque

Section – II

Q.4 Answer the following (Any Four) **16**

a) Explain steady state speed torque characteristics of 3-Ph I.M.
b) Write the comparison between VSI and CSI.
c) Discuss the self-control of synchronous motor fed from square wave inverter.
d) Explain the Voltage Source Inverter Fed Synchronous Motor Drive with diagram.
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Answer the following (Any Two) **12**

a) Draw & explain Brushless motor drives waveforms.
b) Explain the operation of solar and battery-operated drive.
c) Explain the Scherbius drive system with circuit diagram.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Industrial Drives Control (197045701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) To save energy during braking _____.
a) Dynamic b) Plugging
c) Regenerative d) All of the above

2) Dynamic torque is present only during _____.
a) Steady state operations only b) During starting only
c) During braking only d) Both b & c

3) An elevator drive is required to operate in _____.
a) One quadrant only b) Two quadrants
c) Three quadrants d) Four quadrants

4) Three phase fully controlled rectifier fed DC Motor operates in _____.
a) First quadrant only
b) Second quadrant only
c) First and Second quadrant only
d) First and Fourth quadrant only

5) The method which can be used for the speed control of induction motor from stator side is _____.
a) V / f control
b) Controlling number of stator poles to control Ns
c) Adding rheostats in stator circuit
d) All of these

6) Due to low inertia, BLDC motors have _____.
a) Faster acceleration b) Slower acceleration
c) High-cost d) Low cost

7) A stepper motor having a resolution of 300 steps/rev and running at 2400 rpm has a pulse rate of _____ pps.
a) 4000 b) 8000
c) 6000 d) 10000

8) _____ drive is also called as Line shaft drive.
a) Individual drive b) Multi motor drive
c) Group Drive d) None of the above

9) An Electrical drive having _____ number of components.
a) 6 b) 4
c) 3 d) 2

10) If one motor is driving the number of machines is called _____.
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11) _____ duty cycle consists of frequent on load and off-load period.
a) Continuous Duty with constant Load
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c) Short Time duty
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12) Which type of drive can be used for Textile Industry?
a) DC Motor
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c) Cumulative Compound Motor
d) Synchronous Motor

13) For particular application the type of electric and control gear is determined by which of the following considerations?
a) Starting torque
b) Speed control range and its nature
c) Limitation on starting torque
d) All of the above

14) As per IS: 4722-1968 Classes of Motor Duty in Electrical Drives are _____.
a) 6 b) 9
c) 8 d) 3

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Industrial Drives Control (197045701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume data wherever necessary.

Section – I

Q.2 Answer the following (Any four) **16**

a) Write factors on which choice of electric drive depends.
b) What is AC drive and DC drive? Compare AC & DC drives.
c) With neat sketch explain closed loop control of multi motor drive.
d) Explain the step-up chopper fed DC separately excited motor with derivation.
e) With neat sketch & waveform explain single phase Half controlled converter fed separately excited D.C. motor drive.

Q.3 Answer the following (Any Two) **12**

a) What are the parts of Electrical Drives and explain each one?
b) Classify the load torques and explain.
c) A 200 V, 875 rpm, 150 A, separately excited dc motor has an armature resistance of 0.06Ω It is fed from a single phase fully controlled rectifier with an ac source voltage of 220 V, 50 Hz. Assuming continuous conduction calculate.
1) Firing angle for the rated torque and 750 rpm
2) Motor speed for firing angle = 160° and rated torque

Section – II

Q.4 Answer the following (Any Four) **16**

a) Explain steady state speed torque characteristics of 3-Ph I.M.
b) Write the comparison between VSI and CSI.
c) Discuss the self-control of synchronous motor fed from square wave inverter.
d) Explain the Voltage Source Inverter Fed Synchronous Motor Drive with diagram.
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Answer the following (Any Two) **12**

a) Draw & explain Brushless motor drives waveforms.
b) Explain the operation of solar and battery-operated drive.
c) Explain the Scherbius drive system with circuit diagram.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Industrial Drives Control (197045701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Three phase fully controlled rectifier fed DC Motor operates in _____.
a) First quadrant only
b) Second quadrant only
c) First and Second quadrant only
d) First and Fourth quadrant only

2) The method which can be used for the speed control of induction motor from stator side is _____.
a) V / f control
b) Controlling number of stator poles to control Ns
c) Adding rheostats in stator circuit
d) All of these

3) Due to low inertia, BLDC motors have _____.
a) Faster acceleration b) Slower acceleration
c) High-cost d) Low cost

4) A stepper motor having a resolution of 300 steps/rev and running at 2400 rpm has a pulse rate of _____ pps.
a) 4000 b) 8000
c) 6000 d) 10000

5) _____ drive is also called as Line shaft drive.
a) Individual drive b) Multi motor drive
c) Group Drive d) None of the above

6) An Electrical drive having _____ number of components.
a) 6 b) 4
c) 3 d) 2

7) If one motor is driving the number of machines is called _____.
a) Individual drive b) Group drive
c) DC drives d) AC drives

8) _____ duty cycle consists of frequent on load and off-load period.
a) Continuous Duty with constant Load
b) Continuous Duty With the variable load
c) Short Time duty
d) Intermittent duty

9) Which type of drive can be used for Textile Industry?
a) DC Motor
b) Squirrel cage Induction Motor
c) Cumulative Compound Motor
d) Synchronous Motor

10) For particular application the type of electric and control gear is determined by which of the following considerations?
a) Starting torque
b) Speed control range and its nature
c) Limitation on starting torque
d) All of the above

11) As per IS: 4722-1968 Classes of Motor Duty in Electrical Drives are _____.
a) 6 b) 9
c) 8 d) 3

12) To save energy during braking _____.
a) Dynamic b) Plugging
c) Regenerative d) All of the above

13) Dynamic torque is present only during _____.
a) Steady state operations only b) During starting only
c) During braking only d) Both b & c

14) An elevator drive is required to operate in _____.
a) One quadrant only b) Two quadrants
c) Three quadrants d) Four quadrants

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Industrial Drives Control (197045701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Answer the following (Any four) **16**

a) Write factors on which choice of electric drive depends.
b) What is AC drive and DC drive? Compare AC & DC drives.
c) With neat sketch explain closed loop control of multi motor drive.
d) Explain the step-up chopper fed DC separately excited motor with derivation.
e) With neat sketch & waveform explain single phase Half controlled converter fed separately excited D.C. motor drive.

Q.3 Answer the following (Any Two) **12**

a) What are the parts of Electrical Drives and explain each one?
b) Classify the load torques and explain.
c) A 200 V, 875 rpm, 150 A, separately excited dc motor has an armature resistance of 0.06Ω It is fed from a single phase fully controlled rectifier with an ac source voltage of 220 V, 50 Hz. Assuming continuous conduction calculate.
1) Firing angle for the rated torque and 750 rpm
2) Motor speed for firing angle = 160° and rated torque

Section – II

Q.4 Answer the following (Any Four) **16**

a) Explain steady state speed torque characteristics of 3-Ph I.M.
b) Write the comparison between VSI and CSI.
c) Discuss the self-control of synchronous motor fed from square wave inverter.
d) Explain the Voltage Source Inverter Fed Synchronous Motor Drive with diagram.
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Answer the following (Any Two) **12**

a) Draw & explain Brushless motor drives waveforms.
b) Explain the operation of solar and battery-operated drive.
c) Explain the Scherbius drive system with circuit diagram.

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Seat No.	

Set S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Industrial Drives Control (197045701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) For particular application the type of electric and control gear is determined by which of the following considerations?
a) Starting torque
b) Speed control range and its nature
c) Limitation on starting torque
d) All of the above

2) As per IS: 4722-1968 Classes of Motor Duty in Electrical Drives are _____.
a) 6 b) 9
c) 8 d) 3

3) To save energy during braking _____.
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c) Regenerative d) All of the above

4) Dynamic torque is present only during _____.
a) Steady state operations only b) During starting only
c) During braking only d) Both b & c

5) An elevator drive is required to operate in _____.
a) One quadrant only b) Two quadrants
c) Three quadrants d) Four quadrants

6) Three phase fully controlled rectifier fed DC Motor operates in _____.
a) First quadrant only
b) Second quadrant only
c) First and Second quadrant only
d) First and Fourth quadrant only

7) The method which can be used for the speed control of induction motor from stator side is _____.
a) V / f control
b) Controlling number of stator poles to control Ns
c) Adding rheostats in stator circuit
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8) Due to low inertia, BLDC motors have _____.
a) Faster acceleration b) Slower acceleration
c) High-cost d) Low cost

9) A stepper motor having a resolution of 300 steps/rev and running at 2400 rpm has a pulse rate of _____ pps.
a) 4000 b) 8000
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10) _____ drive is also called as Line shaft drive.
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c) Group Drive d) None of the above

11) An Electrical drive having _____ number of components.
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c) 3 d) 2

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a) Individual drive b) Group drive
c) DC drives d) AC drives

13) _____ duty cycle consists of frequent on load and off-load period.
a) Continuous Duty with constant Load
b) Continuous Duty With the variable load
c) Short Time duty
d) Intermittent duty

14) Which type of drive can be used for Textile Industry?
a) DC Motor
b) Squirrel cage Induction Motor
c) Cumulative Compound Motor
d) Synchronous Motor

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Industrial Drives Control (197045701)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.

Section – I

Q.2 Answer the following (Any four) **16**

a) Write factors on which choice of electric drive depends.
b) What is AC drive and DC drive? Compare AC & DC drives.
c) With neat sketch explain closed loop control of multi motor drive.
d) Explain the step-up chopper fed DC separately excited motor with derivation.
e) With neat sketch & waveform explain single phase Half controlled converter fed separately excited D.C. motor drive.

Q.3 Answer the following (Any Two) **12**

a) What are the parts of Electrical Drives and explain each one?
b) Classify the load torques and explain.
c) A 200 V, 875 rpm, 150 A, separately excited dc motor has an armature resistance of 0.06Ω It is fed from a single phase fully controlled rectifier with an ac source voltage of 220 V, 50 Hz. Assuming continuous conduction calculate.
1) Firing angle for the rated torque and 750 rpm
2) Motor speed for firing angle = 160° and rated torque

Section – II

Q.4 Answer the following (Any Four) **16**

a) Explain steady state speed torque characteristics of 3-Ph I.M.
b) Write the comparison between VSI and CSI.
c) Discuss the self-control of synchronous motor fed from square wave inverter.
d) Explain the Voltage Source Inverter Fed Synchronous Motor Drive with diagram.
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Answer the following (Any Two) **12**

a) Draw & explain Brushless motor drives waveforms.
b) Explain the operation of solar and battery-operated drive.
c) Explain the Scherbius drive system with circuit diagram.

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Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (197045702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The Economic dispatch problem _____.
a) To minimize the operating cost
b) To minimize fuel cost only
c) To minimize the load demand
d) To minimize the cost of transportation

2) Incremental cost is defined as _____.
a) The rate of change of fuel cost with active power generation
b) The rate of change of running cost with active power generation
c) The rate of change of production cost with active power generation
d) The rate of change of fixed cost with active power generation

3) The units for heat rate are _____.
a) Kcal/KWh b) KWh/kcal
c) Kcal/hour d) KW

4) The curve obtained by considering the change in cost of generation to change in real power generation at various point is _____.
a) Fuel cost curve b) Input-output curve
c) Incremental cost curve d) All of these

5) In dynamic programming method the cost function $F_N(y)$ represents _____.
a) Cost of generation of N MW by y number of unit
b) Cost of generation of y MW by N number of unit
c) Cost of generation of y MW by N^{th} unit
d) Cost of generation of N MW by y^{th} unit

6) What is the condition for uncontrolled case in two area system?
a) $\Delta Pc1 = 0$ b) $\Delta Pc2 = 0$
c) $\Delta Pc1 = \Delta Pc2 = 0$ d) None

7) If the two alternators are running in parallel, if the field of one of alternator is changed will result in _____.
a) Reduces its speed b) Changes its power factor
c) Changes its load d) Changes its frequency

8) The sharing of real power by two alternators operating in parallel depends on _____.
a) Voltage-load characteristics
b) Speed-load characteristics
c) Both voltage-load and speed-load characteristic
d) Excitations of the two machines

9) At times of peak load, a power system needs _____.
a) Injection of lagging vars
b) Injection of leading vars
c) Injection of lagging or leading vars
d) None of the above

10) The voltage drops across a series capacitor bank is proportional to _____.
a) Line current
b) Line voltage
c) Size of conductor
d) Both line current and voltage

11) Which of following compensator directly improves load ability?
a) SVC
b) Shunt capacitor
c) Series capacitor
d) Synchronous condenser

12) Shunt capacitor compensation at load bus _____.
a) Improves the system frequency
b) Improves the system voltage
c) Reduces Ferranti effect
d) Absorbs reactive power

13) Energy control centre is supposed to perform the following security functions _____.
a) System Monitoring
b) Contingency analysis
c) Corrective action analysis
d) All of these

14) Voltage stability is basically _____.
a) Generator stability
b) Load stability
c) Transformer stability
d) None of these

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (197045702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any four **16**

a) Define UNIT Commitment. Explain the necessity of unit Commitment.
b) Explain heat rate curve and cost curve of thermal power plant.
c) Explain unit commitment and the necessity of it.
d) A power system consists of two 100 mw units whose input cost data are represented by equation
$c1 = 0.04P_1^2 + 22P_1 + 800 \text{ Rs/hr}$
$c2 = 0.045P_2^2 + 15P_2 + 1000 \text{ Rs/hr}$
If total received power is 150 mw. Determine load division between units for most economical operation.
e) Explain the following.
i) Incremental fuel cost ii) Incremental production cost

Q.3 Solve any two **12**

a) Explain with mathematical formulation the economic load dispatch neglecting transmission losses.
b) Explain the dynamic programming method for unit commitment with suitable example.
c) The fuel input per hour of two plants are given as
$C_1 = 0.2{P_{G1}}^2 + 25P_{G1} + 1 \quad \text{Rs/hr}$
$C_2 = 0.2{P_{G2}}^2 + 35P_{G2} + 1.5 \quad \text{Rs/hr}$
If the total demand on the generators is 200 MW, find the economic load scheduling of the two units.
Sreenivasan 105

Section – II

Q.4 Solve any four **16**

a) Explain classification of system states.
b) Summarize the difference between voltage angle and voltage stability.
c) What is mean by load compensation? Explain briefly.
d) Why reactive power compensation required in power system.
e) Discuss methods for improving voltage stability.

Q.5 Solve any two **12**

a) Explain various prevention methods of voltage collapse.
b) Explain classification of system states in detail.
c) What do you mean by security analysis? Explain briefly.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (197045702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The sharing of real power by two alternators operating in parallel depends on _____.
a) Voltage-load characteristics
b) Speed-load characteristics
c) Both voltage-load and speed-load characteristic
d) Excitations of the two machines

2) At times of peak load, a power system needs _____.
a) Injection of lagging vars
b) Injection of leading vars
c) Injection of lagging or leading vars
d) None of the above

3) The voltage drops across a series capacitor bank is proportional to _____.
a) Line current
b) Line voltage
c) Size of conductor
d) Both line current and voltage

4) Which of following compensator directly improves load ability?
a) SVC b) Shunt capacitor
c) Series capacitor d) Synchronous condenser

5) Shunt capacitor compensation at load bus _____.
a) Improves the system frequency
b) Improves the system voltage
c) Reduces Ferranti effect
d) Absorbs reactive power

6) Energy control centre is supposed to perform the following security functions _____.
a) System Monitoring b) Contingency analysis
c) Corrective action analysis d) All of these

7) Voltage stability is basically _____.
a) Generator stability b) Load stability
c) Transformer stability d) None of these

8) The Economic dispatch problem _____.
a) To minimize the operating cost
b) To minimize fuel cost only
c) To minimize the load demand
d) To minimize the cost of transportation

9) Incremental cost is defined as _____.
a) The rate of change of fuel cost with active power generation
b) The rate of change of running cost with active power generation
c) The rate of change of production cost with active power generation
d) The rate of change of fixed cost with active power generation

10) The units for heat rate are _____.
a) Kcal/KWh b) KWh/kcal
c) Kcal/hour d) KW

11) The curve obtained by considering the change in cost of generation to change in real power generation at various point is _____.
a) Fuel cost curve b) Input-output curve
c) Incremental cost curve d) All of these

12) In dynamic programming method the cost function $F_N(y)$ represents _____.
a) Cost of generation of N MW by y number of unit
b) Cost of generation of y MW by N number of unit
c) Cost of generation of y MW by N^{th} unit
d) Cost of generation of N MW by y^{th} unit

13) What is the condition for uncontrolled case in two area system?
a) $\Delta Pc1 = 0$ b) $\Delta Pc2 = 0$
c) $\Delta Pc1 = \Delta Pc2 = 0$ d) None

14) If the two alternators are running in parallel, if the field of one of alternator is changed will result in _____.
a) Reduces its speed b) Changes its power factor
c) Changes its load d) Changes its frequency

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Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (197045702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any four **16**

a) Define UNIT Commitment. Explain the necessity of unit Commitment.
b) Explain heat rate curve and cost curve of thermal power plant.
c) Explain unit commitment and the necessity of it.
d) A power system consists of two 100 mw units whose input cost data are represented by equation
$c1 = 0.04P_1^2 + 22P_1 + 800 \text{ Rs/hr}$
$c2 = 0.045P_2^2 + 15P_2 + 1000 \text{ Rs/hr}$
If total received power is 150 mw. Determine load division between units for most economical operation.
e) Explain the following.
i) Incremental fuel cost ii) Incremental production cost

Q.3 Solve any two **12**

a) Explain with mathematical formulation the economic load dispatch neglecting transmission losses.
b) Explain the dynamic programming method for unit commitment with suitable example.
c) The fuel input per hour of two plants are given as
$C_1 = 0.2{P_{G1}}^2 + 25P_{G1} + 1 \quad \text{Rs/hr}$
$C_2 = 0.2{P_{G2}}^2 + 35P_{G2} + 1.5 \quad \text{Rs/hr}$
If the total demand on the generators is 200 MW, find the economic load scheduling of the two units.
Sreenivasan 105

Section – II

Q.4 Solve any four **16**

a) Explain classification of system states.
b) Summarize the difference between voltage angle and voltage stability.
c) What is mean by load compensation? Explain briefly.
d) Why reactive power compensation required in power system.
e) Discuss methods for improving voltage stability.

Q.5 Solve any two **12**

a) Explain various prevention methods of voltage collapse.
b) Explain classification of system states in detail.
c) What do you mean by security analysis? Explain briefly.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (197045702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of following compensator directly improves load ability?
a) SVC b) Shunt capacitor
c) Series capacitor d) Synchronous condenser

2) Shunt capacitor compensation at load bus _____.
a) Improves the system frequency
b) Improves the system voltage
c) Reduces Ferranti effect
d) Absorbs reactive power

3) Energy control centre is supposed to perform the following security functions _____.
a) System Monitoring b) Contingency analysis
c) Corrective action analysis d) All of these

4) Voltage stability is basically _____.
a) Generator stability b) Load stability
c) Transformer stability d) None of these

5) The Economic dispatch problem _____.
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b) To minimize fuel cost only
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10) What is the condition for uncontrolled case in two area system?
a) $\Delta Pc1 = 0$ b) $\Delta Pc2 = 0$
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11) If the two alternators are running in parallel, if the field of one of alternator is changed will result in _____.
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13) At times of peak load, a power system needs _____.
a) Injection of lagging vars
b) Injection of leading vars
c) Injection of lagging or leading vars
d) None of the above

14) The voltage drops across a series capacitor bank is proportional to _____.
a) Line current
b) Line voltage
c) Size of conductor
d) Both line current and voltage

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (197045702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any four **16**

a) Define UNIT Commitment. Explain the necessity of unit Commitment.
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d) A power system consists of two 100 mw units whose input cost data are represented by equation
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If total received power is 150 mw. Determine load division between units for most economical operation.
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Q.3 Solve any two **12**

a) Explain with mathematical formulation the economic load dispatch neglecting transmission losses.
b) Explain the dynamic programming method for unit commitment with suitable example.
c) The fuel input per hour of two plants are given as
$C_1 = 0.2{P_{G1}}^2 + 25P_{G1} + 1 \quad \text{Rs/hr}$
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If the total demand on the generators is 200 MW, find the economic load scheduling of the two units.
Sreenivasan 105

Section – II

Q.4 Solve any four **16**

a) Explain classification of system states.
b) Summarize the difference between voltage angle and voltage stability.
c) What is mean by load compensation? Explain briefly.
d) Why reactive power compensation required in power system.
e) Discuss methods for improving voltage stability.

Q.5 Solve any two **12**

a) Explain various prevention methods of voltage collapse.
b) Explain classification of system states in detail.
c) What do you mean by security analysis? Explain briefly.

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (197045702)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What is the condition for uncontrolled case in two area system?
a) $\Delta Pc1 = 0$ b) $\Delta Pc2 = 0$
c) $\Delta Pc1 = \Delta Pc2 = 0$ d) None

2) If the two alternators are running in parallel, if the field of one of alternator is changed will result in _____.
a) Reduces its speed b) Changes its power factor
c) Changes its load d) Changes its frequency

3) The sharing of real power by two alternators operating in parallel depends on _____.
a) Voltage-load characteristics
b) Speed-load characteristics
c) Both voltage-load and speed-load characteristic
d) Excitations of the two machines

4) At times of peak load, a power system needs _____.
a) Injection of lagging vars
b) Injection of leading vars
c) Injection of lagging or leading vars
d) None of the above

5) The voltage drops across a series capacitor bank is proportional to _____.
a) Line current
b) Line voltage
c) Size of conductor
d) Both line current and voltage

6) Which of following compensator directly improves load ability?
a) SVC b) Shunt capacitor
c) Series capacitor d) Synchronous condenser

7) Shunt capacitor compensation at load bus _____.
a) Improves the system frequency
b) Improves the system voltage
c) Reduces Ferranti effect
d) Absorbs reactive power

8) Energy control centre is supposed to perform the following security functions _____.
a) System Monitoring
b) Contingency analysis
c) Corrective action analysis
d) All of these

9) Voltage stability is basically _____.
a) Generator stability
b) Load stability
c) Transformer stability
d) None of these

10) The Economic dispatch problem _____.
a) To minimize the operating cost
b) To minimize fuel cost only
c) To minimize the load demand
d) To minimize the cost of transportation

11) Incremental cost is defined as _____.
a) The rate of change of fuel cost with active power generation
b) The rate of change of running cost with active power generation
c) The rate of change of production cost with active power generation
d) The rate of change of fixed cost with active power generation

12) The units for heat rate are _____.
a) Kcal/KWh
b) KWh/kcal
c) Kcal/hour
d) KW

13) The curve obtained by considering the change in cost of generation to change in real power generation at various point is _____.
a) Fuel cost curve
b) Input-output curve
c) Incremental cost curve
d) All of these

14) In dynamic programming method the cost function $F_N(y)$ represents _____.
a) Cost of generation of N MW by y number of unit
b) Cost of generation of y MW by N number of unit
c) Cost of generation of y MW by N^{th} unit
d) Cost of generation of N MW by y^{th} unit

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Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System and Operation Control (197045702)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section –I

Q.2 Solve any four **16**

a) Define UNIT Commitment. Explain the necessity of unit Commitment.
b) Explain heat rate curve and cost curve of thermal power plant.
c) Explain unit commitment and the necessity of it.
d) A power system consists of two 100 mw units whose input cost data are represented by equation
$c1 = 0.04P_1^2 + 22P_1 + 800\ \text{Rs/hr}$
$c2 = 0.045P_2^2 + 15P_2 + 1000\ \text{Rs/hr}$
If total received power is 150 mw. Determine load division between units for most economical operation.
e) Explain the following.
i) Incremental fuel cost ii) Incremental production cost

Q.3 Solve any two **12**

a) Explain with mathematical formulation the economic load dispatch neglecting transmission losses.
b) Explain the dynamic programming method for unit commitment with suitable example.
c) The fuel input per hour of two plants are given as
$C_1 = 0.2{P_{G1}}^2 + 25P_{G1} + 1 \quad \text{Rs/hr}$
$C_2 = 0.2{P_{G2}}^2 + 35P_{G2} + 1.5 \quad \text{Rs/hr}$
If the total demand on the generators is 200 MW, find the economic load scheduling of the two units.
Sreenivasan 105

Section – II

Q.4 Solve any four **16**

a) Explain classification of system states.
b) Summarize the difference between voltage angle and voltage stability.
c) What is mean by load compensation? Explain briefly.
d) Why reactive power compensation required in power system.
e) Discuss methods for improving voltage stability.

Q.5 Solve any two **12**

a) Explain various prevention methods of voltage collapse.
b) Explain classification of system states in detail.
c) What do you mean by security analysis? Explain briefly.

SLR-GF-482

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (Old) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (197045703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. 14

1) Which type of device is used to measure solar irradiance on a planar surface?
a) Pyranometer b) Net radiometer
c) Gardon gauge d) Pyrheliometer

2) What is 'n' in the following solar intensity formula?
$I = I_{sc} \{1 + 0.033\cos(360n/365)\}$
a) Day of the year b) Month of the year
c) The year d) Week of the year

3) The angle between the sun's rays and a line perpendicular to the horizontal plane through angle the beam of the sun and vertical is called _____.
a) Solar Azimuth angle b) Zenith angle
c) Altitude angle d) Declination

4) What is aperture area in a solar collector?
a) Area of the system
b) Area in the receiver that receives the solar radiation
c) Area occupied by the system after installation
d) Cross-sectional area of the receiver

5) Which of the following is generally used as circulating fluid in freezing climates?
a) Liquid carbon dioxide
b) Water
c) A mixture of propylene glycol and water
d) Liquid nitrogen

6) What is solar distillation?
a) Use solar energy to evaporate water and collect its condensate within the same closed system
b) Use solar energy to evaporate water and collect it within the same closed system
c) Use solar energy to collect the condensate of water within the same closed system
d) Use solar energy to evaporate water and collect its condensate within different closed systems

7) What is freeze protection in a solar water heating system?
a) Ensures that the system is frozen
b) Prevents the operation of drain back system
c) Prevents damage to system due to freezing of transfer fluid
d) Ensures that the transfer fluid is frozen

8) What does TSR stand for in design consideration of wind mills?
a) Tip speed ratio
b) Torque-synchronous ratio
c) Tip suspension ratio
d) Temporary speed restriction

9) What is the main disadvantage of a vertical axis wind turbine?
a) Not directional and insensitive to wind turbulence
b) More drag than HAWTs
c) Less drag than HAWTs
d) High starting torque

10) Product of anaerobic decomposition involves _____.
a) Methane
b) Lactic acid
c) Oxygen
d) Alcohol

11) How is the heat inside earth restored?
a) Cosmic rays
b) Sun restores the heat
c) Hot steam is pumped into earth
d) Radioactive decay of elements

12) Which of the following is used to locate a geothermal site?
a) Drilling wells
b) Reflection
c) Seismograph
d) SONAR

13) Which of the following are types of systems used in ocean thermal energy conversion?
a) Horizontal and vertical
b) Vertical and open cycle
c) Open cycle and closed cycle
d) Horizontal and closed cycle

14) Open cycle ocean thermal energy conversion systems use _____ as the working fluid.
a) vapour from rivers
b) water from rivers
c) vapour from seawater
d) seawater

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - I) (Old) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (197045703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any FOUR. **16**

a) Explain Extra terrestrial and terrestrial solar radiation.
b) Explain pyranometer for the measurement of solar radiation.
c) Classification of concentrating solar energy collectors.
d) Different methods of solar energy storage.
e) Brief the components wind energy conversion system.
f) Explain horizontal axis wind mills.

Q.3 Attempt Any Two. **12**

a) Explain structure of sun and write note on solar constant.
b) Describe Flat plate collector with diagram.
c) Explain operating characteristics of wind turbine with graph.

Section – II

Q.4 Attempt Any FOUR. **16**

a) Write the comparison between fixed drum type and floating drum type biodigesters.
b) Brief combustion characteristics of biogas.
c) Potential in India for geothermal energy.
d) What are resources of geothermal energy?
e) Describe tidal and wave energy.
f) Explain Carnot cycle.

Q.5 Attempt Any Two. **12**

a) Explain the structure of the earth interior.
b) Explain double chamber biogas plant.
c) Explain tidal energy conversion system with proper diagram.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (Old) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (197045703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) What does TSR stand for in design consideration of wind mills?
a) Tip speed ratio b) Torque-synchronous ratio
c) Tip suspension ratio d) Temporary speed restriction

2) What is the main disadvantage of a vertical axis wind turbine?
a) Not directional and insensitive to wind turbulence
b) More drag than HAWTs
c) Less drag than HAWTs
d) High starting torque

3) Product of anaerobic decomposition involves _____.
a) Methane b) Lactic acid
c) Oxygen d) Alcohol

4) How is the heat inside earth restored?
a) Cosmic rays
b) Sun restores the heat
c) Hot steam is pumped into earth
d) Radioactive decay of elements

5) Which of the following is used to locate a geothermal site?
a) Drilling wells b) Reflection
c) Seismograph d) SONAR

6) Which of the following are types of systems used in ocean thermal energy conversion?
a) Horizontal and vertical b) Vertical and open cycle
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7) Open cycle ocean thermal energy conversion systems use _____ as the working fluid.
a) vapour from rivers b) water from rivers
c) vapour from seawater d) seawater

8) Which type of device is used to measure solar irradiance on a planar surface?
a) Pyranometer
b) Net radiometer
c) Gardon gauge
d) Pyrheliometer

9) What is 'n' in the following solar intensity formula?
$I = I_{sc} \{1 + 0.033\cos (360n/365)\}$
a) Day of the year
b) Month of the year
c) The year
d) Week of the year

10) The angle between the sun's rays and a line perpendicular to the horizontal plane through angle the beam of the sun and vertical is called _____.
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b) Zenith angle
c) Altitude angle
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11) What is aperture area in a solar collector?
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d) Cross-sectional area of the receiver

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a) Liquid carbon dioxide
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a) Use solar energy to evaporate water and collect its condensate within the same closed system
b) Use solar energy to evaporate water and collect it within the same closed system
c) Use solar energy to collect the condensate of water within the same closed system
d) Use solar energy to evaporate water and collect its condensate within different closed systems

14) What is freeze protection in a solar water heating system?
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b) Prevents the operation of drain back system
c) Prevents damage to system due to freezing of transfer fluid
d) Ensures that the transfer fluid is frozen

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (Old) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (197045703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any FOUR. **16**

a) Explain Extra terrestrial and terrestrial solar radiation.
b) Explain pyranometer for the measurement of solar radiation.
c) Classification of concentrating solar energy collectors.
d) Different methods of solar energy storage.
e) Brief the components wind energy conversion system.
f) Explain horizontal axis wind mills.

Q.3 Attempt Any Two. **12**

a) Explain structure of sun and write note on solar constant.
b) Describe Flat plate collector with diagram.
c) Explain operating characteristics of wind turbine with graph.

Section – II

Q.4 Attempt Any FOUR. **16**

a) Write the comparison between fixed drum type and floating drum type biodigesters.
b) Brief combustion characteristics of biogas.
c) Potential in India for geothermal energy.
d) What are resources of geothermal energy?
e) Describe tidal and wave energy.
f) Explain Carnot cycle.

Q.5 Attempt Any Two. **12**

a) Explain the structure of the earth interior.
b) Explain double chamber biogas plant.
c) Explain tidal energy conversion system with proper diagram.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (Old) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (197045703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) How is the heat inside earth restored?
a) Cosmic rays
b) Sun restores the heat
c) Hot steam is pumped into earth
d) Radioactive decay of elements

2) Which of the following is used to locate a geothermal site?
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c) Seismograph d) SONAR

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b) Use solar energy to evaporate water and collect it within the same closed system
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c) Prevents damage to system due to freezing of transfer fluid
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a) Tip speed ratio
b) Torque-synchronous ratio
c) Tip suspension ratio
d) Temporary speed restriction

13) What is the main disadvantage of a vertical axis wind turbine?
a) Not directional and insensitive to wind turbulence
b) More drag than HAWTs
c) Less drag than HAWTs
d) High starting torque

14) Product of anaerobic decomposition involves _____.
a) Methane
b) Lactic acid
c) Oxygen
d) Alcohol

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (Old) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (197045703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any FOUR. **16**

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b) Explain pyranometer for the measurement of solar radiation.
c) Classification of concentrating solar energy collectors.
d) Different methods of solar energy storage.
e) Brief the components wind energy conversion system.
f) Explain horizontal axis wind mills.

Q.3 Attempt Any Two. **12**

a) Explain structure of sun and write note on solar constant.
b) Describe Flat plate collector with diagram.
c) Explain operating characteristics of wind turbine with graph.

Section – II

Q.4 Attempt Any FOUR. **16**

a) Write the comparison between fixed drum type and floating drum type biodigesters.
b) Brief combustion characteristics of biogas.
c) Potential in India for geothermal energy.
d) What are resources of geothermal energy?
e) Describe tidal and wave energy.
f) Explain Carnot cycle.

Q.5 Attempt Any Two. **12**

a) Explain the structure of the earth interior.
b) Explain double chamber biogas plant.
c) Explain tidal energy conversion system with proper diagram.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (Old) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (197045703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) What is solar distillation?
a) Use solar energy to evaporate water and collect its condensate within the same closed system
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c) Use solar energy to collect the condensate of water within the same closed system
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c) Tip suspension ratio d) Temporary speed restriction

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6) How is the heat inside earth restored?
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b) Sun restores the heat
c) Hot steam is pumped into earth
d) Radioactive decay of elements

7) Which of the following is used to locate a geothermal site?
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c) Seismograph d) SONAR

8) Which of the following are types of systems used in ocean thermal energy conversion?
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$I = I_{sc} \{1 + 0.033\cos(360n/365)\}$
a) Day of the year b) Month of the year
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13) What is aperture area in a solar collector?
a) Area of the system
b) Area in the receiver that receives the solar radiation
c) Area occupied by the system after installation
d) Cross-sectional area of the receiver

14) Which of the following is generally used as circulating fluid in freezing climates?
a) Liquid carbon dioxide
b) Water
c) A mixture of propylene glycol and water
d) Liquid nitrogen

SLR-GF-482

Seat No.	

Set S

Fourth Y. (B. Tech) (Sem - I) (Old) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Renewable Energy Sources (197045703)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any FOUR. **16**

a) Explain Extra terrestrial and terrestrial solar radiation.
b) Explain pyranometer for the measurement of solar radiation.
c) Classification of concentrating solar energy collectors.
d) Different methods of solar energy storage.
e) Brief the components wind energy conversion system.
f) Explain horizontal axis wind mills.

Q.3 Attempt Any Two. **12**

a) Explain structure of sun and write note on solar constant.
b) Describe Flat plate collector with diagram.
c) Explain operating characteristics of wind turbine with graph.

Section – II

Q.4 Attempt Any FOUR. **16**

a) Write the comparison between fixed drum type and floating drum type biodigesters.
b) Brief combustion characteristics of biogas.
c) Potential in India for geothermal energy.
d) What are resources of geothermal energy?
e) Describe tidal and wave energy.
f) Explain Carnot cycle.

Q.5 Attempt Any Two. **12**

a) Explain the structure of the earth interior.
b) Explain double chamber biogas plant.
c) Explain tidal energy conversion system with proper diagram.

SLR-GF-483

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem-I) (New/Old)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (197045704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) The most efficient torque producing actuating structure for the induction type relays is
a) Shaded pole structure
b) Watt hour meter structure
c) Induction cup structure
d) Single induction loop structure

2) What is the purpose of back up protection?
a) To increase the speed
b) To increase the reach
c) To leave no blind spot
d) To guard against failure of primary

3) Interruption of large currents by relay require
a) Arc suppressing blow out coils
b) Wide separation of the opened contacts
c) High speed opening of contacts
d) All of the above

4) Plug setting of an electromagnetic relay can be altered by varying
a) Number of ampere turns
b) Air gap of magnetic path
c) Adjustable back stop
d) None of these

5) The material used for fuse must have
a) Low melting point and high resistance
b) Low melting point and low resistance
c) High melting point and low resistance
d) Low melting point and any resistance

6) The relay best suited for phase fault relaying for medium transmission lines is:
a) Mho relay b) Reactance relay
c) Impedance relay d) None of the above

7) A differential relay measures the vector difference between
a) Two currents
b) Two voltages
c) Two or more similar electrical quantities
d) None of the above

8) The delay fuses are used for the protection of .
a) Motors
b) Power outlet circuits
c) Fluorescent lamps
d) Light circuits

9) For which of the following protection from negative sequence currents is provided?
a) Generators
b) Motors
c) Transmission line
d) Transformers

10) Why is it difficult to interrupt a capacitive circuit?
a) The current has a leading power factor.
b) The restriking voltage can be high.
c) Current magnitude is very small.
d) Stored energy in the capacitor is very high.

11) By using low resistance method for arc extension what is the value of arc resistance?
a) Arc resistance is zero.
b) Arc resistance is high
c) Arc resistance is low
d) Arc resistance is very high

12) What is are the main disadvantage of using oil as the quenching medium in the circuit breakers?
a) Need periodical replacement.
b) Risk of formation of explosive mixture with air.
c) Possibility of causing fire hazards
d) All of the above.

13) In axial blast type of CB, expansion of air takes place from _____
a) High pressure to low pressure.
b) Low pressure to high pressure.
c) Always in high pressure
d) Always in low pressure.

14) The over-voltage surges in power systems may be caused by
a) Lightning
b) Switching
c) Resonance
d) Any of the above.

SLR-GF-483

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem-I) (New/Old)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (197045704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four. **16**

a) State the desirable qualities of protective scheme?
b) Explain static overcurrent relay with neat diagram.
c) What are the different types of fuse? Explain construction and operation of HRC fuse with neat diagram.
d) Explain the following terms
a) Pick up current b) Current Setting
c) Plug setting Multiplier d) Time setting multiplier
e) Explain how impedance relay is used for distance protection? Draw its characteristics on R-X diagram.
f) Describe microprocessor based impedance relay with block diagram.

Q.3 Solve any two. **12**

a) Determine the time of operation of an IDMT relay rating 5A and having setting of 125% and TSM=0.5.The relay is connected through C.T. of 400/5A. The fault current is 4000A.The operating time for PSM of 8 is 3.2 Second.
b) With a neat sketch explain electromagnetic attraction relay.
c) Explain how admittance relay is used for distance protection? Draw its characteristics on R-X diagram.

Section – II

Q.4 Solve any four. **16**

a) Explain construction & operation of buchholz relay with neat diagram.
b) Explain protection of generator against motoring action.
c) Explain high resistance interruption method of arc in circuit breaker.
d) Explain the following terms in case of circuit breaker
a) Restriking voltage b) Recovery voltage.
e) With neat sketch explain construction & operation of air blast circuit breaker.
f) With neat sketch explain metal oxide Zno arrestors.

Q.5 Solve any two. **12**

a) Explain protection of induction motor for different faults.

b) Explain construction, principle and operation of oil circuit breaker with neat diagram.

c) Explain the phenomenon of current chopping in circuit breaker.

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem-I) (New/Old)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (197045704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) The delay fuses are used for the protection of .
a) Motors b) Power outlet circuits
c) Fluorescent lamps d) Light circuits

2) For which of the following protection from negative sequence currents is provided?
a) Generators b) Motors
c) Transmission line d) Transformers

3) Why is it difficult to interrupt a capacitive circuit?
a) The current has a leading power factor.
b) The restriking voltage can be high.
c) Current magnitude is very small.
d) Stored energy in the capacitor is very high.

4) By using low resistance method for arc extension what is the value of arc resistance?
a) Arc resistance is zero.
b) Arc resistance is high
c) Arc resistance is low
d) Arc resistance is very high

5) What is are the main disadvantage of using oil as the quenching medium in the circuit breakers?
a) Need periodical replacement.
b) Risk of formation of explosive mixture with air.
c) Possibility of causing fire hazards
d) All of the above.

6) In axial blast type of CB, expansion of air takes place from _____
a) High pressure to low pressure.
b) Low pressure to high pressure.
c) Always in high pressure
d) Always in low pressure.

7) The over-voltage surges in power systems may be caused by
a) Lightning b) Switching
c) Resonance d) Any of the above.

8) The most efficient torque producing actuating structure for the induction type relays is
a) Shaded pole structure
b) Watt hour meter structure
c) Induction cup structure
d) Single induction loop structure

9) What is the purpose of back up protection?
a) To increase the speed
b) To increase the reach
c) To leave no blind spot
d) To guard against failure of primary

10) Interruption of large currents by relay require
a) Arc suppressing blow out coils
b) Wide separation of the opened contacts
c) High speed opening of contacts
d) All of the above

11) Plug setting of an electromagnetic relay can be altered by varying
a) Number of ampere turns
b) Air gap of magnetic path
c) Adjustable back stop
d) None of these

12) The material used for fuse must have
a) Low melting point and high resistance
b) Low melting point and low resistance
c) High melting point and low resistance
d) Low melting point and any resistance

13) The relay best suited for phase fault relaying for medium transmission lines is:
a) Mho relay b) Reactance relay
c) Impedance relay d) None of the above

14) A differential relay measures the vector difference between
a) Two currents
b) Two voltages
c) Two or more similar electrical quantities
d) None of the above

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem-I) (New/Old)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (197045704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four. **16**

a) State the desirable qualities of protective scheme?
b) Explain static overcurrent relay with neat diagram.
c) What are the different types of fuse? Explain construction and operation of HRC fuse with neat diagram.
d) Explain the following terms
a) Pick up current b) Current Setting
c) Plug setting Multiplier d) Time setting multiplier
e) Explain how impedance relay is used for distance protection? Draw its characteristics on R-X diagram.
f) Describe microprocessor based impedance relay with block diagram.

Q.3 Solve any two. **12**

a) Determine the time of operation of an IDMT relay rating 5A and having setting of 125% and TSM=0.5.The relay is connected through C.T. of 400/5A. The fault current is 4000A.The operating time for PSM of 8 is 3.2 Second.
b) With a neat sketch explain electromagnetic attraction relay.
c) Explain how admittance relay is used for distance protection? Draw its characteristics on R-X diagram.

Section – II

Q.4 Solve any four. **16**

a) Explain construction & operation of buchholz relay with neat diagram.
b) Explain protection of generator against motoring action.
c) Explain high resistance interruption method of arc in circuit breaker.
d) Explain the following terms in case of circuit breaker
a) Restriking voltage b) Recovery voltage.
e) With neat sketch explain construction & operation of air blast circuit breaker.
f) With neat sketch explain metal oxide Zno arrestors.

Q.5 Solve any two. **12**

a) Explain protection of induction motor for different faults.

b) Explain construction, principle and operation of oil circuit breaker with neat diagram.

c) Explain the phenomenon of current chopping in circuit breaker.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem-I) (New/Old)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (197045704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) By using low resistance method for arc extension what is the value of arc resistance?
a) Arc resistance is zero.
b) Arc resistance is high
c) Arc resistance is low
d) Arc resistance is very high

2) What is are the main disadvantage of using oil as the quenching medium in the circuit breakers?
a) Need periodical replacement.
b) Risk of formation of explosive mixture with air.
c) Possibility of causing fire hazards
d) All of the above.

3) In axial blast type of CB, expansion of air takes place from _____
a) High pressure to low pressure.
b) Low pressure to high pressure.
c) Always in high pressure
d) Always in low pressure.

4) The over-voltage surges in power systems may be caused by
a) Lightning b) Switching
c) Resonance d) Any of the above.

5) The most efficient torque producing actuating structure for the induction type relays is
a) Shaded pole structure
b) Watt hour meter structure
c) Induction cup structure
d) Single induction loop structure

6) What is the purpose of back up protection?
a) To increase the speed
b) To increase the reach
c) To leave no blind spot
d) To guard against failure of primary

7) Interruption of large currents by relay require
a) Arc suppressing blow out coils
b) Wide separation of the opened contacts
c) High speed opening of contacts
d) All of the above

8) Plug setting of an electromagnetic relay can be altered by varying
a) Number of ampere turns
b) Air gap of magnetic path
c) Adjustable back stop
d) None of these

9) The material used for fuse must have
a) Low melting point and high resistance
b) Low melting point and low resistance
c) High melting point and low resistance
d) Low melting point and any resistance

10) The relay best suited for phase fault relaying for medium transmission lines is:
a) Mho relay b) Reactance relay
c) Impedance relay d) None of the above

11) A differential relay measures the vector difference between
a) Two currents
b) Two voltages
c) Two or more similar electrical quantities
d) None of the above

12) The delay fuses are used for the protection of .
a) Motors b) Power outlet circuits
c) Fluorescent lamps d) Light circuits

13) For which of the following protection from negative sequence currents is provided?
a) Generators b) Motors
c) Transmission line d) Transformers

14) Why is it difficult to interrupt a capacitive circuit?
a) The current has a leading power factor.
b) The restriking voltage can be high.
c) Current magnitude is very small.
d) Stored energy in the capacitor is very high.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem-I) (New/Old)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (197045704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four. **16**

a) State the desirable qualities of protective scheme?
b) Explain static overcurrent relay with neat diagram.
c) What are the different types of fuse? Explain construction and operation of HRC fuse with neat diagram.
d) Explain the following terms
a) Pick up current b) Current Setting
c) Plug setting Multiplier d) Time setting multiplier
e) Explain how impedance relay is used for distance protection? Draw its characteristics on R-X diagram.
f) Describe microprocessor based impedance relay with block diagram.

Q.3 Solve any two. **12**

a) Determine the time of operation of an IDMT relay rating 5A and having setting of 125% and TSM=0.5.The relay is connected through C.T. of 400/5A. The fault current is 4000A.The operating time for PSM of 8 is 3.2 Second.
b) With a neat sketch explain electromagnetic attraction relay.
c) Explain how admittance relay is used for distance protection? Draw its characteristics on R-X diagram.

Section – II

Q.4 Solve any four. **16**

a) Explain construction & operation of buchholz relay with neat diagram.
b) Explain protection of generator against motoring action.
c) Explain high resistance interruption method of arc in circuit breaker.
d) Explain the following terms in case of circuit breaker
a) Restriking voltage b) Recovery voltage.
e) With neat sketch explain construction & operation of air blast circuit breaker.
f) With neat sketch explain metal oxide Zno arrestors.

Q.5 Solve any two. **12**

a) Explain protection of induction motor for different faults.

b) Explain construction, principle and operation of oil circuit breaker with neat diagram.

c) Explain the phenomenon of current chopping in circuit breaker.

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Seat No.	

Set S

Fourth Y. (B. Tech) (Sem-I) (New/Old)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (197045704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer **14**

1) The relay best suited for phase fault relaying for medium transmission lines is:
a) Mho relay b) Reactance relay
c) Impedance relay d) None of the above

2) A differential relay measures the vector difference between
a) Two currents
b) Two voltages
c) Two or more similar electrical quantities
d) None of the above

3) The delay fuses are used for the protection of .
a) Motors b) Power outlet circuits
c) Fluorescent lamps d) Light circuits

4) For which of the following protection from negative sequence currents is provided?
a) Generators b) Motors
c) Transmission line d) Transformers

5) Why is it difficult to interrupt a capacitive circuit?
a) The current has a leading power factor.
b) The restriking voltage can be high.
c) Current magnitude is very small.
d) Stored energy in the capacitor is very high.

6) By using low resistance method for arc extension what is the value of arc resistance?
a) Arc resistance is zero.
b) Arc resistance is high
c) Arc resistance is low
d) Arc resistance is very high

7) What is are the main disadvantage of using oil as the quenching medium in the circuit breakers?
a) Need periodical replacement.
b) Risk of formation of explosive mixture with air.
c) Possibility of causing fire hazards
d) All of the above.

8) In axial blast type of CB, expansion of air takes place from _____
a) High pressure to low pressure.
b) Low pressure to high pressure.
c) Always in high pressure
d) Always in low pressure.

9) The over-voltage surges in power systems may be caused by
a) Lightning
b) Switching
c) Resonance
d) Any of the above.

10) The most efficient torque producing actuating structure for the induction type relays is
a) Shaded pole structure
b) Watt hour meter structure
c) Induction cup structure
d) Single induction loop structure

11) What is the purpose of back up protection?
a) To increase the speed
b) To increase the reach
c) To leave no blind spot
d) To guard against failure of primary

12) Interruption of large currents by relay require
a) Arc suppressing blow out coils
b) Wide separation of the opened contacts
c) High speed opening of contacts
d) All of the above

13) Plug setting of an electromagnetic relay can be altered by varying
a) Number of ampere turns
b) Air gap of magnetic path
c) Adjustable back stop
d) None of these

14) The material used for fuse must have
a) Low melting point and high resistance
b) Low melting point and low resistance
c) High melting point and low resistance
d) Low melting point and any resistance

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem-I) (New/Old)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Switchgear and Protection (197045704)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve any four. **16**

a) State the desirable qualities of protective scheme?
b) Explain static overcurrent relay with neat diagram.
c) What are the different types of fuse? Explain construction and operation of HRC fuse with neat diagram.
d) Explain the following terms
a) Pick up current b) Current Setting
c) Plug setting Multiplier d) Time setting multiplier
e) Explain how impedance relay is used for distance protection? Draw its characteristics on R-X diagram.
f) Describe microprocessor based impedance relay with block diagram.

Q.3 Solve any two. **12**

a) Determine the time of operation of an IDMT relay rating 5A and having setting of 125% and TSM=0.5.The relay is connected through C.T. of 400/5A. The fault current is 4000A.The operating time for PSM of 8 is 3.2 Second.
b) With a neat sketch explain electromagnetic attraction relay.
c) Explain how admittance relay is used for distance protection? Draw its characteristics on R-X diagram.

Section – II

Q.4 Solve any four. **16**

a) Explain construction & operation of buchholz relay with neat diagram.
b) Explain protection of generator against motoring action.
c) Explain high resistance interruption method of arc in circuit breaker.
d) Explain the following terms in case of circuit breaker
a) Restriking voltage b) Recovery voltage.
e) With neat sketch explain construction & operation of air blast circuit breaker.
f) With neat sketch explain metal oxide Zno arrestors.

Q.5 Solve any two. **12**

a) Explain protection of induction motor for different faults.

b) Explain construction, principle and operation of oil circuit breaker with neat diagram.

c) Explain the phenomenon of current chopping in circuit breaker.

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Audit and Management (197045707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Load Curve helps in deciding the _____.
a) Total installed capacity of the plant
b) Size of the generating units
c) Operating schedule of the generating units
d) All of the above

2) The load duration curve for unity load factor will be of _____.
a) Rectangular shape b) Triangular shape
c) L-shape d) I-shape

3) During which season the load on a power system is maximum?
a) Autumn b) Rainy
c) Summer d) Winter

4) The power system experiences peak demand from _____.
a) Midnight to 8 AM b) 8 AM to 2 PM
c) 2 PM to 6 PM d) 6 PM to 10 PM

5) Demand factor on a power system is _____.
a) Always greater than unity b) Normally greater than unity
c) Always lesser than unity d) Normally lesser than unity

6) Load factor of a power plant is _____.
a) Generally equal to unity b) Always less than unity
c) Always more than unity d) Normally more than unity

7) Load factor for heavy industries may be taken as _____.
a) 70-80% b) 50-60%
c) 25-50% d) 20-25%

8) The connected load of a consumer is 2 kw and his maximum demand is 1.5 kw. The demand factor of the consumer is _____.
a) 0.75 b) 0.375
c) 1.33 d) None of the above

9) The annual load duration curve of a power supply system may be considered as a straight line from 40 MW to 8 MW. The load factor of the system is _____.

a) 20% b) 40%
c) 60% d) 83.3%

10) Diversity factor X maximum demand is _____.

a) Average demand
b) Sum of consumer's maximum demand
c) Installed capacity
d) Generated power

11) The knowledge of diversity factor helps in computing _____.

a) Plant capacity b) Average load
c) Units (kwh) generated d) Peak demand

12) Utilization factor is defined as the ratio of _____.

a) Average demand to rated capacity of the power plant
b) Maximum demand on the power plant to the rated capacity of the power plant
c) Rated capacity of the power plant to the maximum demand
d) None of the above

13) In a power plant, a reserve generating capacity which is in operation but not in service, is called the _____.

a) Cold reserve b) Hot reserve
c) Spinning reserve d) Firm reserve

14) Diversity factor is defined as the ratio of _____.

a) Sum of individual maximum demands of all the consumers supplied by a power system to the maximum of the power station.
b) Maximum demand to average load
c) Maximum demand of the power station to the sum of individual maximum demands of all the consumers supplied by the power station
d) installed capacity to maximum demand of the power station

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Audit and Management (197045707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four. **16**

a) Explain definition and objectives of energy management.
b) What are necessary skills of energy manager?
c) How the power factor penalties and incentives help in DSM?
d) Write a note on supply side management.
e) What is global climate change treaty?
f) Write short note on Kyoto Protocol.

Q.3 Solve Any Two. **12**

a) Explain organization setup for management.
b) What are the duties and responsibilities of energy manager?
c) What is energy conservation building cide? List salient features of ECBC.

Section – II

Q.4 Solve any Four. **16**

a) What is internal and external benchmarking? What are the benefits of benchmarking energy?
b) Write a short note on Motive power.
c) Enlist Energy conservation opportunities in pumping system.
d) Write a short note on cost factors for energy management.
e) Write a short note on Sankey diagram with diagram.
f) Write a short note on T and D sectors in Maharashtra.

Q.6 Solve Any Two. **12**

a) Explain energy audit report writing in prescribed form.
b) Write note on break even analysis.
c) Explain technical means for T and D loss minimization.

Seat No.	

Set | Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Audit and Management (197045707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The connected load of a consumer is 2 kw and his maximum demand is 1.5 kw. The demand factor of the consumer is _____.
a) 0.75 b) 0.375
c) 1.33 d) None of the above

2) The annual load duration curve of a power supply system may be considered as a straight line from 40 MW to 8 MW. The load factor of the system is _____.
a) 20% b) 40%
c) 60% d) 83.3%

3) Diversity factor X maximum demand is _____.
a) Average demand
b) Sum of consumer's maximum demand
c) Installed capacity
d) Generated power

4) The knowledge of diversity factor helps in computing _____.
a) Plant capacity b) Average load
c) Units (kwh) generated d) Peak demand

5) Utilization factor is defined as the ratio of _____.
a) Average demand to rated capacity of the power plant
b) Maximum demand on the power plant to the rated capacity of the power plant
c) Rated capacity of the power plant to the maximum demand
d) None of the above

6) In a power plant, a reserve generating capacity which is in operation but not in service, is called the _____.
a) Cold reserve b) Hot reserve
c) Spinning reserve d) Firm reserve

7) Diversity factor is defined as the ratio of _____.
a) Sum of individual maximum demands of all the consumers supplied by a power system to the maximum of the power station.
b) Maximum demand to average load
c) Maximum demand of the power station to the sum of individual maximum demands of all the consumers supplied by the power station
d) installed capacity to maximum demand of the power station

8) Load Curve helps in deciding the _____.
a) Total installed capacity of the plant
b) Size of the generating units
c) Operating schedule of the generating units
d) All of the above

9) The load duration curve for unity load factor will be of _____.
a) Rectangular shape b) Triangular shape
c) L-shape d) I-shape

10) During which season the load on a power system is maximum?
a) Autumn b) Rainy
c) Summer d) Winter

11) The power system experiences peak demand from _____.
a) Midnight to 8 AM b) 8 AM to 2 PM
c) 2 PM to 6 PM d) 6 PM to 10 PM

12) Demand factor on a power system is _____.
a) Always greater than unity b) Normally greater than unity
c) Always lesser than unity d) Normally lesser than unity

13) Load factor of a power plant is _____.
a) Generally equal to unity b) Always less than unity
c) Always more than unity d) Normally more than unity

14) Load factor for heavy industries may be taken as _____.
a) 70-80% b) 50-60%
c) 25-50% d) 20-25%

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Audit and Management (197045707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four. **16**

a) Explain definition and objectives of energy management.
b) What are necessary skills of energy manager?
c) How the power factor penalties and incentives help in DSM?
d) Write a note on supply side management.
e) What is global climate change treaty?
f) Write short note on Kyoto Protocol.

Q.3 Solve Any Two. **12**

a) Explain organization setup for management.
b) What are the duties and responsibilities of energy manager?
c) What is energy conservation building cide? List salient features of ECBC.

Section – II

Q.4 Solve any Four. **16**

a) What is internal and external benchmarking? What are the benefits of benchmarking energy?
b) Write a short note on Motive power.
c) Enlist Energy conservation opportunities in pumping system.
d) Write a short note on cost factors for energy management.
e) Write a short note on Sankey diagram with diagram.
f) Write a short note on T and D sectors in Maharashtra.

Q.6 Solve Any Two. **12**

a) Explain energy audit report writing in prescribed form.
b) Write note on break even analysis.
c) Explain technical means for T and D loss minimization.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Audit and Management (197045707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The knowledge of diversity factor helps in computing _____.
a) Plant capacity b) Average load
c) Units (kwh) generated d) Peak demand

2) Utilization factor is defined as the ratio of _____.
a) Average demand to rated capacity of the power plant
b) Maximum demand on the power plant to the rated capacity of the power plant
c) Rated capacity of the power plant to the maximum demand
d) None of the above

3) In a power plant, a reserve generating capacity which is in operation but not in service, is called the _____.
a) Cold reserve b) Hot reserve
c) Spinning reserve d) Firm reserve

4) Diversity factor is defined as the ratio of _____.
a) Sum of individual maximum demands of all the consumers supplied by a power system to the maximum of the power station.
b) Maximum demand to average load
c) Maximum demand of the power station to the sum of individual maximum demands of all the consumers supplied by the power station
d) installed capacity to maximum demand of the power station

5) Load Curve helps in deciding the _____.
a) Total installed capacity of the plant
b) Size of the generating units
c) Operating schedule of the generating units
d) All of the above

6) The load duration curve for unity load factor will be of _____.
a) Rectangular shape b) Triangular shape
c) L-shape d) I-shape

7) During which season the load on a power system is maximum?
a) Autumn b) Rainy
c) Summer d) Winter

8) The power system experiences peak demand from _____.
a) Midnight to 8 AM b) 8 AM to 2 PM
c) 2 PM to 6 PM d) 6 PM to 10 PM

9) Demand factor on a power system is _____.
a) Always greater than unity b) Normally greater than unity
c) Always lesser than unity d) Normally lesser than unity

10) Load factor of a power plant is _____.
a) Generally equal to unity b) Always less than unity
c) Always more than unity d) Normally more than unity

11) Load factor for heavy industries may be taken as _____.
a) 70-80% b) 50-60%
c) 25-50% d) 20-25%

12) The connected load of a consumer is 2 kw and his maximum demand is 1.5 kw. The demand factor of the consumer is _____.
a) 0.75 b) 0.375
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13) The annual load duration curve of a power supply system may be considered as a straight line from 40 MW to 8 MW. The load factor of the system is _____.
a) 20% b) 40%
c) 60% d) 83.3%

14) Diversity factor X maximum demand is _____.
a) Average demand
b) Sum of consumer's maximum demand
c) Installed capacity
d) Generated power

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Audit and Management (197045707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four. **16**

a) Explain definition and objectives of energy management.
b) What are necessary skills of energy manager?
c) How the power factor penalties and incentives help in DSM?
d) Write a note on supply side management.
e) What is global climate change treaty?
f) Write short note on Kyoto Protocol.

Q.3 Solve Any Two. **12**

a) Explain organization setup for management.
b) What are the duties and responsibilities of energy manager?
c) What is energy conservation building cide? List salient features of ECBC.

Section – II

Q.4 Solve any Four. **16**

a) What is internal and external benchmarking? What are the benefits of benchmarking energy?
b) Write a short note on Motive power.
c) Enlist Energy conservation opportunities in pumping system.
d) Write a short note on cost factors for energy management.
e) Write a short note on Sankey diagram with diagram.
f) Write a short note on T and D sectors in Maharashtra.

Q.6 Solve Any Two. **12**

a) Explain energy audit report writing in prescribed form.
b) Write note on break even analysis.
c) Explain technical means for T and D loss minimization.

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Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Audit and Management (197045707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Load factor of a power plant is _____.
a) Generally equal to unity b) Always less than unity
c) Always more than unity d) Normally more than unity

2) Load factor for heavy industries may be taken as _____.
a) 70-80% b) 50-60%
c) 25-50% d) 20-25%

3) The connected load of a consumer is 2 kw and his maximum demand is 1.5 kw. The demand factor of the consumer is _____.
a) 0.75 b) 0.375
c) 1.33 d) None of the above

4) The annual load duration curve of a power supply system may be considered as a straight line from 40 MW to 8 MW. The load factor of the system is _____.
a) 20% b) 40%
c) 60% d) 83.3%

5) Diversity factor X maximum demand is _____.
a) Average demand
b) Sum of consumer's maximum demand
c) Installed capacity
d) Generated power

6) The knowledge of diversity factor helps in computing _____.
a) Plant capacity b) Average load
c) Units (kwh) generated d) Peak demand

7) Utilization factor is defined as the ratio of _____.
a) Average demand to rated capacity of the power plant
b) Maximum demand on the power plant to the rated capacity of the power plant
c) Rated capacity of the power plant to the maximum demand
d) None of the above

8) In a power plant, a reserve generating capacity which is in operation but not in service, is called the _____.
a) Cold reserve b) Hot reserve
c) Spinning reserve d) Firm reserve

9) Diversity factor is defined as the ratio of _____.
a) Sum of individual maximum demands of all the consumers supplied by a power system to the maximum of the power station.
b) Maximum demand to average load
c) Maximum demand of the power station to the sum of individual maximum demands of all the consumers supplied by the power station
d) installed capacity to maximum demand of the power station

10) Load Curve helps in deciding the _____.
a) Total installed capacity of the plant
b) Size of the generating units
c) Operating schedule of the generating units
d) All of the above

11) The load duration curve for unity load factor will be of _____.
a) Rectangular shape b) Triangular shape
c) L-shape d) I-shape

12) During which season the load on a power system is maximum?
a) Autumn b) Rainy
c) Summer d) Winter

13) The power system experiences peak demand from _____.
a) Midnight to 8 AM b) 8 AM to 2 PM
c) 2 PM to 6 PM d) 6 PM to 10 PM

14) Demand factor on a power system is _____.
a) Always greater than unity b) Normally greater than unity
c) Always lesser than unity d) Normally lesser than unity

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Energy Audit and Management (197045707)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four. **16**

a) Explain definition and objectives of energy management.
b) What are necessary skills of energy manager?
c) How the power factor penalties and incentives help in DSM?
d) Write a note on supply side management.
e) What is global climate change treaty?
f) Write short note on Kyoto Protocol.

Q.3 Solve Any Two. **12**

a) Explain organization setup for management.
b) What are the duties and responsibilities of energy manager?
c) What is energy conservation building cide? List salient features of ECBC.

Section – II

Q.4 Solve any Four. **16**

a) What is internal and external benchmarking? What are the benefits of benchmarking energy?
b) Write a short note on Motive power.
c) Enlist Energy conservation opportunities in pumping system.
d) Write a short note on cost factors for energy management.
e) Write a short note on Sankey diagram with diagram.
f) Write a short note on T and D sectors in Maharashtra.

Q.6 Solve Any Two. **12**

a) Explain energy audit report writing in prescribed form.
b) Write note on break even analysis.
c) Explain technical means for T and D loss minimization.

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Digital Signal Processing (197045708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat diagrams whenever necessary.
5) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) The system is casual when the current output sample depends upon _____.
a) current input sample
b) current or next & past input samples
c) current and/or past input samples and/or past output samples
d) Next or past input sample or past output samples.

2) A necessary &sufficient condition for the LTI system to be BIBO stable is _____.
a) $\sum_{n=-\infty}^{n=\infty} h > \infty$
b) $\sum_{n=-\infty}^{n=\infty} h(n) < \infty$
c) $\sum_{n=-\infty}^{n=\infty} h(n) = \infty$
d) None

3) Aliasing occurs _____.
a) Overlap save method
b) Overlap add method
c) Both a & b
d) None

4) The circular frequency shift of a sequence is equivalent to _____.
a) Multiplication of the sequence $x(n)$ with complex exponential
b) Multiplication of the sequence $X(k)$ with complex exponential.
c) Multiplication of the sequence $x(n)$ with exponential factor.
d) None

5) Section convolution is performed if one of the sequences is much larger than the other to overcome _____.
a) Long delay in getting output
b) Larger memory space requirement
c) both a & b
d) None

6) The algorithm used for the computation of DFT based on the decomposition of N-point DFT is known as _____.
a) Phase algorithm
b) Overlap save
c) Divide and Conquer
d) None

7) The advantage of the FIR filter is _____.
a) they are always stable b) less storage requirement
c) errors due to round off is less d) None

8) Which among the following represent/s the characteristic/s of an ideal filter?
a) Constant gain in the passband b) Zero gain in the stop band
c) Linear Phase Response d) All of the above

9) Which of the following criterion can be used to optimize the M+1 filter coefficients?
a) Pade approximation method
b) Least squares error criterion
c) Least squares error criterion & Pade approximation method
d) None of the mentioned

10) Poles of Butterworth filter lie on _____.
a) Ellipse b) Circle
c) Parabola d) None

11) The overall impulse response of two LTI systems connected in a cascade is equal to _____.
a) Sum of two impulse response
b) Multiplication of two impulse response
c) Convolution of the individual impulse response
d) None

12) Finite word Length Effect gives _____.
a) Improvement in performance of Filter
b) Degradation in performance of Filter
c) Increased Accuracy
d) None

13) In the IIR system, which of the following structures will give a direct relation between the time domain and Z domain.
a) Direct form I b) Direct form II
c) Cascade form d) Parallel form

14) To avoid aliasing of frequency components which method is useful in designing filter _____.
a) impulse invariant b) bilinear transformation
c) windowing techniques d) None

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Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Digital Signal Processing (197045708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following. **16**

a) What is the twiddle factor and explain its significance?
b) Explain the linear phase filter with an example.
c) Compute autocorrelation of the sequence $x(n) = \{4, 2, 5, 6, 3\}$
d) Compare Wavelet Transform and Discrete Wavelet Transform.
e) Determine DFT of a sequence $x(n)$ if $x(n) = \{3, 5, 2, 3\}$.

Q.3 Attempt any two of the following. **12**

a) Find linear convolution Using the overlap-add method, of the following sequence.
$x(n) = \{1, 2, 0, -3, 2, 2, 1, 0, -1, -1, 0, 1, 5, 7, 3\}$ $h(n) = \{1, 2, 2, 1\}$
b) Find circular convolution of two finite duration sequence.
$x(n) = \{1, -1, -6, 3, -1, 5\}$ $h(n) = \{1, 2, 3, 1)$
c) Explain the application of DSP in Power systems.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the characteristic of the FIR filter.
b) List down the design steps in implementing the IIR filter.
c) Write a note on LMS Algorithm.
d) Explain the windowing technique for designing an FIR filter.
e) What is the warping effect? What is its effect on magnitude and phase response?

Q.5 Attempt any two of the following **12**

a) For the analog transfer function $H(s) = \frac{2}{(s+5)(s+3)}$
Determine $H(Z)$ using Bilinear transformation with $T = 2$ sec.
b) Explain in detail Adaptive Signal Processing.
c) What is bilinear transformation? Explain steps to design IIR filter using bilinear transformation?

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Digital Signal Processing (197045708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat diagrams whenever necessary.
5) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) Which among the following represent/s the characteristic/s of an ideal filter?
a) Constant gain in the passband b) Zero gain in the stop band
c) Linear Phase Response d) All of the above

2) Which of the following criterion can be used to optimize the M+1 filter coefficients?
a) Pade approximation method
b) Least squares error criterion
c) Least squares error criterion & Pade approximation method
d) None of the mentioned

3) Poles of Butterworth filter lie on _____.
a) Ellipse b) Circle
c) Parabola d) None

4) The overall impulse response of two LTI systems connected in a cascade is equal to _____.
a) Sum of two impulse response
b) Multiplication of two impulse response
c) Convolution of the individual impulse response
d) None

5) Finite word Length Effect gives _____.
a) Improvement in performance of Filter
b) Degradation in performance of Filter
c) Increased Accuracy
d) None

6) In the IIR system, which of the following structures will give a direct relation between the time domain and Z domain.
a) Direct form I b) Direct form II
c) Cascade form d) Parallel form

7) To avoid aliasing of frequency components which method is useful in designing filter _____.
a) impulse invariant b) bilinear transformation
c) windowing techniques d) None

8) The system is casual when the current output sample depends upon _____.
a) current input sample
b) current or next & past input samples
c) current and/or past input samples and/or past output samples
d) Next or past input sample or past output samples.

9) A necessary &sufficient condition for the LTI system to be BIBO stable is _____.
a) $\sum_{n=-\infty}^{n=\infty} h > \infty$ b) $\sum_{n=-\infty}^{n=\infty} h(n) < \infty$
c) $\sum_{n=-\infty}^{n=\infty} h(n) = \infty$ d) None

10) Aliasing occurs _____.
a) Overlap save method b) Overlap add method
c) Both a & b d) None

11) The circular frequency shift of a sequence is equivalent to _____.
a) Multiplication of the sequence $x(n)$ with complex exponential
b) Multiplication of the sequence $X(k)$ with complex exponential.
c) Multiplication of the sequence $x(n)$ with exponential factor.
d) None

12) Section convolution is performed if one of the sequences is much larger than the other to overcome _____.
a) Long delay in getting output
b) Larger memory space requirement
c) both a & b
d) None

13) The algorithm used for the computation of DFT based on the decomposition of N-point DFT is known as _____.
a) Phase algorithm b) Overlap save
c) Divide and Conquer d) None

14) The advantage of the FIR filter is _____.
a) they are always stable b) less storage requirement
c) errors due to round off is less d) None

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Digital Signal Processing (197045708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following. **16**

a) What is the twiddle factor and explain its significance?
b) Explain the linear phase filter with an example.
c) Compute autocorrelation of the sequence $x(n) = \{4, 2, 5, 6, 3\}$
d) Compare Wavelet Transform and Discrete Wavelet Transform.
e) Determine DFT of a sequence $x(n)$ if $x(n) = \{3, 5, 2, 3\}$.

Q.3 Attempt any two of the following. **12**

a) Find linear convolution Using the overlap-add method, of the following sequence.
$x(n) = \{1, 2, 0, -3, 2, 2, 1, 0, -1, -1, 0, 1, 5, 7, 3\}$ $h(n) = \{1, 2, 2, 1\}$

b) Find circular convolution of two finite duration sequence.
$x(n) = \{1, -1, -6, 3, -1, 5\}$ $h(n) = \{1, 2, 3, 1)$

c) Explain the application of DSP in Power systems.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the characteristic of the FIR filter.
b) List down the design steps in implementing the IIR filter.
c) Write a note on LMS Algorithm.
d) Explain the windowing technique for designing an FIR filter.
e) What is the warping effect? What is its effect on magnitude and phase response?

Q.5 Attempt any two of the following **12**

a) For the analog transfer function $H(s) = \frac{2}{(s+5)(s+3)}$
Determine $H(Z)$ using Bilinear transformation with $T = 2$ sec.
b) Explain in detail Adaptive Signal Processing.
c) What is bilinear transformation? Explain steps to design IIR filter using bilinear transformation?

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Digital Signal Processing (197045708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Draw neat diagrams whenever necessary.
5) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) The overall impulse response of two LTI systems connected in a cascade is equal to _____.
a) Sum of two impulse response
b) Multiplication of two impulse response
c) Convolution of the individual impulse response
d) None

2) Finite word Length Effect gives _____.
a) Improvement in performance of Filter
b) Degradation in performance of Filter
c) Increased Accuracy
d) None

3) In the IIR system, which of the following structures will give a direct relation between the time domain and Z domain.
a) Direct form I b) Direct form II
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4) To avoid aliasing of frequency components which method is useful in designing filter _____.
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c) windowing techniques d) None

5) The system is casual when the current output sample depends upon _____.
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b) current or next & past input samples
c) current and/or past input samples and/or past output samples
d) Next or past input sample or past output samples.

6) A necessary &sufficient condition for the LTI system to be BIBO stable is _____.

a) $\sum_{n=-\infty}^{n=\infty} h > \infty$ b) $\sum_{n=-\infty}^{n=\infty} h(n) < \infty$

c) $\sum_{n=-\infty}^{n=\infty} h(n) = \infty$ d) None

7) Aliasing occurs _____.

a) Overlap save method b) Overlap add method

c) Both a & b d) None

8) The circular frequency shift of a sequence is equivalent to _____.

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b) Multiplication of the sequence $X(k)$ with complex exponential.

c) Multiplication of the sequence $x(n)$ with exponential factor.

d) None

9) Section convolution is performed if one of the sequences is much larger than the other to overcome _____.

a) Long delay in getting output

b) Larger memory space requirement

c) both a & b

d) None

10) The algorithm used for the computation of DFT based on the decomposition of N-point DFT is known as _____.

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c) Divide and Conquer d) None

11) The advantage of the FIR filter is _____.

a) they are always stable b) less storage requirement

c) errors due to round off is less d) None

12) Which among the following represent/s the characteristic/s of an ideal filter?

a) Constant gain in the passband b) Zero gain in the stop band

c) Linear Phase Response d) All of the above

13) Which of the following criterion can be used to optimize the M+1 filter coefficients?

a) Pade approximation method

b) Least squares error criterion

c) Least squares error criterion & Pade approximation method

d) None of the mentioned

14) Poles of Butterworth filter lie on _____.

a) Ellipse b) Circle

c) Parabola d) None

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Digital Signal Processing (197045708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following. **16**

a) What is the twiddle factor and explain its significance?
b) Explain the linear phase filter with an example.
c) Compute autocorrelation of the sequence $x(n) = \{4, 2, 5, 6, 3\}$
d) Compare Wavelet Transform and Discrete Wavelet Transform.
e) Determine DFT of a sequence $x(n)$ if $x(n) = \{3, 5, 2, 3\}$.

Q.3 Attempt any two of the following. **12**

a) Find linear convolution Using the overlap-add method, of the following sequence.
$x(n) = \{1, 2, 0, -3, 2, 2, 1, 0, -1, -1, 0, 1, 5, 7, 3\}$ $h(n) = \{1, 2, 2, 1\}$

b) Find circular convolution of two finite duration sequence.
$x(n) = \{1, -1, -6, 3, -1, 5\}$ $h(n) = \{1, 2, 3, 1)$

c) Explain the application of DSP in Power systems.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the characteristic of the FIR filter.
b) List down the design steps in implementing the IIR filter.
c) Write a note on LMS Algorithm.
d) Explain the windowing technique for designing an FIR filter.
e) What is the warping effect? What is its effect on magnitude and phase response?

Q.5 Attempt any two of the following **12**

a) For the analog transfer function $H(s) = \frac{2}{(s+5)(s+3)}$
Determine $H(Z)$ using Bilinear transformation with $T = 2$ sec.
b) Explain in detail Adaptive Signal Processing.
c) What is bilinear transformation? Explain steps to design IIR filter using bilinear transformation?

SLR-GF-485

Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Digital Signal Processing (197045708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) The algorithm used for the computation of DFT based on the decomposition of N-point DFT is known as _____.
a) Phase algorithm b) Overlap save
c) Divide and Conquer d) None

2) The advantage of the FIR filter is _____.
a) they are always stable b) less storage requirement
c) errors due to round off is less d) None

3) Which among the following represent/s the characteristic/s of an ideal filter?
a) Constant gain in the passband b) Zero gain in the stop band
c) Linear Phase Response d) All of the above

4) Which of the following criterion can be used to optimize the M+1 filter coefficients?
a) Pade approximation method
b) Least squares error criterion
c) Least squares error criterion & Pade approximation method
d) None of the mentioned

5) Poles of Butterworth filter lie on _____.
a) Ellipse b) Circle
c) Parabola d) None

6) The overall impulse response of two LTI systems connected in a cascade is equal to _____.
a) Sum of two impulse response
b) Multiplication of two impulse response
c) Convolution of the individual impulse response
d) None

7) Finite word Length Effect gives _____.
a) Improvement in performance of Filter
b) Degradation in performance of Filter
c) Increased Accuracy
d) None

8) In the IIR system, which of the following structures will give a direct relation between the time domain and Z domain.
a) Direct form I
b) Direct form II
c) Cascade form
d) Parallel form

9) To avoid aliasing of frequency components which method is useful in designing filter _____.
a) impulse invariant
b) bilinear transformation
c) windowing techniques
d) None

10) The system is casual when the current output sample depends upon _____.
a) current input sample
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c) current and/or past input samples and/or past output samples
d) Next or past input sample or past output samples.

11) A necessary &sufficient condition for the LTI system to be BIBO stable is _____.
a) $\sum_{n=-\infty}^{n=\infty} h > \infty$
b) $\sum_{n=-\infty}^{n=\infty} h(n) < \infty$
c) $\sum_{n=-\infty}^{n=\infty} h(n) = \infty$
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12) Aliasing occurs _____.
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13) The circular frequency shift of a sequence is equivalent to _____.
a) Multiplication of the sequence $x(n)$ with complex exponential
b) Multiplication of the sequence $X(k)$ with complex exponential.
c) Multiplication of the sequence $x(n)$ with exponential factor.
d) None

14) Section convolution is performed if one of the sequences is much larger than the other to overcome _____.
a) Long delay in getting output
b) Larger memory space requirement
c) both a & b
d) None

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Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Digital Signal Processing (197045708)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following. **16**

a) What is the twiddle factor and explain its significance?
b) Explain the linear phase filter with an example.
c) Compute autocorrelation of the sequence $x(n) = \{4, 2, 5, 6, 3\}$
d) Compare Wavelet Transform and Discrete Wavelet Transform.
e) Determine DFT of a sequence $x(n)$ if $x(n) = \{3, 5, 2, 3\}$.

Q.3 Attempt any two of the following. **12**

a) Find linear convolution Using the overlap-add method, of the following sequence.
$x(n) = \{1, 2, 0, -3, 2, 2, 1, 0, -1, -1, 0, 1, 5, 7, 3\}$ $h(n) = \{1, 2, 2, 1\}$
b) Find circular convolution of two finite duration sequence.
$x(n) = \{1, -1, -6, 3, -1, 5\}$ $h(n) = \{1, 2, 3, 1)$
c) Explain the application of DSP in Power systems.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the characteristic of the FIR filter.
b) List down the design steps in implementing the IIR filter.
c) Write a note on LMS Algorithm.
d) Explain the windowing technique for designing an FIR filter.
e) What is the warping effect? What is its effect on magnitude and phase response?

Q.5 Attempt any two of the following **12**

a) For the analog transfer function $H(s) = \frac{2}{(s+5)(s+3)}$
Determine $H(Z)$ using Bilinear transformation with $T = 2$ sec.
b) Explain in detail Adaptive Signal Processing.
c) What is bilinear transformation? Explain steps to design IIR filter using bilinear transformation?

SLR-GF-486

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (197045709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Input with a particular terminal number can be used _____.
a) Many times in a Program b) Only once in a Program
c) Only once in a Rung d) None of the above

2) The first company to build PLC was _____.
a) General Motors b) Allen Bradley
c) Square D d) Modicon

3) The important function of SCADA is _____.
a) Data Acquisition b) Alarm processing
c) Information Display d) All the above

4) RTU has _____.
a) Static Memory b) Dynamic Memory
c) Static & Dynamic Memory d) None of the above

5) Which layer provides the services to user?
a) Application Layer b) Data link layer
c) Physical Layer d) Network Layer

6) High speed Ethernet works on _____.
a) Coaxial cable b) Twisted pair cable
c) Optical fiber d) None of the mentioned

7) How is the speed of operation of conventional relay system as compared to digital controllers?
a) Very slow b) Very fast
c) Same d) Almost similar

8) In OSI model layer No. 6 consist of _____.
a) Physical layer b) Presentation layer
c) Network layer d) Transport layer

9) _____ is a method used to observe the operation or execution of a control program one time.
a) Step scan b) Test rung scan
c) Single scan d) All of the above

10) Which of the following statements is NOT correct?
a) The status of each input can be checked from one location and outputs can be forced on and off.
b) All symbols in the RLL represent actual components and contacts present in the control system.
c) PLCs are not as reliable as electromechanical relays in RLL.
d) Input (-| |-) and output (- ( ) -) instruction symbols in the ladder logic represent only data values stored in PLC memory.

11) The PLC internally operates, stores, and calculates the value in _____.
a) Decimal format
b) Octal format
c) Binary format
d) None

12) What are the types of SCADA systems?
a) Monolithic, Distributed
b) Monolithic, Distributed, Networked
c) Monolithic, Networked
d) None of the above

13) How many levels does complex SCADA system have?
a) One
b) Two
c) Three
d) Four

14) Talus 100 RTU and Talus 200 RTU are the product of _____ Company.
a) ABB
b) Motorola
c) Rockwell Automation
d) Schneider Electric

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (197045709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

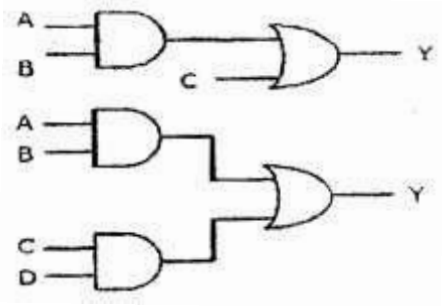
Section – I

Q.2 Solve any four of the following. **16**

a) Define programmable logic controller. Enlist brands of PLC.
b) Draw gate logic & ladder logic of AND & NAND Gates.
c) Explain PID controller.
d) Explain variable speed (variable frequency) AC motor drive.
e) What are the different types of PLC timer? Explain OFF Delay (TOFF) timer.
f) Explain properties of SCADA system.

Q.3 Solve any two of the following. **12**

a) Draw Relay logic, Ladder diagram for given logic diagram & also write Boolean Expression.



b) Draw and Explain Analysis of Rungs.
c) Draw relay, ladder and timing diagram for, three motors can be started automatically in sequence with 20 sec. time delay between each motor startup when push button is starts. Stops all motors when push button is stops.

Section – II

Q.4 Solve any four of the following. **16**

a) State advantages and disadvantages of SCADA System.
b) Explain Human Machine Interface.
c) Write a note on the TCP/IP protocols.
d) Explain SCADA data transfer through PLCC.
e) Draw and explain basic SCADA architecture.

Q.5 Solve any two of the following. **12**

a) Draw and explain seven layers of OSI model and their functions.

b) Explain:

i) Master terminal Unit

ii) Remote Terminal Unit

c) What Security implementation of the SCADA Protocols?

SLR-GF-486

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (197045709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) In OSI model layer No. 6 consist of _____.
a) Physical layer b) Presentation layer
c) Network layer d) Transport layer

2) _____ is a method used to observe the operation or execution of a control program one time.
a) Step scan b) Test rung scan
c) Single scan d) All of the above

3) Which of the following statements is NOT correct?
a) The status of each input can be checked from one location and outputs can be forced on and off.
b) All symbols in the RLL represent actual components and contacts present in the control system.
c) PLCs are not as reliable as electromechanical relays in RLL.
d) Input (-| |-) and output (- ( ) -) instruction symbols in the ladder logic represent only data values stored in PLC memory.

4) The PLC internally operates, stores, and calculates the value in _____.
a) Decimal format b) Octal format
c) Binary format d) None

5) What are the types of SCADA systems?
a) Monolithic, Distributed
b) Monolithic, Distributed, Networked
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6) How many levels does complex SCADA system have?
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7) Talus 100 RTU and Talus 200 RTU are the product of _____ Company.
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8) Input with a particular terminal number can be used _____.
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a) General Motors b) Allen Bradley
c) Square D d) Modicon

10) The important function of SCADA is _____.
a) Data Acquisition b) Alarm processing
c) Information Display d) All the above

11) RTU has _____.
a) Static Memory b) Dynamic Memory
c) Static & Dynamic Memory d) None of the above

12) Which layer provides the services to user?
a) Application Layer b) Data link layer
c) Physical Layer d) Network Layer

13) High speed Ethernet works on _____.
a) Coaxial cable b) Twisted pair cable
c) Optical fiber d) None of the mentioned

14) How is the speed of operation of conventional relay system as compared to digital controllers?
a) Very slow b) Very fast
c) Same d) Almost similar

SLR-GF-486

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (197045709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

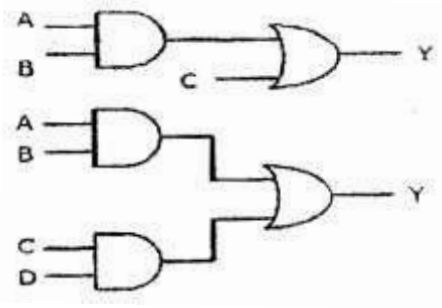
Section – I

Q.2 Solve any four of the following. **16**

a) Define programmable logic controller. Enlist brands of PLC.
b) Draw gate logic & ladder logic of AND & NAND Gates.
c) Explain PID controller.
d) Explain variable speed (variable frequency) AC motor drive.
e) What are the different types of PLC timer? Explain OFF Delay (TOFF) timer.
f) Explain properties of SCADA system.

Q.3 Solve any two of the following. **12**

a) Draw Relay logic, Ladder diagram for given logic diagram & also write Boolean Expression.



b) Draw and Explain Analysis of Rungs.
c) Draw relay, ladder and timing diagram for, three motors can be started automatically in sequence with 20 sec. time delay between each motor startup when push button is starts. Stops all motors when push button is stops.

Section – II

Q.4 Solve any four of the following. **16**

a) State advantages and disadvantages of SCADA System.
b) Explain Human Machine Interface.
c) Write a note on the TCP/IP protocols.
d) Explain SCADA data transfer through PLCC.
e) Draw and explain basic SCADA architecture.

Q.5 Solve any two of the following. **12**

a) Draw and explain seven layers of OSI model and their functions.

b) Explain:

i) Master terminal Unit

ii) Remote Terminal Unit

c) What Security implementation of the SCADA Protocols?

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (197045709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) The PLC internally operates, stores, and calculates the value in _____.
a) Decimal format b) Octal format
c) Binary format d) None

2) What are the types of SCADA systems?
a) Monolithic, Distributed
b) Monolithic, Distributed, Networked
c) Monolithic, Networked
d) None of the above

3) How many levels does complex SCADA system have?
a) One b) Two
c) Three d) Four

4) Talus 100 RTU and Talus 200 RTU are the product of _____ Company.
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c) Rockwell Automation d) Schneider Electric

5) Input with a particular terminal number can be used _____.
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6) The first company to build PLC was _____.
a) General Motors b) Allen Bradley
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7) The important function of SCADA is _____.
a) Data Acquisition b) Alarm processing
c) Information Display d) All the above

8) RTU has _____.
a) Static Memory b) Dynamic Memory
c) Static & Dynamic Memory d) None of the above

9) Which layer provides the services to user?
a) Application Layer b) Data link layer
c) Physical Layer d) Network Layer

10) High speed Ethernet works on _____.

a) Coaxial cable
b) Twisted pair cable
c) Optical fiber
d) None of the mentioned

11) How is the speed of operation of conventional relay system as compared to digital controllers?

a) Very slow
b) Very fast
c) Same
d) Almost similar

12) In OSI model layer No. 6 consist of _____.

a) Physical layer
b) Presentation layer
c) Network layer
d) Transport layer

13) _____ is a method used to observe the operation or execution of a control program one time.

a) Step scan
b) Test rung scan
c) Single scan
d) All of the above

14) Which of the following statements is NOT correct?

a) The status of each input can be checked from one location and outputs can be forced on and off.
b) All symbols in the RLL represent actual components and contacts present in the control system.
c) PLCs are not as reliable as electromechanical relays in RLL.
d) Input (-| |-) and output (- ( ) -) instruction symbols in the ladder logic represent only data values stored in PLC memory.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (197045709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

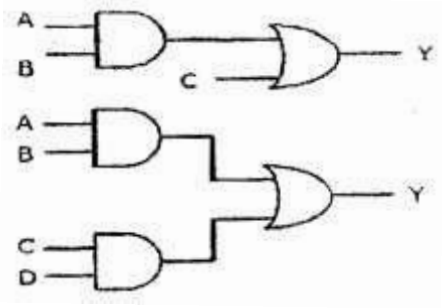
Section – I

Q.2 Solve any four of the following. **16**

a) Define programmable logic controller. Enlist brands of PLC.
b) Draw gate logic & ladder logic of AND & NAND Gates.
c) Explain PID controller.
d) Explain variable speed (variable frequency) AC motor drive.
e) What are the different types of PLC timer? Explain OFF Delay (TOFF) timer.
f) Explain properties of SCADA system.

Q.3 Solve any two of the following. **12**

a) Draw Relay logic, Ladder diagram for given logic diagram & also write Boolean Expression.



b) Draw and Explain Analysis of Rungs.
c) Draw relay, ladder and timing diagram for, three motors can be started automatically in sequence with 20 sec. time delay between each motor startup when push button is starts. Stops all motors when push button is stops.

Section – II

Q.4 Solve any four of the following. **16**

a) State advantages and disadvantages of SCADA System.
b) Explain Human Machine Interface.
c) Write a note on the TCP/IP protocols.
d) Explain SCADA data transfer through PLCC.
e) Draw and explain basic SCADA architecture.

Q.5 Solve any two of the following. **12**

a) Draw and explain seven layers of OSI model and their functions.

b) Explain:

i) Master terminal Unit

ii) Remote Terminal Unit

c) What Security implementation of the SCADA Protocols?

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (197045709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) High speed Ethernet works on _____.
a) Coaxial cable b) Twisted pair cable
c) Optical fiber d) None of the mentioned

2) How is the speed of operation of conventional relay system as compared to digital controllers?
a) Very slow b) Very fast
c) Same d) Almost similar

3) In OSI model layer No. 6 consist of _____.
a) Physical layer b) Presentation layer
c) Network layer d) Transport layer

4) _____ is a method used to observe the operation or execution of a control program one time.
a) Step scan b) Test rung scan
c) Single scan d) All of the above

5) Which of the following statements is NOT correct?
a) The status of each input can be checked from one location and outputs can be forced on and off.
b) All symbols in the RLL represent actual components and contacts present in the control system.
c) PLCs are not as reliable as electromechanical relays in RLL.
d) Input (-| |-) and output (- ( ) -) instruction symbols in the ladder logic represent only data values stored in PLC memory.

6) The PLC internally operates, stores, and calculates the value in _____.
a) Decimal format b) Octal format
c) Binary format d) None

7) What are the types of SCADA systems?
a) Monolithic, Distributed
b) Monolithic, Distributed, Networked
c) Monolithic, Networked
d) None of the above

8) How many levels does complex SCADA system have?
a) One b) Two
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9) Talus 100 RTU and Talus 200 RTU are the product of _____ Company.
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c) Rockwell Automation d) Schneider Electric

10) Input with a particular terminal number can be used _____.
a) Many times in a Program b) Only once in a Program
c) Only once in a Rung d) None of the above

11) The first company to build PLC was _____.
a) General Motors b) Allen Bradley
c) Square D d) Modicon

12) The important function of SCADA is _____.
a) Data Acquisition b) Alarm processing
c) Information Display d) All the above

13) RTU has _____.
a) Static Memory b) Dynamic Memory
c) Static & Dynamic Memory d) None of the above

14) Which layer provides the services to user?
a) Application Layer b) Data link layer
c) Physical Layer d) Network Layer

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Programmable Logic Control and SCADA (197045709)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

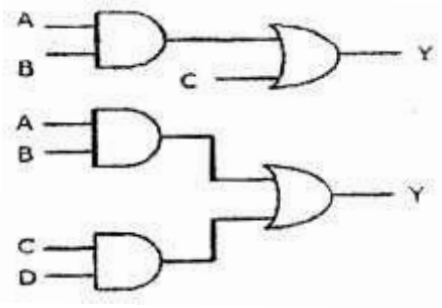
Section – I

Q.2 Solve any four of the following. **16**

a) Define programmable logic controller. Enlist brands of PLC.
b) Draw gate logic & ladder logic of AND & NAND Gates.
c) Explain PID controller.
d) Explain variable speed (variable frequency) AC motor drive.
e) What are the different types of PLC timer? Explain OFF Delay (TOFF) timer.
f) Explain properties of SCADA system.

Q.3 Solve any two of the following. **12**

a) Draw Relay logic, Ladder diagram for given logic diagram & also write Boolean Expression.



b) Draw and Explain Analysis of Rungs.
c) Draw relay, ladder and timing diagram for, three motors can be started automatically in sequence with 20 sec. time delay between each motor startup when push button is starts. Stops all motors when push button is stops.

Section – II

Q.4 Solve any four of the following. **16**

a) State advantages and disadvantages of SCADA System.
b) Explain Human Machine Interface.
c) Write a note on the TCP/IP protocols.
d) Explain SCADA data transfer through PLCC.
e) Draw and explain basic SCADA architecture.

Q.5 Solve any two of the following. **12**

a) Draw and explain seven layers of OSI model and their functions.

b) Explain:

i) Master terminal Unit

ii) Remote Terminal Unit

c) What Security implementation of the SCADA Protocols?

SLR-GF-487

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (197045710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) Liquid with solid impurities _____.
a) Having higher dielectric strength
b) large size have higher dielectric
c) Has lower dielectric strength as compare to pure liquid
d) none of the above

2) Centrifugal method of reconditional transformer oil is effected for removal of _____.
a) Water b) Dissolved gases
c) solid impurities d) all of the above

3) The accepted value of dielectric strength of transformer oil is _____.
a) 30 KV b) 30 Kv/cm
c) 30 Kv/cm for one min d) None of the above

4) While conducting intrinsic dielectric strength on a specimen, its shape should be so prepared that _____.
a) The electric stress is high at its centre
b) The electric stress is high at its corner
c) The electric stress is same all along the sample
d) No definite consideration

5) In case of impulse thermal breakdown of insulating materials, the critical time to breakdown is _____.
a) Proportional to critical electric field
b) Inversely proportional to critical electric field
c) Proportional to square of critical absolute temperature
d) None of the above

6) The ripple voltage in the d. c output is small if _____.
a) Frequency of supply is small b) The filtering capacitor is small
c) The load current is large d) None of the above

7) In cockroft Walton circuit the optimum number of stages for maximum output voltage (for a fixed supply voltage magnitude) is directly proportional to _____.
a) Frequency of supply
b) capacitance of each stage
c) load current
d) none of the above

8) For 3 stage cascaded transformer if p1, p2, p3 are the loading of I, II, & III stage primaries _____.
a) P1=P2=P3
b) P1>P2>P3
c) P1<P2<P3
d) P2<P1<P3

9) If a single stage system using resonance test voltage is required it is better to use _____.
a) Series resonant circuit
b) parallel resonant circuit
c) series-parallel resonant circuit
d) any one of the above

10) To determine intrinsic dielectric strength, the time of application of voltage is of the order of _____.
a) 10^{-8} sec
b) 10^{-6}
c) 10^{-4}
d) No such

11) The impulse ratio for any particular object _____.
a) Is a constant
b) depends upon shape of wave
c) a & b
d) None of the above

12) The magnitude of pulse currents depends upon _____.
a) Voltage applied
b) no. of voids
c) a & b
d) None of the above

13) Partial discharge measurement on a cable gives _____.
a) P. f of the cable
b) loss angle of the cable
c) location of fault
d) a & b

14) The spark over voltage _____.
a) Humidity is minimum for uniform field gaps
b) Humidity effect decreases with the size of spheres
c) decreases with the partial pressure of water vapour in air
d) D. Increases with humidity

SLR-GF-487

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (197045710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four of the following. **16**

a) Explain surge voltages and their distribution.
b) Write a short note on characteristics liquid insulators.
c) Explain post breakdown phenomena and applications.
d) Explain estimation and control of electric stresses.
e) Describe characteristics and applications of the following three s solid dielectrics.
  a) Paper and Board;
  b) Ceramic;
  c) Polyvinyl Chloride (PVC)
f) Write a short note on Gas/Vacuum as insulators.

Q.3 Attempt Any Two of the following. **12**

a) Write short note on Townsend's current growth equation and its secondary ionization process with current equation.
b) Prove that $\frac{V}{d_0} = E_a = 0.6\left[\frac{\gamma}{\varepsilon_0 \varepsilon_r}\right]^{1/2}$ In case of Electromechanical Breakdown.
c) Explain post breakdown phenomena in gases along with glow arc discharge from neat drawn figure.

Section – II

Q.4 Attempt Any Four of the following. **16**

a) Describe with diagram Van-De-Graff generator
b) Explain resonant transformer, its principle and operation.
c) Explain briefly various tests to be carried out on a bushing.
d) Discuss the test facilities, activity and studies in high voltage laboratories.
e) Write a short note on grounding of impulse testing laboratories.
f) Write a short note on Hall generators.

Q.5 Attempt Any Two of the following **12**

a) Discuss various methods of measuring High DC & AC voltages.

b) Discuss the classification of high voltage laboratories, size and ratings of high voltage laboratories.

c) Define the terms impulse voltage, impulse flash over voltage, impulse puncture voltage, impulse ratio for flash over, impulse ratio for puncture.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (197045710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) For 3 stage cascaded transformer if p1, p2, p3 are the loading of I, II, & III stage primaries _____.
a) P1=P2=P3 b) P1>P2>P3
c) P1<P2<P3 d) P2<P1<P3

2) If a single stage system using resonance test voltage is required it is better to use _____.
a) Series resonant circuit b) parallel resonant circuit
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5) The magnitude of pulse currents depends upon _____.
a) Voltage applied b) no. of voids
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6) Partial discharge measurement on a cable gives _____.
a) P. f of the cable b) loss angle of the cable
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7) The spark over voltage _____.
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a) Having higher dielectric strength
b) large size have higher dielectric
c) Has lower dielectric strength as compare to pure liquid
d) none of the above

9) Centrifugal method of reconditional transformer oil is effected for removal of _____.
a) Water
b) Dissolved gases
c) solid impurities
d) all of the above

10) The accepted value of dielectric strength of transformer oil is _____.
a) 30 KV
b) 30 Kv/cm
c) 30 Kv/cm for one min
d) None of the above

11) While conducting intrinsic dielectric strength on a specimen, its shape should be so prepared that _____.
a) The electric stress is high at its centre
b) The electric stress is high at its corner
c) The electric stress is same all along the sample
d) No definite consideration

12) In case of impulse thermal breakdown of insulating materials, the critical time to breakdown is _____.
a) Proportional to critical electric field
b) Inversely proportional to critical electric field
c) Proportional to square of critical absolute temperature
d) None of the above

13) The ripple voltage in the d. c output is small if _____.
a) Frequency of supply is small
b) The filtering capacitor is small
c) The load current is large
d) None of the above

14) In cockroft Walton circuit the optimum number of stages for maximum output voltage (for a fixed supply voltage magnitude) is directly proportional to _____.
a) Frequency of supply
b) capacitance of each stage
c) load current
d) none of the above

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Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (197045710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four of the following. **16**

a) Explain surge voltages and their distribution.
b) Write a short note on characteristics liquid insulators.
c) Explain post breakdown phenomena and applications.
d) Explain estimation and control of electric stresses.
e) Describe characteristics and applications of the following three s solid dielectrics.
  a) Paper and Board;
  b) Ceramic;
  c) Polyvinyl Chloride (PVC)
f) Write a short note on Gas/Vacuum as insulators.

Q.3 Attempt Any Two of the following. **12**

a) Write short note on Townsend's current growth equation and its secondary ionization process with current equation.
b) Prove that $\frac{V}{d_0} = E_a = 0.6\left[\frac{\gamma}{\varepsilon_0 \varepsilon_r}\right]^{1/2}$ In case of Electromechanical Breakdown.
c) Explain post breakdown phenomena in gases along with glow arc discharge from neat drawn figure.

Section – II

Q.4 Attempt Any Four of the following. **16**

a) Describe with diagram Van-De-Graff generator
b) Explain resonant transformer, its principle and operation.
c) Explain briefly various tests to be carried out on a bushing.
d) Discuss the test facilities, activity and studies in high voltage laboratories.
e) Write a short note on grounding of impulse testing laboratories.
f) Write a short note on Hall generators.

Q.5 Attempt Any Two of the following **12**

a) Discuss various methods of measuring High DC & AC voltages.

b) Discuss the classification of high voltage laboratories, size and ratings of high voltage laboratories.

c) Define the terms impulse voltage, impulse flash over voltage, impulse puncture voltage, impulse ratio for flash over, impulse ratio for puncture.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (197045710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) The impulse ratio for any particular object _____.
a) Is a constant b) depends upon shape of wave
c) a & b d) None of the above

2) The magnitude of pulse currents depends upon _____.
a) Voltage applied b) no. of voids
c) a & b d) None of the above

3) Partial discharge measurement on a cable gives _____.
a) P. f of the cable b) loss angle of the cable
c) location of fault d) a & b

4) The spark over voltage _____.
a) Humidity is minimum for uniform field gaps
b) Humidity effect decreases with the size of spheres
c) decreases with the partial pressure of water vapour in air
d) D. Increases with humidity

5) Liquid with solid impurities _____.
a) Having higher dielectric strength
b) large size have higher dielectric
c) Has lower dielectric strength as compare to pure liquid
d) none of the above

6) Centrifugal method of reconditional transformer oil is effected for removal of _____.
a) Water b) Dissolved gases
c) solid impurities d) all of the above

7) The accepted value of dielectric strength of transformer oil is _____.
a) 30 KV b) 30 Kv/cm
c) 30 Kv/cm for one min d) None of the above

8) While conducting intrinsic dielectric strength on a specimen, its shape should be so prepared that _____.
a) The electric stress is high at its centre
b) The electric stress is high at its corner
c) The electric stress is same all along the sample
d) No definite consideration

9) In case of impulse thermal breakdown of insulating materials, the critical time to breakdown is _____.
a) Proportional to critical electric field
b) Inversely proportional to critical electric field
c) Proportional to square of critical absolute temperature
d) None of the above

10) The ripple voltage in the d. c output is small if _____.
a) Frequency of supply is small b) The filtering capacitor is small
c) The load current is large d) None of the above

11) In cockroft Walton circuit the optimum number of stages for maximum output voltage (for a fixed supply voltage magnitude) is directly proportional to _____.
a) Frequency of supply b) capacitance of each stage
c) load current d) none of the above

12) For 3 stage cascaded transformer if p1, p2, p3 are the loading of I, II, & III stage primaries _____.
a) P1=P2=P3 b) P1>P2>P3
c) P1<P2<P3 d) P2<P1<P3

13) If a single stage system using resonance test voltage is required it is better to use _____.
a) Series resonant circuit b) parallel resonant circuit
c) series-parallel resonant circuit d) any one of the above

14) To determine intrinsic dielectric strength, the time of application of voltage is of the order of _____.
a) 10^{-8} sec b) 10^{-6}
c) 10^{-4} d) No such

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (197045710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four of the following. **16**

a) Explain surge voltages and their distribution.
b) Write a short note on characteristics liquid insulators.
c) Explain post breakdown phenomena and applications.
d) Explain estimation and control of electric stresses.
e) Describe characteristics and applications of the following three s solid dielectrics.
a) Paper and Board;
b) Ceramic;
c) Polyvinyl Chloride (PVC)
f) Write a short note on Gas/Vacuum as insulators.

Q.3 Attempt Any Two of the following. **12**

a) Write short note on Townsend's current growth equation and its secondary ionization process with current equation.
b) Prove that $\frac{V}{d_0} = E_a = 0.6\left[\frac{\gamma}{\varepsilon_0 \varepsilon_r}\right]^{1/2}$ In case of Electromechanical Breakdown.
c) Explain post breakdown phenomena in gases along with glow arc discharge from neat drawn figure.

Section – II

Q.4 Attempt Any Four of the following. **16**

a) Describe with diagram Van-De-Graff generator
b) Explain resonant transformer, its principle and operation.
c) Explain briefly various tests to be carried out on a bushing.
d) Discuss the test facilities, activity and studies in high voltage laboratories.
e) Write a short note on grounding of impulse testing laboratories.
f) Write a short note on Hall generators.

Q.5 Attempt Any Two of the following **12**

a) Discuss various methods of measuring High DC & AC voltages.

b) Discuss the classification of high voltage laboratories, size and ratings of high voltage laboratories.

c) Define the terms impulse voltage, impulse flash over voltage, impulse puncture voltage, impulse ratio for flash over, impulse ratio for puncture.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (197045710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) The ripple voltage in the d. c output is small if _____.
a) Frequency of supply is small b) The filtering capacitor is small
c) The load current is large d) None of the above

2) In cockroft Walton circuit the optimum number of stages for maximum output voltage (for a fixed supply voltage magnitude) is directly proportional to _____.
a) Frequency of supply b) capacitance of each stage
c) load current d) none of the above

3) For 3 stage cascaded transformer if p1, p2, p3 are the loading of I, II, & III stage primaries _____.
a) P1=P2=P3 b) P1>P2>P3
c) P1<P2<P3 d) P2<P1<P3

4) If a single stage system using resonance test voltage is required it is better to use _____.
a) Series resonant circuit b) parallel resonant circuit
c) series-parallel resonant circuit d) any one of the above

5) To determine intrinsic dielectric strength, the time of application of voltage is of the order of _____.
a) 10^{-8} sec b) 10^{-6}
c) 10^{-4} d) No such

6) The impulse ratio for any particular object _____.
a) Is a constant b) depends upon shape of wave
c) a & b d) None of the above

7) The magnitude of pulse currents depends upon _____.
a) Voltage applied b) no. of voids
c) a & b d) None of the above

8) Partial discharge measurement on a cable gives _____.
a) P. f of the cable b) loss angle of the cable
c) location of fault d) a & b

9) The spark over voltage _____.
a) Humidity is minimum for uniform field gaps
b) Humidity effect decreases with the size of spheres
c) decreases with the partial pressure of water vapour in air
d) D. Increases with humidity

10) Liquid with solid impurities _____.
a) Having higher dielectric strength
b) large size have higher dielectric
c) Has lower dielectric strength as compare to pure liquid
d) none of the above

11) Centrifugal method of reconditional transformer oil is effected for removal of _____.
a) Water
b) Dissolved gases
c) solid impurities
d) all of the above

12) The accepted value of dielectric strength of transformer oil is _____.
a) 30 KV
b) 30 Kv/cm
c) 30 Kv/cm for one min
d) None of the above

13) While conducting intrinsic dielectric strength on a specimen, its shape should be so prepared that _____.
a) The electric stress is high at its centre
b) The electric stress is high at its corner
c) The electric stress is same all along the sample
d) No definite consideration

14) In case of impulse thermal breakdown of insulating materials, the critical time to breakdown is _____.
a) Proportional to critical electric field
b) Inversely proportional to critical electric field
c) Proportional to square of critical absolute temperature
d) None of the above

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Seat No.	

Set S

Fourth. Y. (B.Tech.) (Sem-I) (New) (Old) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
High Voltage Engineering (197045710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four of the following. **16**

a) Explain surge voltages and their distribution.
b) Write a short note on characteristics liquid insulators.
c) Explain post breakdown phenomena and applications.
d) Explain estimation and control of electric stresses.
e) Describe characteristics and applications of the following three s solid dielectrics.
a) Paper and Board;
b) Ceramic;
c) Polyvinyl Chloride (PVC)
f) Write a short note on Gas/Vacuum as insulators.

Q.3 Attempt Any Two of the following. **12**

a) Write short note on Townsend's current growth equation and its secondary ionization process with current equation.
b) Prove that $\frac{V}{d_0} = E_a = 0.6\left[\frac{\gamma}{\varepsilon_0 \varepsilon_r}\right]^{1/2}$ In case of Electromechanical Breakdown.
c) Explain post breakdown phenomena in gases along with glow arc discharge from neat drawn figure.

Section – II

Q.4 Attempt Any Four of the following. **16**

a) Describe with diagram Van-De-Graff generator
b) Explain resonant transformer, its principle and operation.
c) Explain briefly various tests to be carried out on a bushing.
d) Discuss the test facilities, activity and studies in high voltage laboratories.
e) Write a short note on grounding of impulse testing laboratories.
f) Write a short note on Hall generators.

Q.5 Attempt Any Two of the following **12**

a) Discuss various methods of measuring High DC & AC voltages.

b) Discuss the classification of high voltage laboratories, size and ratings of high voltage laboratories.

c) Define the terms impulse voltage, impulse flash over voltage, impulse puncture voltage, impulse ratio for flash over, impulse ratio for puncture.

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality & FACTS (197045801)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The duration of voltage sag is less than _____.
a) 20 min b) 1 min
c) 20 sec d) 60 min

2) Which meter is used to measure flicker?
a) magnetic gauss b) static electricity meters
c) infrared meters d) flicker meter

3) Passive filters should be placed on a _____.
a) Transformer b) Buses
c) Lines d) None of these

4) Passive filter is used to control _____.
a) voltage b) frequency
c) current d) harmonics

5) To describe the voltage harmonic distortion is used to _____.
a) THD b) TDD
c) UTD d) None of these

6) To describe the current harmonic distortion is used to _____.
a) THD b) TDD
c) UTD d) SD

7) Harmonic problem combined with _____ power factor.
a) lead b) unity
c) lag d) none

8) FACTS devices are generally used for to compensate _____ of the transmission line.
a) reactive power b) active power
c) apparent power d) All of these

9) Basic types of FACTS controller _____.
a) Series Controllers and Shunt Controllers
b) Combined series-series Controllers
c) Combined series-shunt Controllers
d) All of these

10) Objectives of Load compensation _____.
a) Power-factor correction
b) Improvement of voltage regulation
c) Load balancing
d) All of these

11) Load compensation is the management of _____ to improve the quality of supply in ac power systems.
a) Power Quality b) Active power
c) Reactive power d) Apparent power

12) FACTS provides _____.
a) Power transfer capability & controllability
b) Stability & transient response
c) Phase sequence & comparatively
d) None of above

13) STATCOM operates whose capacitive or inductive output current cab be controlled independent of _____.
a) ac system current b) ac system voltage
c) ac system impedance d) ac system power factor

14) SVC and STATCOM are _____ devices.
a) series b) series and shunt
c) shunt and series d) shunt

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Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality & FACTS (197045801)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following. (Any Four) **16**
- **a)** Define Power Quality and Explain the reasons for PQ issues.
- **b)** Explain Transients and Voltage Imbalance.
- **c)** Explain power system response characteristics.
- **d)** Write a short note on Harmonic Indices.
- **e)** Write a short note on Flicker.

Q.3 Answer the following (Any Two) **12**
- **a)** Explain Power Quality Measurement equipment.
- **b)** Explain Harmonic distortion & devices for controlling harmonic distortion.
- **c)** Explain Long duration voltage variations with causes.

Section – II

Q.4 Answer the following. (Any Four) **16**
- **a)** Explain the basic types of FACTS Controllers.
- **b)** Differentiate between STATCOM and SVC.
- **c)** Explain the functional control scheme for the SSSC.
- **d)** Explain the characteristics of Series Compensator.
- **e)** Explain power flow control by phase angle regulators.

Q.5 Answer the following (Any Two). **12**
- **a)** Write short note on basic operating principle of UPFC.
- **b)** Explain:
  - i) GCSC
  - ii) TCSC
- **c)** Write short note on method of controller VAR generation.

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality & FACTS (197045801)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) FACTS devices are generally used for to compensate _____ of the transmission line.
a) reactive power b) active power
c) apparent power d) All of these

2) Basic types of FACTS controller _____.
a) Series Controllers and Shunt Controllers
b) Combined series-series Controllers
c) Combined series-shunt Controllers
d) All of these

3) Objectives of Load compensation _____.
a) Power-factor correction
b) Improvement of voltage regulation
c) Load balancing
d) All of these

4) Load compensation is the management of _____ to improve the quality of supply in ac power systems.
a) Power Quality b) Active power
c) Reactive power d) Apparent power

5) FACTS provides _____.
a) Power transfer capability & controllability
b) Stability & transient response
c) Phase sequence & comparatively
d) None of above

6) STATCOM operates whose capacitive or inductive output current cab be controlled independent of _____.
a) ac system current b) ac system voltage
c) ac system impedance d) ac system power factor

7) SVC and STATCOM are _____ devices.
a) series b) series and shunt
c) shunt and series d) shunt

8) The duration of voltage sag is less than _____.
a) 20 min b) 1 min
c) 20 sec d) 60 min

9) Which meter is used to measure flicker?
a) magnetic gauss b) static electricity meters
c) infrared meters d) flicker meter

10) Passive filters should be placed on a _____.
a) Transformer b) Buses
c) Lines d) None of these

11) Passive filter is used to control _____.
a) voltage b) frequency
c) current d) harmonics

12) To describe the voltage harmonic distortion is used to _____.
a) THD b) TDD
c) UTD d) None of these

13) To describe the current harmonic distortion is used to _____.
a) THD b) TDD
c) UTD d) SD

14) Harmonic problem combined with _____ power factor.
a) lead b) unity
c) lag d) none

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Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality & FACTS (197045801)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following. (Any Four) **16**
- **a)** Define Power Quality and Explain the reasons for PQ issues.
- **b)** Explain Transients and Voltage Imbalance.
- **c)** Explain power system response characteristics.
- **d)** Write a short note on Harmonic Indices.
- **e)** Write a short note on Flicker.

Q.3 Answer the following (Any Two) **12**
- **a)** Explain Power Quality Measurement equipment.
- **b)** Explain Harmonic distortion & devices for controlling harmonic distortion.
- **c)** Explain Long duration voltage variations with causes.

Section – II

Q.4 Answer the following. (Any Four) **16**
- **a)** Explain the basic types of FACTS Controllers.
- **b)** Differentiate between STATCOM and SVC.
- **c)** Explain the functional control scheme for the SSSC.
- **d)** Explain the characteristics of Series Compensator.
- **e)** Explain power flow control by phase angle regulators.

Q.5 Answer the following (Any Two). **12**
- **a)** Write short note on basic operating principle of UPFC.
- **b)** Explain:
  - i) GCSC
  - ii) TCSC
- **c)** Write short note on method of controller VAR generation.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality & FACTS (197045801)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Load compensation is the management of _____ to improve the quality of supply in ac power systems.
a) Power Quality b) Active power
c) Reactive power d) Apparent power

2) FACTS provides _____.
a) Power transfer capability & controllability
b) Stability & transient response
c) Phase sequence & comparatively
d) None of above

3) STATCOM operates whose capacitive or inductive output current cab be controlled independent of _____.
a) ac system current b) ac system voltage
c) ac system impedance d) ac system power factor

4) SVC and STATCOM are _____ devices.
a) series b) series and shunt
c) shunt and series d) shunt

5) The duration of voltage sag is less than _____.
a) 20 min b) 1 min
c) 20 sec d) 60 min

6) Which meter is used to measure flicker?
a) magnetic gauss b) static electricity meters
c) infrared meters d) flicker meter

7) Passive filters should be placed on a _____.
a) Transformer b) Buses
c) Lines d) None of these

8) Passive filter is used to control _____.
a) voltage b) frequency
c) current d) harmonics

9) To describe the voltage harmonic distortion is used to _____.
a) THD b) TDD
c) UTD d) None of these

10) To describe the current harmonic distortion is used to _____.
a) THD b) TDD
c) UTD d) SD

11) Harmonic problem combined with _____ power factor.
a) lead b) unity
c) lag d) none

12) FACTS devices are generally used for to compensate _____ of the transmission line.
a) reactive power b) active power
c) apparent power d) All of these

13) Basic types of FACTS controller _____.
a) Series Controllers and Shunt Controllers
b) Combined series-series Controllers
c) Combined series-shunt Controllers
d) All of these

14) Objectives of Load compensation _____.
a) Power-factor correction
b) Improvement of voltage regulation
c) Load balancing
d) All of these

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality & FACTS (197045801)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following. (Any Four) **16**
- **a)** Define Power Quality and Explain the reasons for PQ issues.
- **b)** Explain Transients and Voltage Imbalance.
- **c)** Explain power system response characteristics.
- **d)** Write a short note on Harmonic Indices.
- **e)** Write a short note on Flicker.

Q.3 Answer the following (Any Two) **12**
- **a)** Explain Power Quality Measurement equipment.
- **b)** Explain Harmonic distortion & devices for controlling harmonic distortion.
- **c)** Explain Long duration voltage variations with causes.

Section – II

Q.4 Answer the following. (Any Four) **16**
- **a)** Explain the basic types of FACTS Controllers.
- **b)** Differentiate between STATCOM and SVC.
- **c)** Explain the functional control scheme for the SSSC.
- **d)** Explain the characteristics of Series Compensator.
- **e)** Explain power flow control by phase angle regulators.

Q.5 Answer the following (Any Two). **12**
- **a)** Write short note on basic operating principle of UPFC.
- **b)** Explain:
  - i) GCSC
  - ii) TCSC
- **c)** Write short note on method of controller VAR generation.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality & FACTS (197045801)

Day & Date: Monday 18-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) To describe the current harmonic distortion is used to _____.
a) THD b) TDD
c) UTD d) SD

2) Harmonic problem combined with _____ power factor.
a) lead b) unity
c) lag d) none

3) FACTS devices are generally used for to compensate _____ of the transmission line.
a) reactive power b) active power
c) apparent power d) All of these

4) Basic types of FACTS controller _____.
a) Series Controllers and Shunt Controllers
b) Combined series-series Controllers
c) Combined series-shunt Controllers
d) All of these

5) Objectives of Load compensation _____.
a) Power-factor correction
b) Improvement of voltage regulation
c) Load balancing
d) All of these

6) Load compensation is the management of _____ to improve the quality of supply in ac power systems.
a) Power Quality b) Active power
c) Reactive power d) Apparent power

7) FACTS provides _____.
a) Power transfer capability & controllability
b) Stability & transient response
c) Phase sequence & comparatively
d) None of above

8) STATCOM operates whose capacitive or inductive output current cab be controlled independent of _____.

a) ac system current b) ac system voltage
c) ac system impedance d) ac system power factor

9) SVC and STATCOM are _____ devices.

a) series b) series and shunt
c) shunt and series d) shunt

10) The duration of voltage sag is less than _____.

a) 20 min b) 1 min
c) 20 sec d) 60 min

11) Which meter is used to measure flicker?

a) magnetic gauss b) static electricity meters
c) infrared meters d) flicker meter

12) Passive filters should be placed on a _____.

a) Transformer b) Buses
c) Lines d) None of these

13) Passive filter is used to control _____.

a) voltage b) frequency
c) current d) harmonics

14) To describe the voltage harmonic distortion is used to _____.

a) THD b) TDD
c) UTD d) None of these

SLR-GF-488

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Quality & FACTS (197045801)

Day & Date: Monday 18-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following. (Any Four) **16**
- **a)** Define Power Quality and Explain the reasons for PQ issues.
- **b)** Explain Transients and Voltage Imbalance.
- **c)** Explain power system response characteristics.
- **d)** Write a short note on Harmonic Indices.
- **e)** Write a short note on Flicker.

Q.3 Answer the following (Any Two) **12**
- **a)** Explain Power Quality Measurement equipment.
- **b)** Explain Harmonic distortion & devices for controlling harmonic distortion.
- **c)** Explain Long duration voltage variations with causes.

Section – II

Q.4 Answer the following. (Any Four) **16**
- **a)** Explain the basic types of FACTS Controllers.
- **b)** Differentiate between STATCOM and SVC.
- **c)** Explain the functional control scheme for the SSSC.
- **d)** Explain the characteristics of Series Compensator.
- **e)** Explain power flow control by phase angle regulators.

Q.5 Answer the following (Any Two). **12**
- **a)** Write short note on basic operating principle of UPFC.
- **b)** Explain:
  - i) GCSC
  - ii) TCSC
- **c)** Write short note on method of controller VAR generation.

SLR-GF-489

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (197045802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The noise levels are controlled by following standards _____.
a) IS 6842 b) IS 6840
c) IS 6846 d) IS 6848

2) In the formation of pulse train how many pulse occurs during positive half cycle in fair whether _____.
a) 3 pulse b) 2 pulse
c) One pulse d) 6 pulse

3) Which type of corona discharge gives interference to radio broadcast?
a) Pulse type b) Pulse less type
c) Glow corona d) None of the above

4) The maximum potential co-efficient depends on only _____.
a) Dimensions of line conductors configuration on the tower
b) System voltage
c) Quantum of power transmitted
d) None of these

5) The high voltage recognized in India are as per _____.
a) IS 2024 b) IS 2026
c) IS 2022 d) IS 2028

6) In general method of Laplace transform, the series and shunt impedance operator per unit length of line is _____.
a) z(s) = r + ls b) y(s) = g + cs
c) Both (a) and (b) d) None of these

7) The AN level at 30 m from the line centre for 1150 KV line in USA is fixed to _____.
a) 50 dB b) 52 dB
c) 55 dB d) 57 dB

8) Draining of trapped charge of line is done by _____.
a) Main breaker b) Auxiliary breaker
c) Air circuit breaker d) Shunt reactor

9) The type of EHV cable is _____.
a) High pressure oil filled
b) Cross linked polythene
c) Gas insulated lines
d) All of the above

10) The surface voltage gradient on conductors in bundle governs _____.
a) Generation of Corona on the line
b) Audible noise
c) Radio interference
d) None of these

11) Sphere gap is used for measurement of _____.
a) Dc voltage only
b) Ac voltage only
c) Impulse voltage of any wave shape
d) Both (a) and (b)

12) The voltage measurements using spark gap are _____.
a) Affected by hear by objects
b) Affected by polarity of supply
c) Affected by dust particles
d) All of the above

13) A generating voltmeter uses _____.
a) A constant speed motor
b) A variable speed motor
c) A variable speed motor with capacitor
d) None of the above

14) The positive sequence reactance per phase in ohm/km in 750 transmission line is _____.
a) 0.272
b) 0.227
c) 0.722
d) None of these

SLR-GF-489

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (197045802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Write short Note (Any Four) **16**

a) Line parameters for mode of propagation
b) Resistance and inductance of ground return
c) Limits for radio interference
d) Corona loss using Q-V diagram of corona
e) "Double exponential response" for open ended line
f) Attenuation of travelling wave

Q.3 Solve any two **12**

a) Derive the expression for resistance and inductance of ground return.
b) An overhead conductor of 1.6 cm radius is 10 m above ground (230 KV line to line). The switching surge experienced is 3.5 pu Taking k=0.7. Calculate energy loss per km of line assume smooth conductor.
c) How the audible noise is generated and what are the characteristics?

Section – II

Q.4 Write short Note (Any Four) **16**

a) Reduction of switch surge over voltages
b) Cascade connection of components by shunt and series compensation
c) Power circle diagram and its use
d) Sub-synchronous resonance in series capacitor compensated lines
e) Horn gap
f) Valve type lightening arrestor

Q.5 Solve any two **12**

a) Brief the static reactive compensation system by different SVC schemes.
b) Describe the insulation co-ordination and over voltage protection.
c) Explain sub synchronous problem and counter measures.

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (197045802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Draining of trapped charge of line is done by _____.
a) Main breaker b) Auxiliary breaker
c) Air circuit breaker d) Shunt reactor

2) The type of EHV cable is _____.
a) High pressure oil filled b) Cross linked polythene
c) Gas insulated lines d) All of the above

3) The surface voltage gradient on conductors in bundle governs _____.
a) Generation of Corona on the line
b) Audible noise
c) Radio interference
d) None of these

4) Sphere gap is used for measurement of _____.
a) Dc voltage only
b) Ac voltage only
c) Impulse voltage of any wave shape
d) Both (a) and (b)

5) The voltage measurements using spark gap are _____.
a) Affected by hear by objects b) Affected by polarity of supply
c) Affected by dust particles d) All of the above

6) A generating voltmeter uses _____.
a) A constant speed motor
b) A variable speed motor
c) A variable speed motor with capacitor
d) None of the above

7) The positive sequence reactance per phase in ohm/km in 750 transmission line is _____.
a) 0.272 b) 0.227
c) 0.722 d) None of these

8) The noise levels are controlled by following standards _____.
a) IS 6842 b) IS 6840
c) IS 6846 d) IS 6848

9) In the formation of pulse train how many pulse occurs during positive half cycle in fair whether _____.

a) 3 pulse b) 2 pulse
c) One pulse d) 6 pulse

10) Which type of corona discharge gives interference to radio broadcast?

a) Pulse type b) Pulse less type
c) Glow corona d) None of the above

11) The maximum potential co-efficient depends on only _____.

a) Dimensions of line conductors configuration on the tower
b) System voltage
c) Quantum of power transmitted
d) None of these

12) The high voltage recognized in India are as per _____.

a) IS 2024 b) IS 2026
c) IS 2022 d) IS 2028

13) In general method of Laplace transform, the series and shunt impedance operator per unit length of line is _____.

a) z(s) = r + ls b) y(s) = g + cs
c) Both (a) and (b) d) None of these

14) The AN level at 30 m from the line centre for 1150 KV line in USA is fixed to _____.

a) 50 dB b) 52 dB
c) 55 dB d) 57 dB

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (197045802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Write short Note (Any Four) **16**

a) Line parameters for mode of propagation
b) Resistance and inductance of ground return
c) Limits for radio interference
d) Corona loss using Q-V diagram of corona
e) "Double exponential response" for open ended line
f) Attenuation of travelling wave

Q.3 Solve any two **12**

a) Derive the expression for resistance and inductance of ground return.
b) An overhead conductor of 1.6 cm radius is 10 m above ground (230 KV line to line). The switching surge experienced is 3.5 pu Taking k=0.7. Calculate energy loss per km of line assume smooth conductor.
c) How the audible noise is generated and what are the characteristics?

Section – II

Q.4 Write short Note (Any Four) **16**

a) Reduction of switch surge over voltages
b) Cascade connection of components by shunt and series compensation
c) Power circle diagram and its use
d) Sub-synchronous resonance in series capacitor compensated lines
e) Horn gap
f) Valve type lightening arrestor

Q.5 Solve any two **12**

a) Brief the static reactive compensation system by different SVC schemes.
b) Describe the insulation co-ordination and over voltage protection.
c) Explain sub synchronous problem and counter measures.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (197045802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Sphere gap is used for measurement of _____.
a) Dc voltage only
b) Ac voltage only
c) Impulse voltage of any wave shape
d) Both (a) and (b)

2) The voltage measurements using spark gap are _____.
a) Affected by hear by objects b) Affected by polarity of supply
c) Affected by dust particles d) All of the above

3) A generating voltmeter uses _____.
a) A constant speed motor
b) A variable speed motor
c) A variable speed motor with capacitor
d) None of the above

4) The positive sequence reactance per phase in ohm/km in 750 transmission line is _____.
a) 0.272 b) 0.227
c) 0.722 d) None of these

5) The noise levels are controlled by following standards _____.
a) IS 6842 b) IS 6840
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6) In the formation of pulse train how many pulse occurs during positive half cycle in fair whether _____.
a) 3 pulse b) 2 pulse
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7) Which type of corona discharge gives interference to radio broadcast?
a) Pulse type b) Pulse less type
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8) The maximum potential co-efficient depends on only _____.
a) Dimensions of line conductors configuration on the tower
b) System voltage
c) Quantum of power transmitted
d) None of these

9) The high voltage recognized in India are as per _____.
a) IS 2024 b) IS 2026
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10) In general method of Laplace transform, the series and shunt impedance operator per unit length of line is _____.
a) z(s) = r + ls b) y(s) = g + cs
c) Both (a) and (b) d) None of these

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12) Draining of trapped charge of line is done by _____.
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13) The type of EHV cable is _____.
a) High pressure oil filled b) Cross linked polythene
c) Gas insulated lines d) All of the above

14) The surface voltage gradient on conductors in bundle governs _____.
a) Generation of Corona on the line
b) Audible noise
c) Radio interference
d) None of these

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (197045802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Write short Note (Any Four) **16**
- **a)** Line parameters for mode of propagation
- **b)** Resistance and inductance of ground return
- **c)** Limits for radio interference
- **d)** Corona loss using Q-V diagram of corona
- **e)** "Double exponential response" for open ended line
- **f)** Attenuation of travelling wave

Q.3 Solve any two **12**
- **a)** Derive the expression for resistance and inductance of ground return.
- **b)** An overhead conductor of 1.6 cm radius is 10 m above ground (230 KV line to line). The switching surge experienced is 3.5 pu Taking k=0.7. Calculate energy loss per km of line assume smooth conductor.
- **c)** How the audible noise is generated and what are the characteristics?

Section – II

Q.4 Write short Note (Any Four) **16**
- **a)** Reduction of switch surge over voltages
- **b)** Cascade connection of components by shunt and series compensation
- **c)** Power circle diagram and its use
- **d)** Sub-synchronous resonance in series capacitor compensated lines
- **e)** Horn gap
- **f)** Valve type lightening arrestor

Q.5 Solve any two **12**
- **a)** Brief the static reactive compensation system by different SVC schemes.
- **b)** Describe the insulation co-ordination and over voltage protection.
- **c)** Explain sub synchronous problem and counter measures.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (197045802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In general method of Laplace transform, the series and shunt impedance operator per unit length of line is _____.
a) z(s) = r + ls b) y(s) = g + cs
c) Both (a) and (b) d) None of these

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4) The type of EHV cable is _____.
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5) The surface voltage gradient on conductors in bundle governs _____.
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b) Audible noise
c) Radio interference
d) None of these

6) Sphere gap is used for measurement of _____.
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b) Ac voltage only
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a) Affected by hear by objects b) Affected by polarity of supply
c) Affected by dust particles d) All of the above

8) A generating voltmeter uses _____.
a) A constant speed motor
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c) A variable speed motor with capacitor
d) None of the above

9) The positive sequence reactance per phase in ohm/km in 750 transmission line is _____.
a) 0.272 b) 0.227
c) 0.722 d) None of these

10) The noise levels are controlled by following standards _____.
a) IS 6842 b) IS 6840
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11) In the formation of pulse train how many pulse occurs during positive half cycle in fair whether _____.
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12) Which type of corona discharge gives interference to radio broadcast?
a) Pulse type b) Pulse less type
c) Glow corona d) None of the above

13) The maximum potential co-efficient depends on only _____.
a) Dimensions of line conductors configuration on the tower
b) System voltage
c) Quantum of power transmitted
d) None of these

14) The high voltage recognized in India are as per _____.
a) IS 2024 b) IS 2026
c) IS 2022 d) IS 2028

SLR-GF-489

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Extra High Voltage AC Transmission (197045802)

Day & Date: Tuesday 19-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Write short Note (Any Four) **16**

a) Line parameters for mode of propagation
b) Resistance and inductance of ground return
c) Limits for radio interference
d) Corona loss using Q-V diagram of corona
e) "Double exponential response" for open ended line
f) Attenuation of travelling wave

Q.3 Solve any two **12**

a) Derive the expression for resistance and inductance of ground return.
b) An overhead conductor of 1.6 cm radius is 10 m above ground (230 KV line to line). The switching surge experienced is 3.5 pu Taking k=0.7. Calculate energy loss per km of line assume smooth conductor.
c) How the audible noise is generated and what are the characteristics?

Section – II

Q.4 Write short Note (Any Four) **16**

a) Reduction of switch surge over voltages
b) Cascade connection of components by shunt and series compensation
c) Power circle diagram and its use
d) Sub-synchronous resonance in series capacitor compensated lines
e) Horn gap
f) Valve type lightening arrestor

Q.5 Solve any two **12**

a) Brief the static reactive compensation system by different SVC schemes.
b) Describe the insulation co-ordination and over voltage protection.
c) Explain sub synchronous problem and counter measures.

SLR-GF-490

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (197045804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The Extrapolation method is based on the _____.
a) Curve fitting to present data
b) Extrapolation of past data
c) Extrapolation of present data
d) Curve fitting to previous data available

2) The correlation technique relates system load to _____.
a) Various Demographic Factors b) Economic factors
c) Both a and b d) None of the above

3) Short term regular variations related to the calendar or time of day is known as _____.
a) Trend b) Seasonality
c) Cycles d) Random variations

4) In order to have a lower cost of electrical energy generation _____.
a) The load factor and diversity factor should be low
b) The load factor should be low but diversity factor should be high
c) The load factor should be high but diversity factor should be low
d) The load factor and diversity factor should be high

5) The reduction of utility load primarily during peak demand is known as ____.
a) Peak clipping b) Load shifting
c) Valley filling d) MTP analysis

6) Distribution automation is used for _____.
a) electrical quantities only b) physical quantities only
c) both of the above d) None of the above

7) The main problem in implanting Distribution Automation in metros is _____.
a) RTUs b) communication
c) D.A.S. d) control computers

8) Distribution SCADA means _____
a) data acquisition b) man – machine interface
c) data archiving d) all of the above

9) The load forecasting is method to predict _____.
a) Past loads b) Present loads
c) Future loads d) None of these

10) For tong term planning time period is _____.
a) 0-2 years b) 2-5 years
c) 5-10 years d) All above

11) For flour mills, power consumed is _____.
a) 10-15 KW b) 100-200 W
c) 200 W d) 7kW

12) The capital cost of a power plant depends on _____.
a) Total installed capacity only b) Total number of units only
c) Both (a) and (b) d) None of these

13) What is the modern trend in electric power generation?
a) To have a large number of small size thermal plants located at different places
b) To have large size thermal plants near load centre
c) To have large size thermal plants located near coal fields
d) None of the above

14) Planning for power systems is essentially a projection of _____.
a) how the system should grow over a specific period of time
b) judgment about the future loads and the size of investment in generating capacity additior
c) transmission facilities expansion and reinforcements
d) All above

SLR-GF-490

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (197045804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Explain What do you mean by system planning State the objectives of system planning.
b) Explain Main aims of different types of system planning.
c) Explain various categories of load forecasting.
d) What are the Important Factors for Forecasts?
e) Describe different methodologies used for load forecasting.

Q.3 Solve any Two **12**

a) What do you mean by DA? Explain tools of DA (distribution automation).
b) Describe generation system model.
c) Write note on Cost Analysis.

Section – II

Q.4 Solve any Four **16**

a) Give objectives of Transmission Planning.
b) Explain the Data required for Composite System Reliability and quality.
c) What do you mean by Energy audit?
d) What do you mean by Demand side Management?
e) Explain New algorithms and methods relating to Load Forecasting.

Q.5 Solve any Two **12**

a) Explain Energy conservation and its importance.
b) Write short note on listing of energy conservation opportunities (ECOs).
c) Explain New algorithms and methods relating to power system planning.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (197045804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Distribution SCADA means _____
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2) The load forecasting is method to predict _____.
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4) For flour mills, power consumed is _____.
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c) To have large size thermal plants located near coal fields
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a) how the system should grow over a specific period of time
b) judgment about the future loads and the size of investment in generating capacity additior
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8) The Extrapolation method is based on the _____.
a) Curve fitting to present data
b) Extrapolation of past data
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d) Curve fitting to previous data available

9) The correlation technique relates system load to _____.
a) Various Demographic Factors b) Economic factors
c) Both a and b d) None of the above

10) Short term regular variations related to the calendar or time of day is known as _____.
a) Trend b) Seasonality
c) Cycles d) Random variations

11) In order to have a lower cost of electrical energy generation _____.
a) The load factor and diversity factor should be low
b) The load factor should be low but diversity factor should be high
c) The load factor should be high but diversity factor should be low
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12) The reduction of utility load primarily during peak demand is known as ____.
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a) RTUs b) communication
c) D.A.S. d) control computers

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Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (197045804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Explain What do you mean by system planning State the objectives of system planning.
b) Explain Main aims of different types of system planning.
c) Explain various categories of load forecasting.
d) What are the Important Factors for Forecasts?
e) Describe different methodologies used for load forecasting.

Q.3 Solve any Two **12**

a) What do you mean by DA? Explain tools of DA (distribution automation).
b) Describe generation system model.
c) Write note on Cost Analysis.

Section – II

Q.4 Solve any Four **16**

a) Give objectives of Transmission Planning.
b) Explain the Data required for Composite System Reliability and quality.
c) What do you mean by Energy audit?
d) What do you mean by Demand side Management?
e) Explain New algorithms and methods relating to Load Forecasting.

Q.5 Solve any Two **12**

a) Explain Energy conservation and its importance.
b) Write short note on listing of energy conservation opportunities (ECOs).
c) Explain New algorithms and methods relating to power system planning.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (197045804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) For flour mills, power consumed is _____.
a) 10-15 KW b) 100-200 W
c) 200 W d) 7kW

2) The capital cost of a power plant depends on _____.
a) Total installed capacity only b) Total number of units only
c) Both (a) and (b) d) None of these

3) What is the modern trend in electric power generation?
a) To have a large number of small size thermal plants located at different places
b) To have large size thermal plants near load centre
c) To have large size thermal plants located near coal fields
d) None of the above

4) Planning for power systems is essentially a projection of _____.
a) how the system should grow over a specific period of time
b) judgment about the future loads and the size of investment in generating capacity additior
c) transmission facilities expansion and reinforcements
d) All above

5) The Extrapolation method is based on the _____.
a) Curve fitting to present data
b) Extrapolation of past data
c) Extrapolation of present data
d) Curve fitting to previous data available

6) The correlation technique relates system load to _____.
a) Various Demographic Factors b) Economic factors
c) Both a and b d) None of the above

7) Short term regular variations related to the calendar or time of day is known as _____.
a) Trend b) Seasonality
c) Cycles d) Random variations

8) In order to have a lower cost of electrical energy generation _____.
a) The load factor and diversity factor should be low
b) The load factor should be low but diversity factor should be high
c) The load factor should be high but diversity factor should be low
d) The load factor and diversity factor should be high

9) The reduction of utility load primarily during peak demand is known as ____.
a) Peak clipping b) Load shifting
c) Valley filling d) MTP analysis

10) Distribution automation is used for _____.
a) electrical quantities only b) physical quantities only
c) both of the above d) None of the above

11) The main problem in implanting Distribution Automation in metros is _____.
a) RTUs b) communication
c) D.A.S. d) control computers

12) Distribution SCADA means _____
a) data acquisition b) man – machine interface
c) data archiving d) all of the above

13) The load forecasting is method to predict _____.
a) Past loads b) Present loads
c) Future loads d) None of these

14) For tong term planning time period is _____.
a) 0-2 years b) 2-5 years
c) 5-10 years d) All above

SLR-GF-490

Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (197045804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Explain What do you mean by system planning State the objectives of system planning.
b) Explain Main aims of different types of system planning.
c) Explain various categories of load forecasting.
d) What are the Important Factors for Forecasts?
e) Describe different methodologies used for load forecasting.

Q.3 Solve any Two **12**

a) What do you mean by DA? Explain tools of DA (distribution automation).
b) Describe generation system model.
c) Write note on Cost Analysis.

Section – II

Q.4 Solve any Four **16**

a) Give objectives of Transmission Planning.
b) Explain the Data required for Composite System Reliability and quality.
c) What do you mean by Energy audit?
d) What do you mean by Demand side Management?
e) Explain New algorithms and methods relating to Load Forecasting.

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b) Write short note on listing of energy conservation opportunities (ECOs).
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Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (197045804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Distribution automation is used for _____.
a) electrical quantities only b) physical quantities only
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c) 200 W d) 7kW

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b) To have large size thermal plants near load centre
c) To have large size thermal plants located near coal fields
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c) transmission facilities expansion and reinforcements
d) All above

10) The Extrapolation method is based on the _____.
a) Curve fitting to present data
b) Extrapolation of past data
c) Extrapolation of present data
d) Curve fitting to previous data available

11) The correlation technique relates system load to _____.
a) Various Demographic Factors b) Economic factors
c) Both a and b d) None of the above

12) Short term regular variations related to the calendar or time of day is known as _____.
a) Trend b) Seasonality
c) Cycles d) Random variations

13) In order to have a lower cost of electrical energy generation _____.
a) The load factor and diversity factor should be low
b) The load factor should be low but diversity factor should be high
c) The load factor should be high but diversity factor should be low
d) The load factor and diversity factor should be high

14) The reduction of utility load primarily during peak demand is known as ____.
a) Peak clipping b) Load shifting
c) Valley filling d) MTP analysis

SLR-GF-490

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Planning (197045804)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Explain What do you mean by system planning State the objectives of system planning.
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c) Explain various categories of load forecasting.
d) What are the Important Factors for Forecasts?
e) Describe different methodologies used for load forecasting.

Q.3 Solve any Two **12**

a) What do you mean by DA? Explain tools of DA (distribution automation).
b) Describe generation system model.
c) Write note on Cost Analysis.

Section – II

Q.4 Solve any Four **16**

a) Give objectives of Transmission Planning.
b) Explain the Data required for Composite System Reliability and quality.
c) What do you mean by Energy audit?
d) What do you mean by Demand side Management?
e) Explain New algorithms and methods relating to Load Forecasting.

Q.5 Solve any Two **12**

a) Explain Energy conservation and its importance.
b) Write short note on listing of energy conservation opportunities (ECOs).
c) Explain New algorithms and methods relating to power system planning.

SLR-GF-492

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Electrical Drives (197045806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) For high frequency choppers the device that is preferred is _____.
a) Thyristor b) TRIAC
c) Transistor d) GTO

2) A four quadrant operation requires _____.
a) Two full converters in series
b) Two full converters connected in parallel
c) Two full converter connected in back to back
d) Two semi converters connected in back to back

3) The operating speed of a synchronous motor can be changed to new fixed value by _____.
a) Changing the load b) Changing the supply voltage
c) Changing frequency d) Using brakes

4) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?
a) Short Time duty
b) Intermittent duty
c) Intermittent duty with starting
d) Intermittent duty with starting and braking

5) During the starting of a slip ring induction motor using rotor resistance starter, the insertion of resistance in the rotor circuit causes _____.
a) Stator current to increase and torque to decrease
b) Stator current to decrease and torque to increase
c) Stators current to increase and power factor to decrease
d) Power factor to decrease and torque to increase

6) The slip of an induction motor normally does not depends on _____.
a) rotor speed b) synchronous speed
c) shaft torque d) core loss component

7) Speed control by variation of field flux results in _____.
a) Constant power drive b) Constant torque drive
c) Variable power drive d) None of the above

8) Efficiency by using rotor resistance control in IM is _____.
a) High b) Low
c) Very high d) Very low

9) Full-converter can be used in DC motor for regenerative braking in _____.
a) Constant Operation b) Variable Operation
c) Inversion Operation d) Opposite Operation

10) Reluctance motor is a _____.
a) Variable torque motor
b) Low torque variable speed motor
c) Self starting type synchronous motor
d) Low noise, slow speed motor

11) Cycloconverter drive has applications in _____.
a) Low power and low speed operations
b) High power and high speed operations
c) Low power and high speed operations
d) High power and low speed operations

12) Which of the following method is employed when regenerative braking is necessary?
a) DC Chopper b) Variable Resistor
c) Inverter Rectifier d) Motor-generator

13) Applications of dc motor is restricted to a few load speed applications because of _____.
a) cost of motor is high
b) mechanical commutation problems
c) maintenance problem
d) all of above

14) Stepper motor is popular for _____.
a) Speed control b) Position control
c) Torque control d) Both a and b

SLR-GF-492

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Electrical Drives (197045806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Describe in details Characteristics of DC motors.
b) Describe in details dynamics of Electric Drives?
c) Explain the working of phase controlled converter fed DC drives.
d) Explain the chopper fed DC separately excited motor in motoring mode.
e) Explain stator voltage control of an induction motor with speed torque characteristics.

Q.3 Solve any Two **12**

a) Explain the static Kramer method and static schrebius method of speed control of three phase induction motor.
b) Derive fundamental torque equations and components of load torque.
c) Describe in details dual-converter control of DC drive.

Section – II

Q.4 Solve any Four **16**

a) Draw and explain variable frequency control for synchronous motors.
b) Explain Losses in electrical drive system.
c) Explain with circuit diagram converter circuit for switched reluctance motor.
d) Describe in details Energy efficient operation of drives.
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Solve any Two **12**

a) With neat sketch explain VSI feed induction motor drive also draw block diagram for closed loop control.
b) Draw a neat diagram & explain the Cycloconverter control for synchronous motors.
c) Describe in details improvement of power factor and quality of supply.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Electrical Drives (197045806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Efficiency by using rotor resistance control in IM is _____.
a) High b) Low
c) Very high d) Very low

2) Full-converter can be used in DC motor for regenerative braking in _____.
a) Constant Operation b) Variable Operation
c) Inversion Operation d) Opposite Operation

3) Reluctance motor is a _____.
a) Variable torque motor
b) Low torque variable speed motor
c) Self starting type synchronous motor
d) Low noise, slow speed motor

4) Cycloconverter drive has applications in _____.
a) Low power and low speed operations
b) High power and high speed operations
c) Low power and high speed operations
d) High power and low speed operations

5) Which of the following method is employed when regenerative braking is necessary?
a) DC Chopper b) Variable Resistor
c) Inverter Rectifier d) Motor-generator

6) Applications of dc motor is restricted to a few load speed applications because of _____.
a) cost of motor is high
b) mechanical commutation problems
c) maintenance problem
d) all of above

7) Stepper motor is popular for _____.
a) Speed control b) Position control
c) Torque control d) Both a and b

8) For high frequency choppers the device that is preferred is _____.
a) Thyristor b) TRIAC
c) Transistor d) GTO

9) A four quadrant operation requires _____.
a) Two full converters in series
b) Two full converters connected in parallel
c) Two full converter connected in back to back
d) Two semi converters connected in back to back

10) The operating speed of a synchronous motor can be changed to new fixed value by _____.
a) Changing the load b) Changing the supply voltage
c) Changing frequency d) Using brakes

11) Which duty cycle is preferred if the load requires a constant power for short period of time and rest for sufficient longer duration?
a) Short Time duty
b) Intermittent duty
c) Intermittent duty with starting
d) Intermittent duty with starting and braking

12) During the starting of a slip ring induction motor using rotor resistance starter, the insertion of resistance in the rotor circuit causes _____.
a) Stator current to increase and torque to decrease
b) Stator current to decrease and torque to increase
c) Stators current to increase and power factor to decrease
d) Power factor to decrease and torque to increase

13) The slip of an induction motor normally does not depends on _____.
a) rotor speed b) synchronous speed
c) shaft torque d) core loss component

14) Speed control by variation of field flux results in _____.
a) Constant power drive b) Constant torque drive
c) Variable power drive d) None of the above

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Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Electrical Drives (197045806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Describe in details Characteristics of DC motors.
b) Describe in details dynamics of Electric Drives?
c) Explain the working of phase controlled converter fed DC drives.
d) Explain the chopper fed DC separately excited motor in motoring mode.
e) Explain stator voltage control of an induction motor with speed torque characteristics.

Q.3 Solve any Two **12**

a) Explain the static Kramer method and static schrebius method of speed control of three phase induction motor.
b) Derive fundamental torque equations and components of load torque.
c) Describe in details dual-converter control of DC drive.

Section – II

Q.4 Solve any Four **16**

a) Draw and explain variable frequency control for synchronous motors.
b) Explain Losses in electrical drive system.
c) Explain with circuit diagram converter circuit for switched reluctance motor.
d) Describe in details Energy efficient operation of drives.
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Solve any Two **12**

a) With neat sketch explain VSI feed induction motor drive also draw block diagram for closed loop control.
b) Draw a neat diagram & explain the Cycloconverter control for synchronous motors.
c) Describe in details improvement of power factor and quality of supply.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Electrical Drives (197045806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Cycloconverter drive has applications in _____.
a) Low power and low speed operations
b) High power and high speed operations
c) Low power and high speed operations
d) High power and low speed operations

2) Which of the following method is employed when regenerative braking is necessary?
a) DC Chopper b) Variable Resistor
c) Inverter Rectifier d) Motor-generator

3) Applications of dc motor is restricted to a few load speed applications because of _____.
a) cost of motor is high
b) mechanical commutation problems
c) maintenance problem
d) all of above

4) Stepper motor is popular for _____.
a) Speed control b) Position control
c) Torque control d) Both a and b

5) For high frequency choppers the device that is preferred is _____.
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6) A four quadrant operation requires _____.
a) Two full converters in series
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c) Two full converter connected in back to back
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7) The operating speed of a synchronous motor can be changed to new fixed value by _____.
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12) Efficiency by using rotor resistance control in IM is _____.
a) High
b) Low
c) Very high
d) Very low

13) Full-converter can be used in DC motor for regenerative braking in _____.
a) Constant Operation
b) Variable Operation
c) Inversion Operation
d) Opposite Operation

14) Reluctance motor is a _____.
a) Variable torque motor
b) Low torque variable speed motor
c) Self starting type synchronous motor
d) Low noise, slow speed motor

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Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Electrical Drives (197045806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Describe in details Characteristics of DC motors.
b) Describe in details dynamics of Electric Drives?
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Q.3 Solve any Two **12**

a) Explain the static Kramer method and static schrebius method of speed control of three phase induction motor.
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Section – II

Q.4 Solve any Four **16**

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Seat No.	

Set | S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Electrical Drives (197045806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) maintenance problem
d) all of above

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c) Intermittent duty with starting
d) Intermittent duty with starting and braking

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b) Stator current to decrease and torque to increase
c) Stators current to increase and power factor to decrease
d) Power factor to decrease and torque to increase

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Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Electrical Drives (197045806)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any Four **16**

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b) Describe in details dynamics of Electric Drives?
c) Explain the working of phase controlled converter fed DC drives.
d) Explain the chopper fed DC separately excited motor in motoring mode.
e) Explain stator voltage control of an induction motor with speed torque characteristics.

Q.3 Solve any Two **12**

a) Explain the static Kramer method and static schrebius method of speed control of three phase induction motor.
b) Derive fundamental torque equations and components of load torque.
c) Describe in details dual-converter control of DC drive.

Section – II

Q.4 Solve any Four **16**

a) Draw and explain variable frequency control for synchronous motors.
b) Explain Losses in electrical drive system.
c) Explain with circuit diagram converter circuit for switched reluctance motor.
d) Describe in details Energy efficient operation of drives.
e) Explain drive circuit for stepper motor with neat sketch.

Q.5 Solve any Two **12**

a) With neat sketch explain VSI feed induction motor drive also draw block diagram for closed loop control.
b) Draw a neat diagram & explain the Cycloconverter control for synchronous motors.
c) Describe in details improvement of power factor and quality of supply.

SLR-GF-493

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (197045807)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Smart Grid Technology comprises the following: _____.
a) AMI, PLM, OMS, Renewable Integration, Microgrid,
b) DR/DSM, Distribution Automation, Energy Efficient Systems
c) All of the above
d) None of the above

2) Smart Grid goals include all but the following: _____.
a) Potentially reducing our carbon footprint
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures, all categories of consumers
d) Maintaining grid affordability

3) Smart Grid technologies are aimed at improvement of
a) Only Power Transmission System
b) Only Power Distribution system
c) Both Power Transmission & Distribution System
d) Neither Power Transmission nor Power Distribution system

4) In a Smart Grid ECO System, a normal consumer is expected to be able to turn to _____.
a) a non-consumer
b) a careful consumer
c) a Prosumer
d) Both careful consumer and Prosumer

5) What is the full form of DR in the context of Smart Grids?
a) Delivery Rate b) Divide & Rule
c) Demand Response d) Demand Recycle

6) Sensors can be used for the following purposes in Smart Grids _____.
a) Detect mechanical failures, tower collapses, extreme mechanical conditions
b) Real time mechanical and electrical conditions of power lines
c) Diagnose imminent as well as permanent faults
d) All above

7) A localized grouping of electricity generations, energy storages, and loads is termed as?
a) Virtual Power Plant b) Macro Grid
c) Micro Grid d) Traditional Grid

8) A system that integrates several types of power sources, (wind-turbines, hydro, Photovoltaics and batteries) to give a reliable overall power supply is termed as?
a) Virtual Power Plant b) Macro Grid
c) Micro Grid d) Traditional Grid

9) How much power is lost in the grid due to resistance?
a) 2-5% b) 7-10%
c) 11-14% d) 15-18%

10) Advanced Control Methods Technology Area include all but: _____.
a) Operational Applications b) Fault Tolerance
c) Distributed Intelligent Agents d) Analytical Tools

11) Smart Grid goals include all but the following: _____.
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c) Assimilate all cultures to become American
d) Maintaining Grid Affordability

12) Distributed Intelligent Agents include all of the following, except: _____.
a) Dynamic distributed power control
b) Digital Protective Relays
c) Grid friendly appliances
d) Meter Reading Frequency

13) The typical voltage level of the primary customer is _____.
a) 66 kV b) 11kV
c) 400V d) None of the above

14) Which of the following is not the characteristic of the existing grid?
a) Manual Monitoring b) Failures and Blackouts
c) Self-healing d) One way communication

SLR-GF-493

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (197045807)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Define smart grid. Differentiate between conventional grid and smart grid.
b) Describe the opportunities and challenges relate to smart grid.
c) What are the major points which are the forced drivers for demanding smart grid?
d) Explain how smart meter can be play an important role to make a system smart.
e) Explain the concept of Resilient and self-healing grid.

Q.3 Solve any Two **12**

a) What is phasor measurement unit? Explain its features and applications of PMU in power System.
b) Give the brief description of Intelligent Electronic Devices (IED).
c) Explain the communication network topologies used for data transmission in advanced Metering infrastructure.

Section – II

Q.4 Solve any Four **16**

a) Describe the Power Quality issues of grid connected Renewable Energy Source.
b) Explain the importance of the power quality in smart grid and how it can be improved.
c) Explain EMC and its importance in smart grid.
d) Write note on 'IP based Protocol'.
e) What are the research are that can strengthen smart grid?

Q.5 Solve any Two **12**

a) Explain the protection & control Strategy implemented in smart grid.
b) What is Geographic Information System (GIS)? Explain the components of GIS.
c) What is meant by Smart Sensors? Give and explain some smart sensors.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (197045807)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A system that integrates several types of power sources, (wind-turbines, hydro, Photovoltaics and batteries) to give a reliable overall power supply is termed as?
a) Virtual Power Plant b) Macro Grid
c) Micro Grid d) Traditional Grid

2) How much power is lost in the grid due to resistance?
a) 2-5% b) 7-10%
c) 11-14% d) 15-18%

3) Advanced Control Methods Technology Area include all but: _____.
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c) Distributed Intelligent Agents d) Analytical Tools

4) Smart Grid goals include all but the following: _____.
a) Potentially Reducing Our Carbon Foot-print
b) Introducing advancements and efficiencies yet to be envisioned
c) Assimilate all cultures to become American
d) Maintaining Grid Affordability

5) Distributed Intelligent Agents include all of the following, except: _____.
a) Dynamic distributed power control
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c) Grid friendly appliances
d) Meter Reading Frequency

6) The typical voltage level of the primary customer is _____.
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7) Which of the following is not the characteristic of the existing grid?
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   c) All of the above
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9) Smart Grid goals include all but the following: _____.
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10) Smart Grid technologies are aimed at improvement of
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   b) Only Power Distribution system
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12) What is the full form of DR in the context of Smart Grids?
   a) Delivery Rate
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   c) Micro Grid
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Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (197045807)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Define smart grid. Differentiate between conventional grid and smart grid.
b) Describe the opportunities and challenges relate to smart grid.
c) What are the major points which are the forced drivers for demanding smart grid?
d) Explain how smart meter can be play an important role to make a system smart.
e) Explain the concept of Resilient and self-healing grid.

Q.3 Solve any Two **12**

a) What is phasor measurement unit? Explain its features and applications of PMU in power System.
b) Give the brief description of Intelligent Electronic Devices (IED).
c) Explain the communication network topologies used for data transmission in advanced Metering infrastructure.

Section – II

Q.4 Solve any Four **16**

a) Describe the Power Quality issues of grid connected Renewable Energy Source.
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c) Explain EMC and its importance in smart grid.
d) Write note on 'IP based Protocol'.
e) What are the research are that can strengthen smart grid?

Q.5 Solve any Two **12**

a) Explain the protection & control Strategy implemented in smart grid.
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Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (197045807)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

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c) Assimilate all cultures to become American
d) Maintaining Grid Affordability

2) Distributed Intelligent Agents include all of the following, except: _____.
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3) The typical voltage level of the primary customer is _____.
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14) Advanced Control Methods Technology Area include all but: _____.
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c) Distributed Intelligent Agents
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Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (197045807)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any Four **16**

a) Define smart grid. Differentiate between conventional grid and smart grid.
b) Describe the opportunities and challenges relate to smart grid.
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d) Explain how smart meter can be play an important role to make a system smart.
e) Explain the concept of Resilient and self-healing grid.

Q.3 Solve any Two **12**

a) What is phasor measurement unit? Explain its features and applications of PMU in power System.
b) Give the brief description of Intelligent Electronic Devices (IED).
c) Explain the communication network topologies used for data transmission in advanced Metering infrastructure.

Section – II

Q.4 Solve any Four **16**

a) Describe the Power Quality issues of grid connected Renewable Energy Source.
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a) Explain the protection & control Strategy implemented in smart grid.
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Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (197045807)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Sensors can be used for the following purposes in Smart Grids _____.
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c) a Prosumer
d) Both careful consumer and Prosumer

14) What is the full form of DR in the context of Smart Grids?
a) Delivery Rate b) Divide & Rule
c) Demand Response d) Demand Recycle

SLR-GF-493

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Smart Grid Technology (197045807)

Day & Date: Wednesday, 20-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Define smart grid. Differentiate between conventional grid and smart grid.
b) Describe the opportunities and challenges relate to smart grid.
c) What are the major points which are the forced drivers for demanding smart grid?
d) Explain how smart meter can be play an important role to make a system smart.
e) Explain the concept of Resilient and self-healing grid.

Q.3 Solve any Two **12**

a) What is phasor measurement unit? Explain its features and applications of PMU in power System.
b) Give the brief description of Intelligent Electronic Devices (IED).
c) Explain the communication network topologies used for data transmission in advanced Metering infrastructure.

Section – II

Q.4 Solve any Four **16**

a) Describe the Power Quality issues of grid connected Renewable Energy Source.
b) Explain the importance of the power quality in smart grid and how it can be improved.
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e) What are the research are that can strengthen smart grid?

Q.5 Solve any Two **12**

a) Explain the protection & control Strategy implemented in smart grid.
b) What is Geographic Information System (GIS)? Explain the components of GIS.
c) What is meant by Smart Sensors? Give and explain some smart sensors.

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Control Engineering (197045808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Draw neat diagrams whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) For the system

$$\dot{x} = \begin{bmatrix} 0 & 1 \\ -1 & -2 \end{bmatrix} x + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u \; and \; y = [1 \quad 1]$$

a) System is controllable but unstable
b) System is un controllable but unstable
c) System is controllable but stable
d) System is un controllable but stable

2) Consider the following statements:
i) State space approach can handle the systems with non-zero initial conditions
ii) Backlash, saturation, and dead-zone are the characteristics of nonlinear systems
iii) Transfer function approach is applicable to only linear time-invariant (LTI) systems.
Which of these statements are correct?
a) only iii b) i and iii
c) i, ii and iii d) None of these

3) What are the advantages of integral controller?
a) Contains small offset b) Slow response time
c) Both a and b d) None of the above

4) Which of the following state space representation is based on partial fraction _____.
a) Controllable canonical form and observable canonical form
b) Diagonal canonical form and Jordan form
c) Controllable canonical form and Jordan form
d) Diagonal canonical form and observable canonical form

5) Which of the following statements is false regarding the state feedback controller design?
a) It can be designed for any system whether state controllable or uncontrollable
b) It is designed for state controllable systems only
c) It is designed for arbitrary pole placement
d) Ackermann's formula is used to design state feedback controller

6) Which of the following statement is false?
a) Pole locations of controller and observer are independent of each other
b) Observer poles are nearer to the imaginary axis as compared to controller poles
c) Controller poles are nearer to the imaginary axis as compared to observer poles
d) Observer poles are dominant in case of significant sensor noise

7) The method of investigating the stability using Liapunov function as the _____.
a) Direct method b) Indirect method
c) Not determined d) Always unstable

8) The points at which derivatives of all the state variables are zero are:
a) Singular points b) Nonsingular points
c) Poles d) Zeros

9) In phase plane _____.
a) X1 is represented in x-axis, and X2 in y-axis
b) X2 is represented in x-axis, and X1 in y-axis
c) any one of above
d) none of the above

10) Conditions of _____ are necessary and sufficient condition for the asymptotic stability of the system.
a) Linear system b) Krasovskii's method
c) positive definiteness d) Variable gradient method

11) It is difficult to form Liapunov's function for:
a) Linear system b) Non-linear
c) Time variant systems d) Time -invariant systems

12) Fuzzy logic is:
a) Used to respond to questions in a humanlike way
b) A new programming language used to program animation
c) The result of fuzzy thinking
d) A term that indicates logical values greater than one

13) What are pros of neural networks over computers?
a) they have ability to learn
b) they have real time high computational rates
c) they have more tolerance
d) all of the mentioned

14) The system is asymptotically stable in the large at the origin if _____.
a) It is stable
b) There exist a real number > 0 such that $|| x(t0) || <= r$
c) Every initial state $x(t0)$ results in $x(t)$ tends to zero as t tends to infinity
d) Both a and c

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Advance Control Engineering (197045808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.
5) Separate answer books for each section.

Section – I

Q.2 Attempt any four of the following. **16**

a) Consider the following system

$$\frac{Y(s)}{U(s)} = \frac{2(s+3)}{s(s^2+5)}$$

Calculate the state-space representation of this system in observable canonical form.

b) Explain the Jordan Canonical Form to express state space equations.

c) Check the controllability and observability of the state model given below.

$$\begin{bmatrix}\dot{X}_1\\ \dot{X}_2\\ \dot{X}^3\end{bmatrix} = \begin{bmatrix}-1 & -2 & -2\\ 0 & -1 & 1\\ 1 & 0 & -1\end{bmatrix}\begin{bmatrix}X_1\\ X_2\\ X_3\end{bmatrix} + \begin{bmatrix}2\\ 0\\ 1\end{bmatrix} u(t) \; and \; y = [1 \quad 1 \quad 0]\begin{bmatrix}X_1\\ X_2\\ X_3\end{bmatrix}$$

d) A linear system is described by the state model.

$\begin{bmatrix}\dot{X}_1\\ \dot{X}_2\end{bmatrix} = \begin{bmatrix}0 & 1\\ 0 & -2\end{bmatrix}\begin{bmatrix}X_1\\ X_2\end{bmatrix} + \begin{bmatrix}0\\ 4\end{bmatrix} u(t) \; and \; y = [1 \quad 0]\begin{bmatrix}X_1\\ X_2\end{bmatrix}$. Calculate the observer gain matrix so that the observer poles are at $s1,2 = -8, -8$

e) Explain the working of cascade control with the help of block diagram.

Q.3 Attempt any two of the following: **12**

a) It is desired to place the closed loop poles of following system at $s = -1. -2, -2$ by a state feedback controller with the control $u = -kx$. Determine the state feedback gain matrix K the Ackermann's formula.

$$\begin{bmatrix}\dot{X}_1\\ \dot{X}_2\\ \dot{X}_3\end{bmatrix} = \begin{bmatrix}0 & 1 & 0\\ 0 & 0 & 1\\ 1 & 0 & 0\end{bmatrix}\begin{bmatrix}X_1\\ X_2\\ X_3\end{bmatrix} + \begin{bmatrix}0\\ 0\\ 1\end{bmatrix} u(t)$$

b) A system is described by the differential equation.

$\dddot{y} + 6\ddot{y} + 11\,\dot{y} + 6\,y = \dddot{u} + 8\,\ddot{u} + 17\,\dot{u} + 8u$, all the initial conditions being zero. Describe the system in diagonal canonical form.

c) Explain in details different tuning methods of PID controller.

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain the Lyapunov stability of non-linear control system.

b) Explain the isoclines method for construction of phase trajectories.

c) Explain the use of Artificial neural network in control Engineering.

d) State and explain the direct method of Lyapunov for stability analysis of nonlinear system.

e) Explain singular points in nonlinear control system.

Q.5 Attempt any two of the following. **12**

a) A linear autonomous system is described by the following state equation. $\begin{bmatrix}\dot{X}_1\\ \dot{X}_2\end{bmatrix} = \begin{bmatrix}0 & -1\\ 1 & -1\end{bmatrix}\begin{bmatrix}X_1\\ X_2\end{bmatrix}$. The system stability is checked by using Lyapunov's equation $A^TP + PA = -Q$. Calculate the matrix P and the system stability assume Q as an identity matrix.

b) Explain in detail different methods of Adaptive control.

c) Derive the describing function of dead-zone and saturation nonlinearity.

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Control Engineering (197045808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Draw neat diagrams whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

1) The points at which derivatives of all the state variables are zero are:
a) Singular points b) Nonsingular points
c) Poles d) Zeros

2) In phase plane _____.
a) X1 is represented in x-axis, and X2 in y-axis
b) X2 is represented in x-axis, and X1 in y-axis
c) any one of above
d) none of the above

3) Conditions of _____ are necessary and sufficient condition for the asymptotic stability of the system.
a) Linear system b) Krasovskii's method
c) positive definiteness d) Variable gradient method

4) It is difficult to form Liapunov's function for:
a) Linear system b) Non-linear
c) Time variant systems d) Time -invariant systems

5) Fuzzy logic is:
a) Used to respond to questions in a humanlike way
b) A new programming language used to program animation
c) The result of fuzzy thinking
d) A term that indicates logical values greater than one

6) What are pros of neural networks over computers?
a) they have ability to learn
b) they have real time high computational rates
c) they have more tolerance
d) all of the mentioned

7) The system is asymptotically stable in the large at the origin if _____.
a) It is stable
b) There exist a real number > 0 such that $|| x(t0) || <= r$
c) Every initial state $x(t0)$ results in $x(t)$ tends to zero as t tends to infinity
d) Both a and c

8) For the system

$$\dot{x} = \begin{bmatrix} 0 & 1 \\ -1 & -2 \end{bmatrix} x + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u \; and \; y = [1 \quad 1]$$

a) System is controllable but unstable
b) System is un controllable but unstable
c) System is controllable but stable
d) System is un controllable but stable

9) Consider the following statements:
i) State space approach can handle the systems with non-zero initial conditions
ii) Backlash, saturation, and dead-zone are the characteristics of nonlinear systems
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Which of these statements are correct?
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b) i and iii
c) i, ii and iii
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10) What are the advantages of integral controller?
a) Contains small offset
b) Slow response time
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11) Which of the following state space representation is based on partial fraction _____.
a) Controllable canonical form and observable canonical form
b) Diagonal canonical form and Jordan form
c) Controllable canonical form and Jordan form
d) Diagonal canonical form and observable canonical form

12) Which of the following statements is false regarding the state feedback controller design?
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b) It is designed for state controllable systems only
c) It is designed for arbitrary pole placement
d) Ackermann's formula is used to design state feedback controller

13) Which of the following statement is false?
a) Pole locations of controller and observer are independent of each other
b) Observer poles are nearer to the imaginary axis as compared to controller poles
c) Controller poles are nearer to the imaginary axis as compared to observer poles
d) Observer poles are dominant in case of significant sensor noise

14) The method of investigating the stability using Liapunov function as the _____.
a) Direct method
b) Indirect method
c) Not determined
d) Always unstable

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Control Engineering (197045808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.
5) Separate answer books for each section.

Section – I

Q.2 Attempt any four of the following. **16**

a) Consider the following system

$$\frac{Y(s)}{U(s)} = \frac{2(s+3)}{s(s^2+5)}$$

Calculate the state-space representation of this system in observable canonical form.

b) Explain the Jordan Canonical Form to express state space equations.

c) Check the controllability and observability of the state model given below.

$$\begin{bmatrix}\dot{X}_1\\ \dot{X}_2\\ \dot{X}^3\end{bmatrix} = \begin{bmatrix}-1 & -2 & -2\\ 0 & -1 & 1\\ 1 & 0 & -1\end{bmatrix}\begin{bmatrix}X_1\\ X_2\\ X_3\end{bmatrix} + \begin{bmatrix}2\\ 0\\ 1\end{bmatrix} u(t) \; and \; y = [1 \quad 1 \quad 0]\begin{bmatrix}X_1\\ X_2\\ X_3\end{bmatrix}$$

d) A linear system is described by the state model.

$\begin{bmatrix}\dot{X}_1\\ \dot{X}_2\end{bmatrix} = \begin{bmatrix}0 & 1\\ 0 & -2\end{bmatrix}\begin{bmatrix}X_1\\ X_2\end{bmatrix} + \begin{bmatrix}0\\ 4\end{bmatrix} u(t) \; and \; y = [1 \quad 0]\begin{bmatrix}X_1\\ X_2\end{bmatrix}$. Calculate the observer gain matrix so that the observer poles are at $s1,2 = -8, -8$

e) Explain the working of cascade control with the help of block diagram.

Q.3 Attempt any two of the following: **12**

a) It is desired to place the closed loop poles of following system at $s = -1. -2, -2$ by a state feedback controller with the control $u = -kx$. Determine the state feedback gain matrix K the Ackermann's formula.

$$\begin{bmatrix}\dot{X}_1\\ \dot{X}_2\\ \dot{X}_3\end{bmatrix} = \begin{bmatrix}0 & 1 & 0\\ 0 & 0 & 1\\ 1 & 0 & 0\end{bmatrix}\begin{bmatrix}X_1\\ X_2\\ X_3\end{bmatrix} + \begin{bmatrix}0\\ 0\\ 1\end{bmatrix} u(t)$$

b) A system is described by the differential equation.

$\dddot{y} + 6\ddot{y} + 11\,\dot{y} + 6\,y = \dddot{u} + 8\,\ddot{u} + 17\,\dot{u} + 8u$, all the initial conditions being zero. Describe the system in diagonal canonical form.

c) Explain in details different tuning methods of PID controller.

Section – II

Q.4 Attempt any four of the following. **16**

a) Explain the Lyapunov stability of non-linear control system.

b) Explain the isoclines method for construction of phase trajectories.

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d) State and explain the direct method of Lyapunov for stability analysis of nonlinear system.

e) Explain singular points in nonlinear control system.

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a) A linear autonomous system is described by the following state equation. $\begin{bmatrix}\dot{X}_1\\ \dot{X}_2\end{bmatrix} = \begin{bmatrix}0 & -1\\ 1 & -1\end{bmatrix}\begin{bmatrix}X_1\\ X_2\end{bmatrix}$. The system stability is checked by using Lyapunov's equation $A^T P + PA = -Q$. Calculate the matrix P and the system stability assume Q as an identity matrix.

b) Explain in detail different methods of Adaptive control.

c) Derive the describing function of dead-zone and saturation nonlinearity.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Control Engineering (197045808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. 14

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a) Linear system b) Non-linear
c) Time variant systems d) Time -invariant systems

2) Fuzzy logic is:
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Seat No.	

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Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Control Engineering (197045808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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Section – II

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SLR-GF-494

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advance Control Engineering (197045808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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Duration: 30 Minutes Marks: 14

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Seat No.		Set	S

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ELECTRICAL ENGINEERING
Advance Control Engineering (197045808)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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Section – II

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b) Explain in detail different methods of Adaptive control.

c) Derive the describing function of dead-zone and saturation nonlinearity.

SLR-GF-495

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Estimation and Installation (197045809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume the suitable data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) Do's and Don'ts are observed carefully in safety precautions as per _____.
a) IS 5216-1962 b) IS 5216-1964
c) IS 5216-1966 d) IS 5216-1969

2) Which of the following methods providing artificial respiration _____.
a) Schafer's prone pressure method
b) Silvester's method
c) Both a & b
d) Narcol Method

3) Which state in India does not follow IE (Indian Electricity rules)?
a) Sikkim b) Jammu Kashmir
c) Nagaland d) Mizoram

4) Which insulating material is used for low voltage cables?
a) Impregnated paper b) Rubber
c) Silk and cotton d) Vulcanised Indian rub

5) Brake test is _____ method of testing machine.
a) Regenerative b) Direct
c) Indirect d) All of these

6) Copper losses in a rotating machine is _____.
a) Variable losses b) Constant losses
c) Either (a) or (b) d) None of these

7) Swinburne's test can be performed at _____.
a) A. Any load b) Only no load
c) Only full load d) Only half load

8) Which of the following factors affects on life of insulating material _____.
a) Temperature b) Deposition of dust
c) Impurities d) All of these

9) No load test on transformer is carried out to determine _____.
a) copper losses b) magnetizing current
c) magnetizing current & loss d) efficiency of transformer

10) For class 'A' insulating material, maximum operating temperature is _____.
a) 600C b) 900C
c) 950C d) 1050C

11) Which of the following factors affects on life of insulating material?
a) Temperature b) Deposition of dust
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12) A fuse is normally a _____.
a) Power limiting device b) Voltage limiting device
c) Current limiting device d) p.f. correcting device

13) Depth of foundation is dependent on _____.
a) Cost of equipment
b) Frequency
c) H.P. rating
d) None of these

14) Thermal relays are used for the protection of motors against over-current owing to:
a) Short circuit b) Heavy loads
c) Earth fault d) All the above

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Estimation and Installation (197045809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four: **16**

a) Define the terms- Hazard, Accident, Authority and Accountability.
b) What are the objectives of testing? What is significance of ISS?
c) Explain Silvester's method of providing artificial respiration?
d) What do you mean by preventive maintenance? State advantage of it.
e) Write a short note on Electrical Estimation.

Q.3 Solve any two: **12**

a) What are the types of fire extinguishers? State their applications.
b) What is the purpose of conducting reduced voltage running up test? Explain how it is carried out?
c) The main circuit wire in a house is required to carry a current of 45 amperes when connected to single phase a.c. supply. Determine the size of the wire if the length of the circuit is 40 metres.

Section – II

Q.4 Solve any four: **16**

a) Give maintenance schedule for distribution transformers as per ISS 1886-1967.
b) Write the different properties of transformer oil.
c) What are the effects of mis-alignment?
d) What is the different dimension of foundation for static and rotating machines?
e) What are type tests of 3ph transformers as per ISS? Explain any one in detail.

Q.5 Solve any two: **12**

a) Write short note on Foundation Making.
b) What are the requirements of foundations for installing rotating electrical machines as per IS 900-1992?
c) Describe with neat sketch
i) Acidity Test
ii) Sludge Test
iii) Crackle Test
iv) Flash point
v) Flash point Test

Table 14.1

Current ratings and voltage drop for vulcanised rubber PVC or polythene insulated or tough Rubber PVC lead sheathed single core aluminum wires or cables

Size of Conductor		*2 Cables d.c. or Single-phase a.c.*		*3 or 4 cables of balanced 3-phase*		4 Cables *d.c.*	
Normal area sq. mm.	Number and diameter of wire in mm.	*Current rating* in amperes	*Approx length of run for volt-drop in meters*	*Current rating* in amperes	*Approx length of run for volt-drop in meters*	*Current rating* in amperes	*Approx length of run for volt-drop in meters*
1.5	1/1.40	10	2.3	9	2.9	9	2.5
2.5	1/1.60	15	2.5	12	3.6	11	3.4
4.0	1/2.24	20	2.9	17	3.9	15	4.1
6.0	1/2.80	27	3.4	24	4.3	21	4.3
10.0	1/3.55	34	4.3	31	5.4	27	5.4
16.0	7/1.10	43	5.4	38	7.0	35	6.8
25.0	7/2.24	59	6.8	54	8.5	48	8.5
35.0	7/2.50	69	7.2	62	9.3	55	9.0
50.0	7/3.0] 19/1.80]	91	7.9	82	10.1	69	10.0

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Estimation and Installation (197045809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume the suitable data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Which of the following factors affects on life of insulating material _____.
a) Temperature b) Deposition of dust
c) Impurities d) All of these

2) No load test on transformer is carried out to determine _____.
a) copper losses b) magnetizing current
c) magnetizing current & loss d) efficiency of transformer

3) For class 'A' insulating material, maximum operating temperature is _____.
a) 600C b) 900C
c) 950C d) 1050C

4) Which of the following factors affects on life of insulating material?
a) Temperature b) Deposition of dust
c) Impurities d) All of these

5) A fuse is normally a _____.
a) Power limiting device b) Voltage limiting device
c) Current limiting device d) p.f. correcting device

6) Depth of foundation is dependent on _____.
a) Cost of equipment
b) Frequency
c) H.P. rating
d) None of these

7) Thermal relays are used for the protection of motors against over-current owing to:
a) Short circuit b) Heavy loads
c) Earth fault d) All the above

8) Do's and Don'ts are observed carefully in safety precautions as per _____.
a) IS 5216-1962 b) IS 5216-1964
c) IS 5216-1966 d) IS 5216-1969

9) Which of the following methods providing artificial respiration _____.
a) Schafer's prone pressure method
b) Silvester's method
c) Both a & b
d) Narcol Method

10) Which state in India does not follow IE (Indian Electricity rules)?
a) Sikkim b) Jammu Kashmir
c) Nagaland d) Mizoram

11) Which insulating material is used for low voltage cables?
a) Impregnated paper b) Rubber
c) Silk and cotton d) Vulcanised Indian rub

12) Brake test is _____ method of testing machine.
a) Regenerative b) Direct
c) Indirect d) All of these

13) Copper losses in a rotating machine is _____.
a) Variable losses b) Constant losses
c) Either (a) or (b) d) None of these

14) Swinburne's test can be performed at _____.
a) A. Any load b) Only no load
c) Only full load d) Only half load

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Estimation and Installation (197045809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four: **16**

a) Define the terms- Hazard, Accident, Authority and Accountability.
b) What are the objectives of testing? What is significance of ISS?
c) Explain Silvester's method of providing artificial respiration?
d) What do you mean by preventive maintenance? State advantage of it.
e) Write a short note on Electrical Estimation.

Q.3 Solve any two: **12**

a) What are the types of fire extinguishers? State their applications.
b) What is the purpose of conducting reduced voltage running up test? Explain how it is carried out?
c) The main circuit wire in a house is required to carry a current of 45 amperes when connected to single phase a.c. supply. Determine the size of the wire if the length of the circuit is 40 metres.

Section – II

Q.4 Solve any four: **16**

a) Give maintenance schedule for distribution transformers as per ISS 1886-1967.
b) Write the different properties of transformer oil.
c) What are the effects of mis-alignment?
d) What is the different dimension of foundation for static and rotating machines?
e) What are type tests of 3ph transformers as per ISS? Explain any one in detail.

Q.5 Solve any two: **12**

a) Write short note on Foundation Making.
b) What are the requirements of foundations for installing rotating electrical machines as per IS 900-1992?
c) Describe with neat sketch
i) Acidity Test
ii) Sludge Test
iii) Crackle Test
iv) Flash point
v) Flash point Test

Table 14.1

Current ratings and voltage drop for vulcanised rubber PVC or polythene insulated or tough Rubber PVC lead sheathed single core aluminum wires or cables

Size of Conductor		*2 Cables d.c. or Single-phase a.c.*		*3 or 4 cables of balanced 3-phase*		4 Cables *d.c.*	
Normal area sq. mm.	Number and diameter of wire in mm.	*Current rating* in amperes	*Approx length of run for volt-drop in meters*	*Current rating* in amperes	*Approx length of run for volt-drop in meters*	*Current rating* in amperes	*Approx length of run for volt-drop in meters*
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6.0	1/2.80	27	3.4	24	4.3	21	4.3
10.0	1/3.55	34	4.3	31	5.4	27	5.4
16.0	7/1.10	43	5.4	38	7.0	35	6.8
25.0	7/2.24	59	6.8	54	8.5	48	8.5
35.0	7/2.50	69	7.2	62	9.3	55	9.0
50.0	7/3.0] 19/1.80]	91	7.9	82	10.1	69	10.0

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Estimation and Installation (197045809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume the suitable data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Which of the following factors affects on life of insulating material?
a) Temperature b) Deposition of dust
c) Impurities d) All of these

2) A fuse is normally a _____.
a) Power limiting device b) Voltage limiting device
c) Current limiting device d) p.f. correcting device

3) Depth of foundation is dependent on _____.
a) Cost of equipment
b) Frequency
c) H.P. rating
d) None of these

4) Thermal relays are used for the protection of motors against over-current owing to:
a) Short circuit b) Heavy loads
c) Earth fault d) All the above

5) Do's and Don'ts are observed carefully in safety precautions as per _____.
a) IS 5216-1962 b) IS 5216-1964
c) IS 5216-1966 d) IS 5216-1969

6) Which of the following methods providing artificial respiration _____.
a) Schafer's prone pressure method
b) Silvester's method
c) Both a & b
d) Narcol Method

7) Which state in India does not follow IE (Indian Electricity rules)?
a) Sikkim b) Jammu Kashmir
c) Nagaland d) Mizoram

8) Which insulating material is used for low voltage cables?
a) Impregnated paper b) Rubber
c) Silk and cotton d) Vulcanised Indian rub

9) Brake test is _____ method of testing machine.
a) Regenerative b) Direct
c) Indirect d) All of these

10) Copper losses in a rotating machine is _____.
a) Variable losses b) Constant losses
c) Either (a) or (b) d) None of these

11) Swinburne's test can be performed at _____.
a) A. Any load b) Only no load
c) Only full load d) Only half load

12) Which of the following factors affects on life of insulating material _____.
a) Temperature b) Deposition of dust
c) Impurities d) All of these

13) No load test on transformer is carried out to determine _____.
a) copper losses b) magnetizing current
c) magnetizing current & loss d) efficiency of transformer

14) For class 'A' insulating material, maximum operating temperature is _____.
a) 600C b) 900C
c) 950C d) 1050C

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Estimation and Installation (197045809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four: **16**

a) Define the terms- Hazard, Accident, Authority and Accountability.
b) What are the objectives of testing? What is significance of ISS?
c) Explain Silvester's method of providing artificial respiration?
d) What do you mean by preventive maintenance? State advantage of it.
e) Write a short note on Electrical Estimation.

Q.3 Solve any two: **12**

a) What are the types of fire extinguishers? State their applications.
b) What is the purpose of conducting reduced voltage running up test? Explain how it is carried out?
c) The main circuit wire in a house is required to carry a current of 45 amperes when connected to single phase a.c. supply. Determine the size of the wire if the length of the circuit is 40 metres.

Section – II

Q.4 Solve any four: **16**

a) Give maintenance schedule for distribution transformers as per ISS 1886-1967.
b) Write the different properties of transformer oil.
c) What are the effects of mis-alignment?
d) What is the different dimension of foundation for static and rotating machines?
e) What are type tests of 3ph transformers as per ISS? Explain any one in detail.

Q.5 Solve any two: **12**

a) Write short note on Foundation Making.
b) What are the requirements of foundations for installing rotating electrical machines as per IS 900-1992?
c) Describe with neat sketch
i) Acidity Test
ii) Sludge Test
iii) Crackle Test
iv) Flash point
v) Flash point Test

Table 14.1

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2.5	1/1.60	15	2.5	12	3.6	11	3.4
4.0	1/2.24	20	2.9	17	3.9	15	4.1
6.0	1/2.80	27	3.4	24	4.3	21	4.3
10.0	1/3.55	34	4.3	31	5.4	27	5.4
16.0	7/1.10	43	5.4	38	7.0	35	6.8
25.0	7/2.24	59	6.8	54	8.5	48	8.5
35.0	7/2.50	69	7.2	62	9.3	55	9.0
50.0	7/3.0] 19/1.80]	91	7.9	82	10.1	69	10.0

Seat No.	

Set S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Estimation and Installation (197045809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume the suitable data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Copper losses in a rotating machine is _____.
a) Variable losses b) Constant losses
c) Either (a) or (b) d) None of these

2) Swinburne's test can be performed at _____.
a) A. Any load b) Only no load
c) Only full load d) Only half load

3) Which of the following factors affects on life of insulating material _____.
a) Temperature b) Deposition of dust
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4) No load test on transformer is carried out to determine _____.
a) copper losses b) magnetizing current
c) magnetizing current & loss d) efficiency of transformer

5) For class 'A' insulating material, maximum operating temperature is _____.
a) 600C b) 900C
c) 950C d) 1050C

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c) Impurities d) All of these

7) A fuse is normally a _____.
a) Power limiting device b) Voltage limiting device
c) Current limiting device d) p.f. correcting device

8) Depth of foundation is dependent on _____.
a) Cost of equipment
b) Frequency
c) H.P. rating
d) None of these

9) Thermal relays are used for the protection of motors against over-current owing to:

a) Short circuit
b) Heavy loads
c) Earth fault
d) All the above

10) Do's and Don'ts are observed carefully in safety precautions as per _____.

a) IS 5216-1962
b) IS 5216-1964
c) IS 5216-1966
d) IS 5216-1969

11) Which of the following methods providing artificial respiration _____.

a) Schafer's prone pressure method
b) Silvester's method
c) Both a & b
d) Narcol Method

12) Which state in India does not follow IE (Indian Electricity rules)?

a) Sikkim
b) Jammu Kashmir
c) Nagaland
d) Mizoram

13) Which insulating material is used for low voltage cables?

a) Impregnated paper
b) Rubber
c) Silk and cotton
d) Vulcanised Indian rub

14) Brake test is _____ method of testing machine.

a) Regenerative
b) Direct
c) Indirect
d) All of these

SLR-GF-495

Seat No.	

Set S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Estimation and Installation (197045809)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four: **16**

a) Define the terms- Hazard, Accident, Authority and Accountability.
b) What are the objectives of testing? What is significance of ISS?
c) Explain Silvester's method of providing artificial respiration?
d) What do you mean by preventive maintenance? State advantage of it.
e) Write a short note on Electrical Estimation.

Q.3 Solve any two: **12**

a) What are the types of fire extinguishers? State their applications.
b) What is the purpose of conducting reduced voltage running up test? Explain how it is carried out?
c) The main circuit wire in a house is required to carry a current of 45 amperes when connected to single phase a.c. supply. Determine the size of the wire if the length of the circuit is 40 metres.

Section – II

Q.4 Solve any four: **16**

a) Give maintenance schedule for distribution transformers as per ISS 1886-1967.
b) Write the different properties of transformer oil.
c) What are the effects of mis-alignment?
d) What is the different dimension of foundation for static and rotating machines?
e) What are type tests of 3ph transformers as per ISS? Explain any one in detail.

Q.5 Solve any two: **12**

a) Write short note on Foundation Making.
b) What are the requirements of foundations for installing rotating electrical machines as per IS 900-1992?
c) Describe with neat sketch
i) Acidity Test
ii) Sludge Test
iii) Crackle Test
iv) Flash point
v) Flash point Test

Table 14.1

Current ratings and voltage drop for vulcanised rubber PVC or polythene insulated or tough Rubber PVC lead sheathed single core aluminum wires or cables

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4.0	1/2.24	20	2.9	17	3.9	15	4.1
6.0	1/2.80	27	3.4	24	4.3	21	4.3
10.0	1/3.55	34	4.3	31	5.4	27	5.4
16.0	7/1.10	43	5.4	38	7.0	35	6.8
25.0	7/2.24	59	6.8	54	8.5	48	8.5
35.0	7/2.50	69	7.2	62	9.3	55	9.0
50.0	7/3.0] 19/1.80]	91	7.9	82	10.1	69	10.0

SLR-GF-496

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (197045810)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions. **14**

1) Which of the following is correct for proximity sensors?
a) Inductive type b) Capacitive type
c) Ultrasonic wave type d) All of the mentioned

2) The main objective(s) of Industrial robot is to _____.
a) To minimise the labour requirement
b) To increase productivity
c) To enhance the life of production machines
d) All of the above

3) The following drive is used for lighter class of Robot _____.
a) Pneumatic drive b) Hydraulic drive
c) Electric drive d) All of the above

4) State model representation is possible using _____.
a) Physical variable b) Phase variables
c) Canonical state variables d) All of the mentioned

5) A sensor is a device that converts _____.
a) Physical quantity into measurable signals
b) Physical quantity into mechanical signal
c) Electrical signal into physical quantity
d) Physical quantity into electric signal only

6) Which among the following plays a crucial role in determining the state of dynamic system?
a) State variables b) State vector
c) State space d) State scalar

7) Which among the following are the interconnected units of state diagram representation?
a) Scalars b) Adders
c) Integrators d) All of the above

8) A Robot is a _____.
a) Programmable
b) multi-functional manipulator
c) Both a) and b)
d) None of the above

9) Automatic controllers operate on the difference between set point and measurement, which is called _____.
a) Offset
b) Bias
c) Error
d) Feedback

10) The main objective of a process control is _____.
a) To control physical parameters
b) To control mechanical parameters
c) To control optical parameters
d) To control electrical parameters

11) The input of a controller is _____.
a) Sensed signal
b) Error signal
c) Desired variable value
d) Signal of fixed amplitude not dependent on desired variable value

12) The feed forward control system _____.
a) Cannot make corrections until a measurable error exists
b) Makes a change in output that is the integrated error
c) Requires little knowledge of the process before installation
d) Is theoretically capable of perfect control

13) Internal state sensors are used for measuring _____ of the end effector.
a) Position
b) Position & Velocity
c) Velocity & Acceleration
d) Position, Velocity & Acceleration

14) Which of the motions in actuators are preferred?
a) Rotary
b) Stationary
c) Non-Stationary
d) Translator

Seat No.	

Set **P**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (197045810)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four: **16**

a) Explain predictive control with neat sketch.
b) Explain operation of PI control with neat sketch.
c) Explain cascade control with block diagram.
d) Explain selective control with block diagram.
e) Write a note on Controller Tuning.

Q.3 Attempt any two: **12**

a) Explain Control of Systems with Inverse Response.
b) What are the different methods available for tuning of PID controller? Explain relay feedback method in details.
c) Explain feed forward control loop with neat sketch.

Section – II

Q.4 Attempt any Four: **16**

a) Explain laws of robotics.
b) Write a short note on Direct and inverse kinematics problems.
c) Explain the Accuracy and repeatability characteristics of Robotics
d) Explain proximity and distance measuring sensors with neat sketch.
e) Explain advantages & dis-advantages of robot.

Q.5 Attempt any Two: **12**

a) What is purpose of sensors? Explain internal and external sensors.
b) Explain in details Tractrix based approach for fixed and free robots and multibody system.
c) Write in detail History and Terminology of Robotics.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (197045810)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions. **14**

1) A Robot is a _____.
a) Programmable b) multi-functional manipulator
c) Both a) and b) d) None of the above

2) Automatic controllers operate on the difference between set point and measurement, which is called _____.
a) Offset b) Bias
c) Error d) Feedback

3) The main objective of a process control is _____.
a) To control physical parameters
b) To control mechanical parameters
c) To control optical parameters
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4) The input of a controller is _____.
a) Sensed signal
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5) The feed forward control system _____.
a) Cannot make corrections until a measurable error exists
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6) Internal state sensors are used for measuring _____ of the end effector.
a) Position b) Position & Velocity
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13) Which among the following plays a crucial role in determining the state of dynamic system?
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b) State vector
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d) State scalar

14) Which among the following are the interconnected units of state diagram representation?
a) Scalars
b) Adders
c) Integrators
d) All of the above

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (197045810)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four: **16**

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Section – II

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c) Explain the Accuracy and repeatability characteristics of Robotics
d) Explain proximity and distance measuring sensors with neat sketch.
e) Explain advantages & dis-advantages of robot.

Q.5 Attempt any Two: **12**

a) What is purpose of sensors? Explain internal and external sensors.
b) Explain in details Tractrix based approach for fixed and free robots and multibody system.
c) Write in detail History and Terminology of Robotics.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (197045810)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions. **14**

1) The input of a controller is _____.
a) Sensed signal
b) Error signal
c) Desired variable value
d) Signal of fixed amplitude not dependent on desired variable value

2) The feed forward control system _____.
a) Cannot make corrections until a measurable error exists
b) Makes a change in output that is the integrated error
c) Requires little knowledge of the process before installation
d) Is theoretically capable of perfect control

3) Internal state sensors are used for measuring _____ of the end effector.
a) Position b) Position & Velocity
c) Velocity & Acceleration d) Position, Velocity & Acceleration

4) Which of the motions in actuators are preferred?
a) Rotary b) Stationary
c) Non-Stationary d) Translator

5) Which of the following is correct for proximity sensors?
a) Inductive type b) Capacitive type
c) Ultrasonic wave type d) All of the mentioned

6) The main objective(s) of Industrial robot is to _____.
a) To minimise the labour requirement
b) To increase productivity
c) To enhance the life of production machines
d) All of the above

7) The following drive is used for lighter class of Robot _____.
a) Pneumatic drive b) Hydraulic drive
c) Electric drive d) All of the above

8) State model representation is possible using _____.
a) Physical variable b) Phase variables
c) Canonical state variables d) All of the mentioned

9) A sensor is a device that converts _____.
a) Physical quantity into measurable signals
b) Physical quantity into mechanical signal
c) Electrical signal into physical quantity
d) Physical quantity into electric signal only

10) Which among the following plays a crucial role in determining the state of dynamic system?
a) State variables
b) State vector
c) State space
d) State scalar

11) Which among the following are the interconnected units of state diagram representation?
a) Scalars
b) Adders
c) Integrators
d) All of the above

12) A Robot is a _____.
a) Programmable
b) multi-functional manipulator
c) Both a) and b)
d) None of the above

13) Automatic controllers operate on the difference between set point and measurement, which is called _____.
a) Offset
b) Bias
c) Error
d) Feedback

14) The main objective of a process control is _____.
a) To control physical parameters
b) To control mechanical parameters
c) To control optical parameters
d) To control electrical parameters

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (197045810)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four: **16**

a) Explain predictive control with neat sketch.
b) Explain operation of PI control with neat sketch.
c) Explain cascade control with block diagram.
d) Explain selective control with block diagram.
e) Write a note on Controller Tuning.

Q.3 Attempt any two: **12**

a) Explain Control of Systems with Inverse Response.
b) What are the different methods available for tuning of PID controller? Explain relay feedback method in details.
c) Explain feed forward control loop with neat sketch.

Section – II

Q.4 Attempt any Four: **16**

a) Explain laws of robotics.
b) Write a short note on Direct and inverse kinematics problems.
c) Explain the Accuracy and repeatability characteristics of Robotics
d) Explain proximity and distance measuring sensors with neat sketch.
e) Explain advantages & dis-advantages of robot.

Q.5 Attempt any Two: **12**

a) What is purpose of sensors? Explain internal and external sensors.
b) Explain in details Tractrix based approach for fixed and free robots and multibody system.
c) Write in detail History and Terminology of Robotics.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (197045810)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions. **14**

1) Which among the following plays a crucial role in determining the state of dynamic system?
a) State variables b) State vector
c) State space d) State scalar

2) Which among the following are the interconnected units of state diagram representation?
a) Scalars b) Adders
c) Integrators d) All of the above

3) A Robot is a _____.
a) Programmable b) multi-functional manipulator
c) Both a) and b) d) None of the above

4) Automatic controllers operate on the difference between set point and measurement, which is called _____.
a) Offset b) Bias
c) Error d) Feedback

5) The main objective of a process control is _____.
a) To control physical parameters
b) To control mechanical parameters
c) To control optical parameters
d) To control electrical parameters

6) The input of a controller is _____.
a) Sensed signal
b) Error signal
c) Desired variable value
d) Signal of fixed amplitude not dependent on desired variable value

7) The feed forward control system _____.
a) Cannot make corrections until a measurable error exists
b) Makes a change in output that is the integrated error
c) Requires little knowledge of the process before installation
d) Is theoretically capable of perfect control

8) Internal state sensors are used for measuring _____ of the end effector.
a) Position b) Position & Velocity
c) Velocity & Acceleration d) Position, Velocity & Acceleration

9) Which of the motions in actuators are preferred?
a) Rotary b) Stationary
c) Non-Stationary d) Translator

10) Which of the following is correct for proximity sensors?
a) Inductive type b) Capacitive type
c) Ultrasonic wave type d) All of the mentioned

11) The main objective(s) of Industrial robot is to _____.
a) To minimise the labour requirement
b) To increase productivity
c) To enhance the life of production machines
d) All of the above

12) The following drive is used for lighter class of Robot _____.
a) Pneumatic drive b) Hydraulic drive
c) Electric drive d) All of the above

13) State model representation is possible using _____.
a) Physical variable b) Phase variables
c) Canonical state variables d) All of the mentioned

14) A sensor is a device that converts _____.
a) Physical quantity into measurable signals
b) Physical quantity into mechanical signal
c) Electrical signal into physical quantity
d) Physical quantity into electric signal only

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Instrumentation Process Control & Robotics (197045810)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four: **16**
- **a)** Explain predictive control with neat sketch.
- **b)** Explain operation of PI control with neat sketch.
- **c)** Explain cascade control with block diagram.
- **d)** Explain selective control with block diagram.
- **e)** Write a note on Controller Tuning.

Q.3 Attempt any two: **12**
- **a)** Explain Control of Systems with Inverse Response.
- **b)** What are the different methods available for tuning of PID controller? Explain relay feedback method in details.
- **c)** Explain feed forward control loop with neat sketch.

Section – II

Q.4 Attempt any Four: **16**
- **a)** Explain laws of robotics.
- **b)** Write a short note on Direct and inverse kinematics problems.
- **c)** Explain the Accuracy and repeatability characteristics of Robotics
- **d)** Explain proximity and distance measuring sensors with neat sketch.
- **e)** Explain advantages & dis-advantages of robot.

Q.5 Attempt any Two: **12**
- **a)** What is purpose of sensors? Explain internal and external sensors.
- **b)** Explain in details Tractrix based approach for fixed and free robots and multibody system.
- **c)** Write in detail History and Terminology of Robotics.

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Seat No.	

Set P

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Dynamics and Stability (197045811)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Governors of controlling the speed of electric generating units normally provide _____.
a) A flat-speed load characteristic
b) An increase in speed with an increasing load
c) A decrease in speed with an increasing load
d) None

2) A 50 Hz, 4 pole alternator rated at 20 MVA, 13.2 KV has an inertia constant H = 4 KW.sec./KVA. The K.E. stored in the rotor at synchronous speed is _____.
a) 80 KJ b) 80 MJ
c) 40 MJ d) 20 MJ

3) Linkage mechanism provides _____.
a) The moment of control valve is proportional to the inlet steam
b) The feedback from the control valve moment
c) Both a) and b)
d) None of these

4) The stability of the power system is not affected by which among these?
a) Generator reactance b) Line losses
c) Excitation of generators d) All of these

5) When a system is dynamically stable, oscillations of synchronous machines following sudden load changes will _____.
a) Diminish with time b) Increase with time
c) Not occur d) Oscillate the machine

6) A synchronous generator connected to an infinite bus delivers power at a lag p.f. If its excitation is increased _____.
a) The terminal voltage increases b) Voltage angle increases
c) Current delivered increases d) Both b) and c)

7) Park's transformation matrix is _____.
a) A linear matrix
b) A time dependent matrix
c) Non-linear and time invariant matrix
d) Both a) and b)

8) The excitation system consists of _____.
a) An exciter
b) An AVR
c) Both an exciter and an AVR
d) None of these

9) The flexibility is more in which type of speed governing system?
a) mechanical- hydraulic speed governing system
b) electro- hydraulic speed governing system
c) both a) and b)
d) none of these

10) Hydraulic servomotors are used in _____ type of speed governing system.
a) mechanical-hydraulic controlled
b) electro-hydraulic controlled
c) both a) and b)
d) none of these

11) For a long uncompensated line the limit to the line loading is governed by ___.
a) Thermal limit
b) Voltage drop
c) Stability limit
d) Corona loss

12) Why are the series capacitors used?
a) Improve the voltage
b) Reduce the fault level
c) Compensate for line inductive reactance and improve the stability of the power system
d) Improves the power factor

13) What is the range of $'\delta'$ for stable operation?
a) $0^\circ < \delta < 45^\circ$
b) $45^\circ < \delta < 90^\circ$
c) $0^\circ < \delta < 90^\circ$
d) $0^\circ < \delta < 120^\circ$

14) The use of high speed breakers can: _____.
a) Increase the transient stability
b) Decrease the transient stability
c) Increase the steady state stability
d) Decrease the steady state stability

Seat No.	

Set **P**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Dynamics and Stability (197045811)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Draw the block diagram of IEEE type-1 model for excitation control and explain the same.
b) Explain with example need of reduced model in stability analysis.
c) Distinguish between transient and dynamic stability.
d) Draw and explain functional block diagram of an excitation control system.
e) Formulate sub-transient and transient inductances and also write about time constants.

Q.3 Solve any two of the following. **12**

a) Classify the different type's excitation system? Explain any one.
b) Explain with block diagram typical excitation system configuration.
c) Explain in detail importance of stability in power system operation and control.

Section – II

Q.4 Solve any four of the following. **16**

a) Compare: coherent and non-coherent machines.
b) Explain with neat sketch electrical hydraulic governor for hydro turbines.
c) Explain the role of auto reclosing circuit breaker in stability enhancement.
d) Explain in detail function of speed governing system.
e) A 50 Hz, four pole turbo-generator rated 100 MVA, 11 kV has an inertia constant of 8.0 MJ/MVA.
1) Find the stored energy in the rotor at synchronous speed.
2) If the mechanical input is suddenly raised to 80 MW for an electrical load of 50 MW, find rotor acceleration, neglecting mechanical and electrical losses.

Q.5 Solve any two of the following. **12**

a) Develop the swing equation of synchronous machine with its linearization.
b) List various methods are used to improve steady state stability and any one method in detail.
c) What are the major components of speed governing mechanism and explain with the help of linkage mechanism diagram?

Seat No.	

Set **Q**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Dynamics and Stability (197045811)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The excitation system consists of _____.
a) An exciter
b) An AVR
c) Both an exciter and an AVR
d) None of these

2) The flexibility is more in which type of speed governing system?
a) mechanical- hydraulic speed governing system
b) electro- hydraulic speed governing system
c) both a) and b)
d) none of these

3) Hydraulic servomotors are used in _____ type of speed governing system.
a) mechanical-hydraulic controlled
b) electro-hydraulic controlled
c) both a) and b)
d) none of these

4) For a long uncompensated line the limit to the line loading is governed by ___.
a) Thermal limit b) Voltage drop
c) Stability limit d) Corona loss

5) Why are the series capacitors used?
a) Improve the voltage
b) Reduce the fault level
c) Compensate for line inductive reactance and improve the stability of the power system
d) Improves the power factor

6) What is the range of $'\delta'$ for stable operation?
a) $0° < \delta < 45°$ b) $45° < \delta < 90°$
c) $0° < \delta < 90°$ d) $0° < \delta < 120°$

7) The use of high speed breakers can: _____.
a) Increase the transient stability
b) Decrease the transient stability
c) Increase the steady state stability
d) Decrease the steady state stability

8) Governors of controlling the speed of electric generating units normally provide _____.
a) A flat-speed load characteristic
b) An increase in speed with an increasing load
c) A decrease in speed with an increasing load
d) None

9) A 50 Hz, 4 pole alternator rated at 20 MVA, 13.2 KV has an inertia constant H = 4 KW.sec./KVA. The K.E. stored in the rotor at synchronous speed is _____.
a) 80 KJ b) 80 MJ
c) 40 MJ d) 20 MJ

10) Linkage mechanism provides _____.
a) The moment of control valve is proportional to the inlet steam
b) The feedback from the control valve moment
c) Both a) and b)
d) None of these

11) The stability of the power system is not affected by which among these?
a) Generator reactance b) Line losses
c) Excitation of generators d) All of these

12) When a system is dynamically stable, oscillations of synchronous machines following sudden load changes will _____.
a) Diminish with time b) Increase with time
c) Not occur d) Oscillate the machine

13) A synchronous generator connected to an infinite bus delivers power at a lag p.f. If its excitation is increased _____.
a) The terminal voltage increases b) Voltage angle increases
c) Current delivered increases d) Both b) and c)

14) Park's transformation matrix is _____.
a) A linear matrix
b) A time dependent matrix
c) Non-linear and time invariant matrix
d) Both a) and b)

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Seat No.	

Set Q

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Dynamics and Stability (197045811)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Draw the block diagram of IEEE type-1 model for excitation control and explain the same.
b) Explain with example need of reduced model in stability analysis.
c) Distinguish between transient and dynamic stability.
d) Draw and explain functional block diagram of an excitation control system.
e) Formulate sub-transient and transient inductances and also write about time constants.

Q.3 Solve any two of the following. **12**

a) Classify the different type's excitation system? Explain any one.
b) Explain with block diagram typical excitation system configuration.
c) Explain in detail importance of stability in power system operation and control.

Section – II

Q.4 Solve any four of the following. **16**

a) Compare: coherent and non-coherent machines.
b) Explain with neat sketch electrical hydraulic governor for hydro turbines.
c) Explain the role of auto reclosing circuit breaker in stability enhancement.
d) Explain in detail function of speed governing system.
e) A 50 Hz, four pole turbo-generator rated 100 MVA, 11 kV has an inertia constant of 8.0 MJ/MVA.
1) Find the stored energy in the rotor at synchronous speed.
2) If the mechanical input is suddenly raised to 80 MW for an electrical load of 50 MW, find rotor acceleration, neglecting mechanical and electrical losses.

Q.5 Solve any two of the following. **12**

a) Develop the swing equation of synchronous machine with its linearization.
b) List various methods are used to improve steady state stability and any one method in detail.
c) What are the major components of speed governing mechanism and explain with the help of linkage mechanism diagram?

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Dynamics and Stability (197045811)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) For a long uncompensated line the limit to the line loading is governed by ___.
a) Thermal limit b) Voltage drop
c) Stability limit d) Corona loss

2) Why are the series capacitors used?
a) Improve the voltage
b) Reduce the fault level
c) Compensate for line inductive reactance and improve the stability of the power system
d) Improves the power factor

3) What is the range of $'\delta'$ for stable operation?
a) $0^\circ < \delta < 45^\circ$ b) $45^\circ < \delta < 90^\circ$
c) $0^\circ < \delta < 90^\circ$ d) $0^\circ < \delta < 120^\circ$

4) The use of high speed breakers can: _____.
a) Increase the transient stability
b) Decrease the transient stability
c) Increase the steady state stability
d) Decrease the steady state stability

5) Governors of controlling the speed of electric generating units normally provide _____.
a) A flat-speed load characteristic
b) An increase in speed with an increasing load
c) A decrease in speed with an increasing load
d) None

6) A 50 Hz, 4 pole alternator rated at 20 MVA, 13.2 KV has an inertia constant H = 4 KW.sec./KVA. The K.E. stored in the rotor at synchronous speed is _____.
a) 80 KJ b) 80 MJ
c) 40 MJ d) 20 MJ

7) Linkage mechanism provides _____.
a) The moment of control valve is proportional to the inlet steam
b) The feedback from the control valve moment
c) Both a) and b)
d) None of these

8) The stability of the power system is not affected by which among these?
a) Generator reactance b) Line losses
c) Excitation of generators d) All of these

9) When a system is dynamically stable, oscillations of synchronous machines following sudden load changes will _____.
a) Diminish with time b) Increase with time
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a) The terminal voltage increases b) Voltage angle increases
c) Current delivered increases d) Both b) and c)

11) Park's transformation matrix is _____.
a) A linear matrix
b) A time dependent matrix
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d) Both a) and b)

12) The excitation system consists of _____.
a) An exciter
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c) Both an exciter and an AVR
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13) The flexibility is more in which type of speed governing system?
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14) Hydraulic servomotors are used in _____ type of speed governing system.
a) mechanical-hydraulic controlled
b) electro-hydraulic controlled
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Seat No.	

Set R

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Dynamics and Stability (197045811)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Draw the block diagram of IEEE type-1 model for excitation control and explain the same.
b) Explain with example need of reduced model in stability analysis.
c) Distinguish between transient and dynamic stability.
d) Draw and explain functional block diagram of an excitation control system.
e) Formulate sub-transient and transient inductances and also write about time constants.

Q.3 Solve any two of the following. **12**

a) Classify the different type's excitation system? Explain any one.
b) Explain with block diagram typical excitation system configuration.
c) Explain in detail importance of stability in power system operation and control.

Section – II

Q.4 Solve any four of the following. **16**

a) Compare: coherent and non-coherent machines.
b) Explain with neat sketch electrical hydraulic governor for hydro turbines.
c) Explain the role of auto reclosing circuit breaker in stability enhancement.
d) Explain in detail function of speed governing system.
e) A 50 Hz, four pole turbo-generator rated 100 MVA, 11 kV has an inertia constant of 8.0 MJ/MVA.
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Q.5 Solve any two of the following. **12**

a) Develop the swing equation of synchronous machine with its linearization.
b) List various methods are used to improve steady state stability and any one method in detail.
c) What are the major components of speed governing mechanism and explain with the help of linkage mechanism diagram?

Seat No.	

Set **S**

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Dynamics and Stability (197045811)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) A synchronous generator connected to an infinite bus delivers power at a lag p.f. If its excitation is increased _____.
a) The terminal voltage increases b) Voltage angle increases
c) Current delivered increases d) Both b) and c)

2) Park's transformation matrix is _____.
a) A linear matrix
b) A time dependent matrix
c) Non-linear and time invariant matrix
d) Both a) and b)

3) The excitation system consists of _____.
a) An exciter
b) An AVR
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d) None of these

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b) electro- hydraulic speed governing system
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d) none of these

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a) mechanical-hydraulic controlled
b) electro-hydraulic controlled
c) both a) and b)
d) none of these

6) For a long uncompensated line the limit to the line loading is governed by ___.
a) Thermal limit b) Voltage drop
c) Stability limit d) Corona loss

7) Why are the series capacitors used?
a) Improve the voltage
b) Reduce the fault level
c) Compensate for line inductive reactance and improve the stability of the power system
d) Improves the power factor

8) What is the range of $'\delta'$ for stable operation?
a) $0^\circ < \delta < 45^\circ$ b) $45^\circ < \delta < 90^\circ$
c) $0^\circ < \delta < 90^\circ$ d) $0^\circ < \delta < 120^\circ$

9) The use of high speed breakers can: _____.
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b) Decrease the transient stability
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10) Governors of controlling the speed of electric generating units normally provide _____.
a) A flat-speed load characteristic
b) An increase in speed with an increasing load
c) A decrease in speed with an increasing load
d) None

11) A 50 Hz, 4 pole alternator rated at 20 MVA, 13.2 KV has an inertia constant H = 4 KW.sec./KVA. The K.E. stored in the rotor at synchronous speed is _____.
a) 80 KJ b) 80 MJ
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12) Linkage mechanism provides _____.
a) The moment of control valve is proportional to the inlet steam
b) The feedback from the control valve moment
c) Both a) and b)
d) None of these

13) The stability of the power system is not affected by which among these?
a) Generator reactance b) Line losses
c) Excitation of generators d) All of these

14) When a system is dynamically stable, oscillations of synchronous machines following sudden load changes will _____.
a) Diminish with time b) Increase with time
c) Not occur d) Oscillate the machine

SLR-GF-497

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System Dynamics and Stability (197045811)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Draw the block diagram of IEEE type-1 model for excitation control and explain the same.
b) Explain with example need of reduced model in stability analysis.
c) Distinguish between transient and dynamic stability.
d) Draw and explain functional block diagram of an excitation control system.
e) Formulate sub-transient and transient inductances and also write about time constants.

Q.3 Solve any two of the following. **12**

a) Classify the different type's excitation system? Explain any one.
b) Explain with block diagram typical excitation system configuration.
c) Explain in detail importance of stability in power system operation and control.

Section – II

Q.4 Solve any four of the following. **16**

a) Compare: coherent and non-coherent machines.
b) Explain with neat sketch electrical hydraulic governor for hydro turbines.
c) Explain the role of auto reclosing circuit breaker in stability enhancement.
d) Explain in detail function of speed governing system.
e) A 50 Hz, four pole turbo-generator rated 100 MVA, 11 kV has an inertia constant of 8.0 MJ/MVA.
1) Find the stored energy in the rotor at synchronous speed.
2) If the mechanical input is suddenly raised to 80 MW for an electrical load of 50 MW, find rotor acceleration, neglecting mechanical and electrical losses.

Q.5 Solve any two of the following. **12**

a) Develop the swing equation of synchronous machine with its linearization.
b) List various methods are used to improve steady state stability and any one method in detail.
c) What are the major components of speed governing mechanism and explain with the help of linkage mechanism diagram?

SLR-GF-498

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer.
Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Disaster Management includes:
a) Mitigation b) Reconstruction
c) Rehabilitation d) All of the above

2) What is the primary goal of disaster mitigation?
a) Immediate response to disasters
b) Minimizing the impact of disasters and reducing the risk of future occurrences
c) Allocating resources for recovery efforts
d) Ignoring the need for preparedness

3) The National Disaster Management Authority (NDMA) is headed by _____.
a) Prime Minister of India b) President of India
c) Governor of States d) Chief Minister of States

4) What is the primary purpose of insurance in disaster risk management?
a) To create financial burdens for individuals
b) To transfer and manage the financial risks associated with disasters
c) To discourage risk reduction efforts
d) To ignore the impact of disasters

5) Which traditional construction material is known for its earthquake resistance?
a) Bamboo b) Mud bricks
c) Timber d) Concrete

6) Fiscal discipline refers to:
a) Strict control over public spending
b) Generous spending on public projects
c) Reducing taxes without considering the budget
d) Unrestricted borrowing for development projects

7) What is the primary goal of socio-economic rehabilitation?
a) Preservation of cultural heritage
b) Restoration of physical health
c) Restoration of economic and social well-being
d) Implementation of new policies

8) In the aftermath of a natural disaster, which aspect of socio-economic rehabilitation is crucial for long-term resilience?
a) Short-term financial aid b) Infrastructure reconstruction
c) Community empowerment d) Technological advancements

9) Which phase of disaster management involves restoring the affected community to a stable and sustainable state.
a) Response b) Preparedness
c) Recovery d) Mitigation

10) How can microfinance initiatives contribute to livelihood restoration?
a) By creating dependency on external aid
b) By promoting unequal distribution of resources
c) By providing financial support for small businesses and entrepreneurs
d) By discouraging local entrepreneurship

11) How does Community-Based Disaster Management contribute to increasing community resilience?
a) By promoting dependency on external aid
b) By isolating the community from the disaster management process
c) By enhancing local capacity, knowledge, and self-reliance
d) By avoiding community input for quick decision-making

12) What is a primary concern regarding drinking water during a disaster?
a) Over hydration b) Contamination
c) Lack of taste d) Excessive fluoride content

13) What is the purpose of a shear wall in earthquake-resistant house?
a) To resist wind loads
b) To provide insulation
c) To enhance aesthetics
d) To resist lateral forces during earthquakes

14) How do the police contribute to disaster response efforts?
a) By promoting chaos and disorder
b) By enforcing law and order, ensuring public safety, and assisting in evacuations
c) By limiting collaboration with external agencies
d) By ignoring the needs of vulnerable populations

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	Write the importance of Disaster mitigation.	**04**
	b)	Write Key elements of contingency plans for reconstructions.	**03**
	c)	Write short note on Calamity Relief Fund.	**03**
Q.3	**a)**	Give the classification of damage as per the Medvedev- Sponheuer- Kanik (MSK) Scale of 1964.	**05**
	b)	What are the objectives of damage assessment.	**04**
Q.4	**a)**	What do you mean by Physical Infrastructure? Explain development of Physical Infrastructure.	**05**
	b)	Write the roles of NGOs in rehabilitation.	**04**
Q.5	**a)**	Explain various Earthquake Resistant Construction Techniques.	**05**
	b)	Write note on Fiscal Discipline.	**04**

Section – II

Q.6	**a)**	Describe Agricultural Rehabilitation.	**04**
	b)	What is the importance of Livelihood Restoration in Recovery?	**03**
	c)	Write note on Individual Response in Disaster Management.	**03**
Q.7	**a)**	What are the key steps and considerations for monitoring rehabilitation work?	**05**
	b)	What are the roles of Information Dissemination?	**04**
Q.8	**a)**	What are Connection Between Recovery and Safe Development? Mention benefits of linking recovery with safe development.	**05**
	b)	What are the challenges in creating Long-term Jobs?	**04**
Q.9	**a)**	Write note on Food and Nutrition and response strategies for it after disaster.	**05**
	b)	What are the benefits of Community- Based Disaster Management?	**04**

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer.
Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In the aftermath of a natural disaster, which aspect of socio-economic rehabilitation is crucial for long-term resilience?
a) Short-term financial aid b) Infrastructure reconstruction
c) Community empowerment d) Technological advancements

2) Which phase of disaster management involves restoring the affected community to a stable and sustainable state.
a) Response b) Preparedness
c) Recovery d) Mitigation

3) How can microfinance initiatives contribute to livelihood restoration?
a) By creating dependency on external aid
b) By promoting unequal distribution of resources
c) By providing financial support for small businesses and entrepreneurs
d) By discouraging local entrepreneurship

4) How does Community-Based Disaster Management contribute to increasing community resilience?
a) By promoting dependency on external aid
b) By isolating the community from the disaster management process
c) By enhancing local capacity, knowledge, and self-reliance
d) By avoiding community input for quick decision-making

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a) To resist wind loads
b) To provide insulation
c) To enhance aesthetics
d) To resist lateral forces during earthquakes

7) How do the police contribute to disaster response efforts?
a) By promoting chaos and disorder
b) By enforcing law and order, ensuring public safety, and assisting in evacuations
c) By limiting collaboration with external agencies
d) By ignoring the needs of vulnerable populations

8) Disaster Management includes:
a) Mitigation b) Reconstruction
c) Rehabilitation d) All of the above

9) What is the primary goal of disaster mitigation?
a) Immediate response to disasters
b) Minimizing the impact of disasters and reducing the risk of future occurrences
c) Allocating resources for recovery efforts
d) Ignoring the need for preparedness

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a) To create financial burdens for individuals
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13) Fiscal discipline refers to:
a) Strict control over public spending
b) Generous spending on public projects
c) Reducing taxes without considering the budget
d) Unrestricted borrowing for development projects

14) What is the primary goal of socio-economic rehabilitation?
a) Preservation of cultural heritage
b) Restoration of physical health
c) Restoration of economic and social well-being
d) Implementation of new policies

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Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	Write the importance of Disaster mitigation.	**04**
	b)	Write Key elements of contingency plans for reconstructions.	**03**
	c)	Write short note on Calamity Relief Fund.	**03**
Q.3	**a)**	Give the classification of damage as per the Medvedev- Sponheuer- Kanik (MSK) Scale of 1964.	**05**
	b)	What are the objectives of damage assessment.	**04**
Q.4	**a)**	What do you mean by Physical Infrastructure? Explain development of Physical Infrastructure.	**05**
	b)	Write the roles of NGOs in rehabilitation.	**04**
Q.5	**a)**	Explain various Earthquake Resistant Construction Techniques.	**05**
	b)	Write note on Fiscal Discipline.	**04**

Section – II

Q.6	**a)**	Describe Agricultural Rehabilitation.	**04**
	b)	What is the importance of Livelihood Restoration in Recovery?	**03**
	c)	Write note on Individual Response in Disaster Management.	**03**
Q.7	**a)**	What are the key steps and considerations for monitoring rehabilitation work?	**05**
	b)	What are the roles of Information Dissemination?	**04**
Q.8	**a)**	What are Connection Between Recovery and Safe Development? Mention benefits of linking recovery with safe development.	**05**
	b)	What are the challenges in creating Long-term Jobs?	**04**
Q.9	**a)**	Write note on Food and Nutrition and response strategies for it after disaster.	**05**
	b)	What are the benefits of Community- Based Disaster Management?	**04**

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer.
Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) How does Community-Based Disaster Management contribute to increasing community resilience?
a) By promoting dependency on external aid
b) By isolating the community from the disaster management process
c) By enhancing local capacity, knowledge, and self-reliance
d) By avoiding community input for quick decision-making

2) What is a primary concern regarding drinking water during a disaster?
a) Over hydration b) Contamination
c) Lack of taste d) Excessive fluoride content

3) What is the purpose of a shear wall in earthquake-resistant house?
a) To resist wind loads
b) To provide insulation
c) To enhance aesthetics
d) To resist lateral forces during earthquakes

4) How do the police contribute to disaster response efforts?
a) By promoting chaos and disorder
b) By enforcing law and order, ensuring public safety, and assisting in evacuations
c) By limiting collaboration with external agencies
d) By ignoring the needs of vulnerable populations

5) Disaster Management includes:
a) Mitigation b) Reconstruction
c) Rehabilitation d) All of the above

6) What is the primary goal of disaster mitigation?
a) Immediate response to disasters
b) Minimizing the impact of disasters and reducing the risk of future occurrences
c) Allocating resources for recovery efforts
d) Ignoring the need for preparedness

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9) Which traditional construction material is known for its earthquake resistance?
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12) In the aftermath of a natural disaster, which aspect of socio-economic rehabilitation is crucial for long-term resilience?
a) Short-term financial aid b) Infrastructure reconstruction
c) Community empowerment d) Technological advancements

13) Which phase of disaster management involves restoring the affected community to a stable and sustainable state.
a) Response b) Preparedness
c) Recovery d) Mitigation

14) How can microfinance initiatives contribute to livelihood restoration?
a) By creating dependency on external aid
b) By promoting unequal distribution of resources
c) By providing financial support for small businesses and entrepreneurs
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Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	Write the importance of Disaster mitigation.	**04**
	b)	Write Key elements of contingency plans for reconstructions.	**03**
	c)	Write short note on Calamity Relief Fund.	**03**
Q.3	**a)**	Give the classification of damage as per the Medvedev- Sponheuer- Kanik (MSK) Scale of 1964.	**05**
	b)	What are the objectives of damage assessment.	**04**
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	b)	Write the roles of NGOs in rehabilitation.	**04**
Q.5	**a)**	Explain various Earthquake Resistant Construction Techniques.	**05**
	b)	Write note on Fiscal Discipline.	**04**

Section – II

Q.6	**a)**	Describe Agricultural Rehabilitation.	**04**
	b)	What is the importance of Livelihood Restoration in Recovery?	**03**
	c)	Write note on Individual Response in Disaster Management.	**03**
Q.7	**a)**	What are the key steps and considerations for monitoring rehabilitation work?	**05**
	b)	What are the roles of Information Dissemination?	**04**
Q.8	**a)**	What are Connection Between Recovery and Safe Development? Mention benefits of linking recovery with safe development.	**05**
	b)	What are the challenges in creating Long-term Jobs?	**04**
Q.9	**a)**	Write note on Food and Nutrition and response strategies for it after disaster.	**05**
	b)	What are the benefits of Community- Based Disaster Management?	**04**

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer.
Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Fiscal discipline refers to:
a) Strict control over public spending
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d) Unrestricted borrowing for development projects

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d) Implementation of new policies

3) In the aftermath of a natural disaster, which aspect of socio-economic rehabilitation is crucial for long-term resilience?
a) Short-term financial aid b) Infrastructure reconstruction
c) Community empowerment d) Technological advancements

4) Which phase of disaster management involves restoring the affected community to a stable and sustainable state.
a) Response b) Preparedness
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a) To create financial burdens for individuals
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d) To ignore the impact of disasters

14) Which traditional construction material is known for its earthquake resistance?
a) Bamboo b) Mud bricks
c) Timber d) Concrete

SLR-GF-498

Seat No.		Set	S

Fourth Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Recovery, Rehabilitation and Reconstruction (BTN01717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2	**a)**	Write the importance of Disaster mitigation.	**04**
	b)	Write Key elements of contingency plans for reconstructions.	**03**
	c)	Write short note on Calamity Relief Fund.	**03**
Q.3	**a)**	Give the classification of damage as per the Medvedev- Sponheuer- Kanik (MSK) Scale of 1964.	**05**
	b)	What are the objectives of damage assessment.	**04**
Q.4	**a)**	What do you mean by Physical Infrastructure? Explain development of Physical Infrastructure.	**05**
	b)	Write the roles of NGOs in rehabilitation.	**04**
Q.5	**a)**	Explain various Earthquake Resistant Construction Techniques.	**05**
	b)	Write note on Fiscal Discipline.	**04**

Section – II

Q.6	**a)**	Describe Agricultural Rehabilitation.	**04**
	b)	What is the importance of Livelihood Restoration in Recovery?	**03**
	c)	Write note on Individual Response in Disaster Management.	**03**
Q.7	**a)**	What are the key steps and considerations for monitoring rehabilitation work?	**05**
	b)	What are the roles of Information Dissemination?	**04**
Q.8	**a)**	What are Connection Between Recovery and Safe Development? Mention benefits of linking recovery with safe development.	**05**
	b)	What are the challenges in creating Long-term Jobs?	**04**
Q.9	**a)**	Write note on Food and Nutrition and response strategies for it after disaster.	**05**
	b)	What are the benefits of Community- Based Disaster Management?	**04**

SLR-GF-499

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ of the following are components of bridges.
a) Pier b) Abutment
c) Foundation d) All of these

2) Factors affecting Selection of Type of Bridge and Bridge Site _____.
a) The nature and bed conditions of river or stream
b) Hydraulic data collected at the site.
c) The climatic condition of the area.
d) All of these

3) Types of Bridge Bearings are _____.
a) Fixed Bearings b) Elastomeric Bearings
c) Pot Bearings d) All of these

4) Types of grades separated structures are _____.
a) Overpass b) Under pass
c) Flyover d) All of these

5) Types of Bridge foundations are _____.
a) Caisson Foundation b) Pile foundation
c) Pier Foundation d) All of these

6) Steps involved in the Construction of Diaphragm Walls are ____.
a) Excavation Preparation b) Slurry Trench
c) Concrete Pouring d) All of these

7) Pipe jacking involves moving _____ to the ground.
a) Box b) Pipe
c) both a and b d) All of these

8) Launching girders for bridges involves the following steps _____.
a) Planning and Design b) Fabrication
c) Transportation to the Site d) All of these

9) Offshore platforms are _____.
a) Structure built in the lake
b) Structure built on the sea
c) Structure built in the pond
d) All of these

10) Material handling is _____.
a) Process of change of material
b) Process of transporting, lifting, and placing various construction materials and equipment.
c) Process of finding Quality of Construction Material.
d) Process of finding Quantity of Construction Material

11) Erecting lightweight components on tall structures in bridges requires _____.
a) Engineering and Design
b) Assembly and Connection
c) Specialized Equipment
d) All of these

12) _____ of the following is not type of well foundations.
a) Box Caisson
b) Open Caisson
c) Ring Caisson
d) Pneumatic Caisson

13) Ground improvement techniques are _____.
a) Compaction
b) Grouting
c) Deep Soil Mixing
d) All of these

14) What is the basis for PERT analysis?
a) An optimistic time
b) A pessimistic period of time
c) The date that is most likely
d) All options mentioned above

Seat No.	

Set **P**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data wherever needed & mention it clearly.
3) Draw neat sketches wherever necessary.
4) Figures to the right indicates full marks.

Section – I

Q.2 Answer the following questions (Any Two) **14**
a) Explain Structural Requirements of Bridge.
b) Explain various basic elements of Bridge.
c) Explain in detail *'Box Jacking'*.

Q.3 Answer the following questions (Any Two) **14**
a) Explain in detail the process of 'Dewatering'.
b) Explain in detail process of launching of Girders for bridge.
c) Explain in detail, '*Strengthening of bridges*'.

Section – II

Q.4 Answer the following questions (Any Two) **14**
a) Explain the process of Embankment Construction in detail.
b) Explain in detail, '*Cofferdam'*.
c) Explain in detail, '*Cost control of equipment*'.

Q.5 Answer the following questions (Any Two) **14**
a) Explain the concept of Maintenance management in construction projects.
b) Differentiate between CPM and PERT Techniques.
c) The following table shows the list of activities and their durations. Calculate the project duration and critical path of the network.

Activity	Duration (Weeks)	Depends on
A	2	-
B	4	A
C	3	A
D	6	B, C
E	7	B
F	3	D, E

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Launching girders for bridges involves the following steps _____.
a) Planning and Design b) Fabrication
c) Transportation to the Site d) All of these

2) Offshore platforms are _____.
a) Structure built in the lake
b) Structure built on the sea
c) Structure built in the pond
d) All of these

3) Material handling is _____.
a) Process of change of material
b) Process of transporting, lifting, and placing various construction materials and equipment.
c) Process of finding Quality of Construction Material.
d) Process of finding Quantity of Construction Material

4) Erecting lightweight components on tall structures in bridges requires _____.
a) Engineering and Design b) Assembly and Connection
c) Specialized Equipment d) All of these

5) _____ of the following is not type of well foundations.
a) Box Caisson b) Open Caisson
c) Ring Caisson d) Pneumatic Caisson

6) Ground improvement techniques are _____.
a) Compaction b) Grouting
c) Deep Soil Mixing d) All of these

7) What is the basis for PERT analysis?
a) An optimistic time
b) A pessimistic period of time
c) The date that is most likely
d) All options mentioned above

8) _____ of the following are components of bridges.
a) Pier b) Abutment
c) Foundation d) All of these

9) Factors affecting Selection of Type of Bridge and Bridge Site _____.
a) The nature and bed conditions of river or stream
b) Hydraulic data collected at the site.
c) The climatic condition of the area.
d) All of these

10) Types of Bridge Bearings are _____.
a) Fixed Bearings b) Elastomeric Bearings
c) Pot Bearings d) All of these

11) Types of grades separated structures are _____.
a) Overpass b) Under pass
c) Flyover d) All of these

12) Types of Bridge foundations are _____.
a) Caisson Foundation b) Pile foundation
c) Pier Foundation d) All of these

13) Steps involved in the Construction of Diaphragm Walls are ____.
a) Excavation Preparation b) Slurry Trench
c) Concrete Pouring d) All of these

14) Pipe jacking involves moving _____ to the ground.
a) Box b) Pipe
c) both a and b d) All of these

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data wherever needed & mention it clearly.
3) Draw neat sketches wherever necessary.
4) Figures to the right indicates full marks.

Section – I

Q.2 Answer the following questions (Any Two) **14**
a) Explain Structural Requirements of Bridge.
b) Explain various basic elements of Bridge.
c) Explain in detail *'Box Jacking'*.

Q.3 Answer the following questions (Any Two) **14**
a) Explain in detail the process of 'Dewatering'.
b) Explain in detail process of launching of Girders for bridge.
c) Explain in detail, '*Strengthening of bridges*'.

Section – II

Q.4 Answer the following questions (Any Two) **14**
a) Explain the process of Embankment Construction in detail.
b) Explain in detail, '*Cofferdam'*.
c) Explain in detail, '*Cost control of equipment*'.

Q.5 Answer the following questions (Any Two) **14**
a) Explain the concept of Maintenance management in construction projects.
b) Differentiate between CPM and PERT Techniques.
c) The following table shows the list of activities and their durations. Calculate the project duration and critical path of the network.

Activity	Duration (Weeks)	Depends on
A	2	-
B	4	A
C	3	A
D	6	B, C
E	7	B
F	3	D, E

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Erecting lightweight components on tall structures in bridges requires _____.
a) Engineering and Design b) Assembly and Connection
c) Specialized Equipment d) All of these

2) _____ of the following is not type of well foundations.
a) Box Caisson b) Open Caisson
c) Ring Caisson d) Pneumatic Caisson

3) Ground improvement techniques are _____.
a) Compaction b) Grouting
c) Deep Soil Mixing d) All of these

4) What is the basis for PERT analysis?
a) An optimistic time
b) A pessimistic period of time
c) The date that is most likely
d) All options mentioned above

5) _____ of the following are components of bridges.
a) Pier b) Abutment
c) Foundation d) All of these

6) Factors affecting Selection of Type of Bridge and Bridge Site _____.
a) The nature and bed conditions of river or stream
b) Hydraulic data collected at the site.
c) The climatic condition of the area.
d) All of these

7) Types of Bridge Bearings are _____.
a) Fixed Bearings b) Elastomeric Bearings
c) Pot Bearings d) All of these

8) Types of grades separated structures are _____.
a) Overpass b) Under pass
c) Flyover d) All of these

9) Types of Bridge foundations are _____.
a) Caisson Foundation b) Pile foundation
c) Pier Foundation d) All of these

10) Steps involved in the Construction of Diaphragm Walls are ____.
a) Excavation Preparation b) Slurry Trench
c) Concrete Pouring d) All of these

11) Pipe jacking involves moving _____ to the ground.
a) Box b) Pipe
c) both a and b d) All of these

12) Launching girders for bridges involves the following steps _____.
a) Planning and Design b) Fabrication
c) Transportation to the Site d) All of these

13) Offshore platforms are _____.
a) Structure built in the lake
b) Structure built on the sea
c) Structure built in the pond
d) All of these

14) Material handling is _____.
a) Process of change of material
b) Process of transporting, lifting, and placing various construction materials and equipment.
c) Process of finding Quality of Construction Material.
d) Process of finding Quantity of Construction Material

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data wherever needed & mention it clearly.
3) Draw neat sketches wherever necessary.
4) Figures to the right indicates full marks.

Section – I

Q.2 Answer the following questions (Any Two) **14**
a) Explain Structural Requirements of Bridge.
b) Explain various basic elements of Bridge.
c) Explain in detail *'Box Jacking'*.

Q.3 Answer the following questions (Any Two) **14**
a) Explain in detail the process of 'Dewatering'.
b) Explain in detail process of launching of Girders for bridge.
c) Explain in detail, '*Strengthening of bridges*'.

Section – II

Q.4 Answer the following questions (Any Two) **14**
a) Explain the process of Embankment Construction in detail.
b) Explain in detail, '*Cofferdam'*.
c) Explain in detail, '*Cost control of equipment*'.

Q.5 Answer the following questions (Any Two) **14**
a) Explain the concept of Maintenance management in construction projects.
b) Differentiate between CPM and PERT Techniques.
c) The following table shows the list of activities and their durations. Calculate the project duration and critical path of the network.

Activity	Duration (Weeks)	Depends on
A	2	-
B	4	A
C	3	A
D	6	B, C
E	7	B
F	3	D, E

Seat No.	

Set | S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) Steps involved in the Construction of Diaphragm Walls are ____.
a) Excavation Preparation b) Slurry Trench
c) Concrete Pouring d) All of these

2) Pipe jacking involves moving _____ to the ground.
a) Box b) Pipe
c) both a and b d) All of these

3) Launching girders for bridges involves the following steps _____.
a) Planning and Design b) Fabrication
c) Transportation to the Site d) All of these

4) Offshore platforms are _____.
a) Structure built in the lake
b) Structure built on the sea
c) Structure built in the pond
d) All of these

5) Material handling is _____.
a) Process of change of material
b) Process of transporting, lifting, and placing various construction materials and equipment.
c) Process of finding Quality of Construction Material.
d) Process of finding Quantity of Construction Material

6) Erecting lightweight components on tall structures in bridges requires _____.
a) Engineering and Design b) Assembly and Connection
c) Specialized Equipment d) All of these

7) _____ of the following is not type of well foundations.
a) Box Caisson b) Open Caisson
c) Ring Caisson d) Pneumatic Caisson

8) Ground improvement techniques are _____.
a) Compaction b) Grouting
c) Deep Soil Mixing d) All of these

9) What is the basis for PERT analysis?
a) An optimistic time
b) A pessimistic period of time
c) The date that is most likely
d) All options mentioned above

10) _____ of the following are components of bridges.
a) Pier b) Abutment
c) Foundation d) All of these

11) Factors affecting Selection of Type of Bridge and Bridge Site _____.
a) The nature and bed conditions of river or stream
b) Hydraulic data collected at the site.
c) The climatic condition of the area.
d) All of these

12) Types of Bridge Bearings are _____.
a) Fixed Bearings b) Elastomeric Bearings
c) Pot Bearings d) All of these

13) Types of grades separated structures are _____.
a) Overpass b) Under pass
c) Flyover d) All of these

14) Types of Bridge foundations are _____.
a) Caisson Foundation b) Pile foundation
c) Pier Foundation d) All of these

SLR-GF-499

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Bridge and Grade Separated Structures (BTN01718)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data wherever needed & mention it clearly.
3) Draw neat sketches wherever necessary.
4) Figures to the right indicates full marks.

Section – I

Q.2 Answer the following questions (Any Two) **14**
a) Explain Structural Requirements of Bridge.
b) Explain various basic elements of Bridge.
c) Explain in detail *'Box Jacking'*.

Q.3 Answer the following questions (Any Two) **14**
a) Explain in detail the process of 'Dewatering'.
b) Explain in detail process of launching of Girders for bridge.
c) Explain in detail, '*Strengthening of bridges*'.

Section – II

Q.4 Answer the following questions (Any Two) **14**
a) Explain the process of Embankment Construction in detail.
b) Explain in detail, '*Cofferdam'*.
c) Explain in detail, '*Cost control of equipment*'.

Q.5 Answer the following questions (Any Two) **14**
a) Explain the concept of Maintenance management in construction projects.
b) Differentiate between CPM and PERT Techniques.
c) The following table shows the list of activities and their durations. Calculate the project duration and critical path of the network.

Activity	Duration (Weeks)	Depends on
A	2	-
B	4	A
C	3	A
D	6	B, C
E	7	B
F	3	D, E

SLR-GF-500

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions. **14**

1) How can sustainable engineering contribute to a circular economy?
a) By promoting linear production and consumption practices
b) By designing products for reuse, recycling and resource recovery
c) By disregarding environmental considerations in engineering decisions
d) By prioritizing short term economic gains

2) Which of the following is not considered in an LCA?
a) Energy consumption b) Water usage
c) Greenhouse gas emissions d) Aesthetics

3) From which perspective sustainable engineering designs are different from the conventional engineering designs?
a) Operational safety b) Environmental impact
c) Functionality d) Cost effectiveness

4) Which stage of the product life cycle is important for sustainable engineering?
a) Raw material extraction and processing
b) Manufacturing and production
c) End of life disposal
d) Product use and maintenance

5) Which of the following is a principle of sustainable engineering?
a) Long term thinking and planning
b) Short term decision making
c) Minimizing resource efficiency
d) All of the above

6) Which of the following falls under environmental impact categories in LCA?
a) Acid rain b) Eutrophication
c) Photochemical smog d) All of the above

7) Elementary flows involve the input and output relation between _____.
a) two-unit processes and represents the function of unit process
b) two system boundaries and represents connection among systems
c) system boundary and impact category and represents the potential of impact from the system boundary chosen
d) environment and unit process and represents the environmental intervention

8) Which statement dictates the relation between functional unit and reference flows?
a) Reference flows indicates the amounts of input necessary to fulfil the amount of function specified by the functional unit
b) Reference flow provides the basis for functional unit determination
c) Reference flow has no correlation with functional unit
d) Reference flow is the functional unit multiplied by impact factor

9) Electric vehicles (EVs) are not zero emission vehicles. Why?
a) Batteries needs to be recharged by electricity and electricity production has air emissions
b) Batteries emits radiation like nuclear wastes
c) EV has a non zero gasoline indicator installed in the car
d) Batteries contain heavy metals, production and disposal of these metals is associated with environmental emissions

10) Which of the following stage cannot be ignored for conducting a comparative life cycle assessment between two waste management technologies for the same product?
a) Manufacturing
b) Product Usage
c) End-of-life
d) Resource acquisition

11) The chemical industry is not a cause of:
a) Water pollution
b) Noise pollution
c) Air pollution
d) Nuclear pollution

12) Which instrument is used to measure the Beam radiations?
a) Pyrheliometer
b) Sunshine Recorder
c) Anemometer
d) All of the above

13) The maximum number of individuals that can be supported by a given environment is called _____.
a) Biotic potential
b) Carrying capacity
c) Environmental resistance
d) Population size

14) In which collector the solar radiation collection efficiency is maximum?
a) Flat Plate
b) Line Focussing
c) Evacuated Tube
d) Paraboloid Dish

SLR-GF-500

Seat No.	

Set P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 compulsory in section I, and solve any two questions from remaining.
2) Q. No. 6 is compulsory in section II, and solve any two questions from remaining.
3) Figures to right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programable calculator is allowed.

Section – I

Q.2	**a)**	Outline Sustainable Development Goals in detail.	**05**
	b)	Categorize 5R concepts in solid waste management of ideal town.	**05**
Q.3	**a)**	Intercept effects of greenhouse gases in Solapur city and Pune city.	**05**
	b)	Outline Millennium Development Goals for a developing country.	**04**
Q.4	**a)**	Categorize Air Pollution and its effects of a town contributing 60% air pollution due to transportation sector.	**05**
	b)	Intercept effects of water pollution in Solapur city and Pune city.	**04**
Q.5	**a)**	Outline advantages of carbon trading in developing countries.	**05**
	b)	Examine effects of ozone layer depletion on carbon footprints.	**04**

Section – II

Q.6	**a)**	Illustrate numerous advantages legal environmental laws in EIA.	**05**
	b)	Outline advantages of carbon credits in developing countries.	**05**
Q.7	**a)**	Examine effects of carbon trading on reducing the climate change in future.	**05**
	b)	Illustrate Scope and goal of Life Cycle Analysis (LCA) in detail.	**04**
Q.8	**a)**	Outline wind turbine operation and power versus wind speed characteristic in detail.	**05**
	b)	Intercept effects of sustainable transport to conventional transport with the help of practical example.	**04**
Q.9	**a)**	Illustrate sustainable urbanization using developing and developed country scenario.	**05**
	b)	Explain various green practices in construction and management sector.	**04**

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Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions. **14**

1) Which statement dictates the relation between functional unit and reference flows?
a) Reference flows indicates the amounts of input necessary to fulfil the amount of function specified by the functional unit
b) Reference flow provides the basis for functional unit determination
c) Reference flow has no correlation with functional unit
d) Reference flow is the functional unit multiplied by impact factor

2) Electric vehicles (EVs) are not zero emission vehicles. Why?
a) Batteries needs to be recharged by electricity and electricity production has air emissions
b) Batteries emits radiation like nuclear wastes
c) EV has a non zero gasoline indicator installed in the car
d) Batteries contain heavy metals, production and disposal of these metals is associated with environmental emissions

3) Which of the following stage cannot be ignored for conducting a comparative life cycle assessment between two waste management technologies for the same product?
a) Manufacturing b) Product Usage
c) End-of-life d) Resource acquisition

4) The chemical industry is not a cause of:
a) Water pollution b) Noise pollution
c) Air pollution d) Nuclear pollution

5) Which instrument is used to measure the Beam radiations?
a) Pyrheliometer b) Sunshine Recorder
c) Anemometer d) All of the above

6) The maximum number of individuals that can be supported by a given environment is called _____.
a) Biotic potential b) Carrying capacity
c) Environmental resistance d) Population size

7) In which collector the solar radiation collection efficiency is maximum?
a) Flat Plate b) Line Focussing
c) Evacuated Tube d) Paraboloid Dish

8) How can sustainable engineering contribute to a circular economy?
a) By promoting linear production and consumption practices
b) By designing products for reuse, recycling and resource recovery
c) By disregarding environmental considerations in engineering decisions
d) By prioritizing short term economic gains

9) Which of the following is not considered in an LCA?
a) Energy consumption b) Water usage
c) Greenhouse gas emissions d) Aesthetics

10) From which perspective sustainable engineering designs are different from the conventional engineering designs?
a) Operational safety b) Environmental impact
c) Functionality d) Cost effectiveness

11) Which stage of the product life cycle is important for sustainable engineering?
a) Raw material extraction and processing
b) Manufacturing and production
c) End of life disposal
d) Product use and maintenance

12) Which of the following is a principle of sustainable engineering?
a) Long term thinking and planning
b) Short term decision making
c) Minimizing resource efficiency
d) All of the above

13) Which of the following falls under environmental impact categories in LCA?
a) Acid rain b) Eutrophication
c) Photochemical smog d) All of the above

14) Elementary flows involve the input and output relation between _____.
a) two-unit processes and represents the function of unit process
b) two system boundaries and represents connection among systems
c) system boundary and impact category and represents the potential of impact from the system boundary chosen
d) environment and unit process and represents the environmental intervention

SLR-GF-500

Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 compulsory in section I, and solve any two questions from remaining.
2) Q. No. 6 is compulsory in section II, and solve any two questions from remaining.
3) Figures to right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programable calculator is allowed.

Section – I

Q.2	**a)**	Outline Sustainable Development Goals in detail.	**05**
	b)	Categorize 5R concepts in solid waste management of ideal town.	**05**
Q.3	**a)**	Intercept effects of greenhouse gases in Solapur city and Pune city.	**05**
	b)	Outline Millennium Development Goals for a developing country.	**04**
Q.4	**a)**	Categorize Air Pollution and its effects of a town contributing 60% air pollution due to transportation sector.	**05**
	b)	Intercept effects of water pollution in Solapur city and Pune city.	**04**
Q.5	**a)**	Outline advantages of carbon trading in developing countries.	**05**
	b)	Examine effects of ozone layer depletion on carbon footprints.	**04**

Section – II

Q.6	**a)**	Illustrate numerous advantages legal environmental laws in EIA.	**05**
	b)	Outline advantages of carbon credits in developing countries.	**05**
Q.7	**a)**	Examine effects of carbon trading on reducing the climate change in future.	**05**
	b)	Illustrate Scope and goal of Life Cycle Analysis (LCA) in detail.	**04**
Q.8	**a)**	Outline wind turbine operation and power versus wind speed characteristic in detail.	**05**
	b)	Intercept effects of sustainable transport to conventional transport with the help of practical example.	**04**
Q.9	**a)**	Illustrate sustainable urbanization using developing and developed country scenario.	**05**
	b)	Explain various green practices in construction and management sector.	**04**

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions. **14**

1) The chemical industry is not a cause of:
a) Water pollution b) Noise pollution
c) Air pollution d) Nuclear pollution

2) Which instrument is used to measure the Beam radiations?
a) Pyrheliometer b) Sunshine Recorder
c) Anemometer d) All of the above

3) The maximum number of individuals that can be supported by a given environment is called _____.
a) Biotic potential b) Carrying capacity
c) Environmental resistance d) Population size

4) In which collector the solar radiation collection efficiency is maximum?
a) Flat Plate b) Line Focussing
c) Evacuated Tube d) Paraboloid Dish

5) How can sustainable engineering contribute to a circular economy?
a) By promoting linear production and consumption practices
b) By designing products for reuse, recycling and resource recovery
c) By disregarding environmental considerations in engineering decisions
d) By prioritizing short term economic gains

6) Which of the following is not considered in an LCA?
a) Energy consumption b) Water usage
c) Greenhouse gas emissions d) Aesthetics

7) From which perspective sustainable engineering designs are different from the conventional engineering designs?
a) Operational safety b) Environmental impact
c) Functionality d) Cost effectiveness

8) Which stage of the product life cycle is important for sustainable engineering?
a) Raw material extraction and processing
b) Manufacturing and production
c) End of life disposal
d) Product use and maintenance

9) Which of the following is a principle of sustainable engineering?
a) Long term thinking and planning
b) Short term decision making
c) Minimizing resource efficiency
d) All of the above

10) Which of the following falls under environmental impact categories in LCA?
a) Acid rain
b) Eutrophication
c) Photochemical smog
d) All of the above

11) Elementary flows involve the input and output relation between _____.
a) two-unit processes and represents the function of unit process
b) two system boundaries and represents connection among systems
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12) Which statement dictates the relation between functional unit and reference flows?
a) Reference flows indicates the amounts of input necessary to fulfil the amount of function specified by the functional unit
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c) Reference flow has no correlation with functional unit
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13) Electric vehicles (EVs) are not zero emission vehicles. Why?
a) Batteries needs to be recharged by electricity and electricity production has air emissions
b) Batteries emits radiation like nuclear wastes
c) EV has a non zero gasoline indicator installed in the car
d) Batteries contain heavy metals, production and disposal of these metals is associated with environmental emissions

14) Which of the following stage cannot be ignored for conducting a comparative life cycle assessment between two waste management technologies for the same product?
a) Manufacturing
b) Product Usage
c) End-of-life
d) Resource acquisition

SLR-GF-500

Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 compulsory in section I, and solve any two questions from remaining.
2) Q. No. 6 is compulsory in section II, and solve any two questions from remaining.
3) Figures to right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programable calculator is allowed.

Section – I

Q.2	**a)**	Outline Sustainable Development Goals in detail.	**05**
	b)	Categorize 5R concepts in solid waste management of ideal town.	**05**
Q.3	**a)**	Intercept effects of greenhouse gases in Solapur city and Pune city.	**05**
	b)	Outline Millennium Development Goals for a developing country.	**04**
Q.4	**a)**	Categorize Air Pollution and its effects of a town contributing 60% air pollution due to transportation sector.	**05**
	b)	Intercept effects of water pollution in Solapur city and Pune city.	**04**
Q.5	**a)**	Outline advantages of carbon trading in developing countries.	**05**
	b)	Examine effects of ozone layer depletion on carbon footprints.	**04**

Section – II

Q.6	**a)**	Illustrate numerous advantages legal environmental laws in EIA.	**05**
	b)	Outline advantages of carbon credits in developing countries.	**05**
Q.7	**a)**	Examine effects of carbon trading on reducing the climate change in future.	**05**
	b)	Illustrate Scope and goal of Life Cycle Analysis (LCA) in detail.	**04**
Q.8	**a)**	Outline wind turbine operation and power versus wind speed characteristic in detail.	**05**
	b)	Intercept effects of sustainable transport to conventional transport with the help of practical example.	**04**
Q.9	**a)**	Illustrate sustainable urbanization using developing and developed country scenario.	**05**
	b)	Explain various green practices in construction and management sector.	**04**

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions. **14**

1) Which of the following falls under environmental impact categories in LCA?
a) Acid rain b) Eutrophication
c) Photochemical smog d) All of the above

2) Elementary flows involve the input and output relation between _____.
a) two-unit processes and represents the function of unit process
b) two system boundaries and represents connection among systems
c) system boundary and impact category and represents the potential of impact from the system boundary chosen
d) environment and unit process and represents the environmental intervention

3) Which statement dictates the relation between functional unit and reference flows?
a) Reference flows indicates the amounts of input necessary to fulfil the amount of function specified by the functional unit
b) Reference flow provides the basis for functional unit determination
c) Reference flow has no correlation with functional unit
d) Reference flow is the functional unit multiplied by impact factor

4) Electric vehicles (EVs) are not zero emission vehicles. Why?
a) Batteries needs to be recharged by electricity and electricity production has air emissions
b) Batteries emits radiation like nuclear wastes
c) EV has a non zero gasoline indicator installed in the car
d) Batteries contain heavy metals, production and disposal of these metals is associated with environmental emissions

5) Which of the following stage cannot be ignored for conducting a comparative life cycle assessment between two waste management technologies for the same product?
a) Manufacturing b) Product Usage
c) End-of-life d) Resource acquisition

6) The chemical industry is not a cause of:
a) Water pollution b) Noise pollution
c) Air pollution d) Nuclear pollution

7) Which instrument is used to measure the Beam radiations?
a) Pyrheliometer b) Sunshine Recorder
c) Anemometer d) All of the above

8) The maximum number of individuals that can be supported by a given environment is called _____.
a) Biotic potential b) Carrying capacity
c) Environmental resistance d) Population size

9) In which collector the solar radiation collection efficiency is maximum?
a) Flat Plate b) Line Focussing
c) Evacuated Tube d) Paraboloid Dish

10) How can sustainable engineering contribute to a circular economy?
a) By promoting linear production and consumption practices
b) By designing products for reuse, recycling and resource recovery
c) By disregarding environmental considerations in engineering decisions
d) By prioritizing short term economic gains

11) Which of the following is not considered in an LCA?
a) Energy consumption b) Water usage
c) Greenhouse gas emissions d) Aesthetics

12) From which perspective sustainable engineering designs are different from the conventional engineering designs?
a) Operational safety b) Environmental impact
c) Functionality d) Cost effectiveness

13) Which stage of the product life cycle is important for sustainable engineering?
a) Raw material extraction and processing
b) Manufacturing and production
c) End of life disposal
d) Product use and maintenance

14) Which of the following is a principle of sustainable engineering?
a) Long term thinking and planning
b) Short term decision making
c) Minimizing resource efficiency
d) All of the above

SLR-GF-500

Seat No.	

Set S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Sustainable Engineering & Technology (BTN01719)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 2 compulsory in section I, and solve any two questions from remaining.
2) Q. No. 6 is compulsory in section II, and solve any two questions from remaining.
3) Figures to right indicate full marks.
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5) Use of non-programable calculator is allowed.

Section – I

Q.2	**a)**	Outline Sustainable Development Goals in detail.	**05**
	b)	Categorize 5R concepts in solid waste management of ideal town.	**05**
Q.3	**a)**	Intercept effects of greenhouse gases in Solapur city and Pune city.	**05**
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	b)	Intercept effects of water pollution in Solapur city and Pune city.	**04**
Q.5	**a)**	Outline advantages of carbon trading in developing countries.	**05**
	b)	Examine effects of ozone layer depletion on carbon footprints.	**04**

Section – II

Q.6	**a)**	Illustrate numerous advantages legal environmental laws in EIA.	**05**
	b)	Outline advantages of carbon credits in developing countries.	**05**
Q.7	**a)**	Examine effects of carbon trading on reducing the climate change in future.	**05**
	b)	Illustrate Scope and goal of Life Cycle Analysis (LCA) in detail.	**04**
Q.8	**a)**	Outline wind turbine operation and power versus wind speed characteristic in detail.	**05**
	b)	Intercept effects of sustainable transport to conventional transport with the help of practical example.	**04**
Q.9	**a)**	Illustrate sustainable urbanization using developing and developed country scenario.	**05**
	b)	Explain various green practices in construction and management sector.	**04**

Seat No.	

Set **P**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) Which type of quantization is most preferable for audio signals for a human ear?
a) Uniform quantization
b) Non uniform quantization
c) Uniform & Non uniform quantization
d) None of the mentioned

2) In India, which monochrome TV system is used _____.
a) 525 line system b) 625 line system
c) 819 line system d) None of these

3) TV broadcasting system in India is as per CCIR _____.
a) system B b) system I
c) system M d) system X

4) Moving Picture Experts Group (MPEG) is used to compress _____.
a) Frames b) Images
c) Audio d) Video

5) The outdoor unit is connected to indoor DTH received by _____.
a) Wave Guide b) Coaxial cable
c) Twin flat feeder d) Optical fiber

6) Compact disc surface doesn't wear out because the sensor is _____.
a) Electric b) Magnetic
c) Mechanical d) Optical

7) I signal in NTSC colour TV system is located at 57° with respect to _____.
a) Colour burst b) R – Y
c) B – Y d) G – Y

8) In Audio and Video Compression, voice is sampled at 8000 samples per second with _____.
a) 5 bits per sample b) 6 bits per sample
c) 7 bits per sample d) 8 bits per sample

9) In PAL system, phase of R-Y signal is changed every alternate line by _____.
a) 90° b) 180°
c) 270° d) 360°

10) In Audio and Video compression, each frame is divided into small grids called picture element or _____.
a) Frame b) Packet
c) Pixel d) Mega pixel

11) Encoding of colour and modulation of audio carrier use the following modulation techniques in SECAM system of France _____.
a) A.M. for both
b) F.M. for both
c) F.M. for colour and A.M. for audio
d) A.M. for colour and F.M. for audio

12) The outdoor unit is connected to indoor DTH received by _____.
a) Wave Guide b) Coaxial cable
c) Twin flat feeder d) Optical fiber

13) I signal in NTSC colour TV system is located at 57° with respect to _____.
a) Colour burst b) R – Y
c) B – Y d) G – Y

14) Which of the following TV uses CCFL as back lighting?
a) LCD b) LED
c) OLED d) CRT

SLR-GF-501

Seat No.	

Set P

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any four. **16**

a) Draw and explain the color composite video signal.
b) What is the difference between PAL NTSC.
c) Explain MPEG 4 in detail.
d) Explain the term kell factor and aspect ratio.
e) What is interlaced scanning? What are its advantages?

Q.3 Attempt any two. **12**

a) Why is compression essential in multimedia applications? Explain MPEG in detail.
b) What is DTH (Direct to Home) & what are the specifications of DTH trainer.
c) Explain Video IF amplifier and video detector of color TV system

Section – II

Q.4 Attempt any four. **16**

a) Signal to Quantization noise ratio.
b) What is the difference in Linear Quantization and Non-linear Quantization?
c) Compare between DVD and CD.
d) What is DVD? State its advantages and types.
e) What is Nyquist Theorem?

Q.5 Attempt any two. **12**

a) What do you mean by lossy and lossless compression?
b) What is Blue Ray Disc? Give its specifications.
c) Explain in detail about the digitization principles.

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Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) In Audio and Video Compression, voice is sampled at 8000 samples per second with _____.
a) 5 bits per sample b) 6 bits per sample
c) 7 bits per sample d) 8 bits per sample

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a) 90° b) 180°
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a) A.M. for both
b) F.M. for both
c) F.M. for colour and A.M. for audio
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7) Which of the following TV uses CCFL as back lighting?
a) LCD b) LED
c) OLED d) CRT

8) Which type of quantization is most preferable for audio signals for a human ear?
a) Uniform quantization
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9) In India, which monochrome TV system is used _____.
a) 525 line system b) 625 line system
c) 819 line system d) None of these

10) TV broadcasting system in India is as per CCIR _____.
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SLR-GF-501

Seat No.	

Set Q

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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Section – II

Q.4 Attempt any four. **16**

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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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Seat No.	

Set **R**

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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Section – I

Q.2 Attempt any four. **16**

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a) What do you mean by lossy and lossless compression?
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SLR-GF-501

Seat No.	

Set S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Thursday, 21-12-2023 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

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SLR-GF-501

Seat No.		Set	S

T.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Multimedia Communication Technology (BTN06611)

Day & Date: Thursday, 21-12-2023 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any four. **16**

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b) What is the difference between PAL NTSC.
c) Explain MPEG 4 in detail.
d) Explain the term kell factor and aspect ratio.
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b) What is DTH (Direct to Home) & what are the specifications of DTH trainer.
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Section – II

Q.4 Attempt any four. **16**

a) Signal to Quantization noise ratio.
b) What is the difference in Linear Quantization and Non-linear Quantization?
c) Compare between DVD and CD.
d) What is DVD? State its advantages and types.
e) What is Nyquist Theorem?

Q.5 Attempt any two. **12**

a) What do you mean by lossy and lossless compression?
b) What is Blue Ray Disc? Give its specifications.
c) Explain in detail about the digitization principles.

SLR-GF-502

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) _____ is set of components that work together for overall objectives.
a) System b) Goals
c) Objective d) None of these

2) _____ is termed as performance measure, simply an objective that stated in measurable terms.
a) Measure of Effectiveness b) Dimension
c) Planning d) None

3) Which of the following is not property of desired MOE?
a) Appropriateness b) Measurability
c) Realistic d) Cost Saving

4) The super systems are _____.
a) Higher level systems b) Lower level systems
c) Both d) None of these

5) _____ models describe the amount of money needed to undertake specific action.
a) Demand b) Cost
c) Real d) Supply

6) Which of the following is tool for task of description.
a) Probability b) Statistics
c) Economics d) All of the above

7) _____ models are that use the mathematics of decision making to choose a course of action, design or policy.
a) Prescriptive b) Descriptive
c) Analog d) Real

8) _____ Provides basis for predicting the need for proposed civil system.
a) Planning b) Need Assessment
c) Controlling d) None

9) A _____ may be defined as deficiency, an unfulfilled requirement, lack of product that is necessary.

a) Supply b) Need
c) None d) All of these

10) Which of the following is the stakeholder of system?

a) Users b) Community
c) System Owner d) All

11) From _____ perspective, the system inputs considered in system planning could have short term, moderate term & long term effects.

a) Temporal b) Operational
c) Phase d) None

12) Which of the following is classification of design?

a) Selection Design b) Configuration Design
c) Both of the above d) None of the above

13) In Preliminary Design, analysis & evaluation of design is done on _____stage.

a) Detailed b) Conceptual
c) Multiple d) Preliminary

14) In ____ design, analysis & evaluation of alternative designs is done in details.

a) Conceptual b) Preliminary
c) Detailed d) None

SLR-GF-502

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed

Section – I

Q.2 Solve any four of following. **20**

a) Explain concept of system development with example.
b) Explain monetary & non-monetary outcomes in civil systems.
c) Explain role of operations research & decision making in civil systems development.
d) Explain Traditional tasks of analyzing systems in civil engineering.
e) Explain examples of tasks at each phase of civil system development.
f) Explain development of civil engineering system.

Q.3 Solve any two of following. **08**

a) Explain various classifications of system.
b) Classify different models with examples.
c) Explain hierarchy of desired outcomes: Values, Goals, Objectives.

Section – II

Q.4 Solve any four of following. **20**

a) Explain engineering design process in detail with sketch.
b) Explain process for system planning.
c) Explain classification of engineering design with examples.
d) Explain various principles of planning in detail.
e) Explain various of mechanisms for need assessment of system

Q.5 Solve any two of following. **08**

a) Explain applications of engineering design.
b) Explain.
i) Initial vs Recurring needs.
ii) Growing vs Sudden needs.
c) Explain dimensions of system planning.

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Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) _____ Provides basis for predicting the need for proposed civil system.
a) Planning b) Need Assessment
c) Controlling d) None

2) A _____ may be defined as deficiency, an unfulfilled requirement, lack of product that is necessary.
a) Supply b) Need
c) None d) All of these

3) Which of the following is the stakeholder of system?
a) Users b) Community
c) System Owner d) All

4) From _____ perspective, the system inputs considered in system planning could have short term, moderate term & long term effects.
a) Temporal b) Operational
c) Phase d) None

5) Which of the following is classification of design?
a) Selection Design b) Configuration Design
c) Both of the above d) None of the above

6) In Preliminary Design, analysis & evaluation of design is done on _____stage.
a) Detailed b) Conceptual
c) Multiple d) Preliminary

7) In ____ design, analysis & evaluation of alternative designs is done in details.
a) Conceptual b) Preliminary
c) Detailed d) None

8) _____ is set of components that work together for overall objectives.
a) System b) Goals
c) Objective d) None of these

9) _____ is termed as performance measure, simply an objective that stated in measurable terms.

a) Measure of Effectiveness b) Dimension
c) Planning d) None

10) Which of the following is not property of desired MOE?

a) Appropriateness b) Measurability
c) Realistic d) Cost Saving

11) The super systems are _____.

a) Higher level systems b) Lower level systems
c) Both d) None of these

12) _____ models describe the amount of money needed to undertake specific action.

a) Demand b) Cost
c) Real d) Supply

13) Which of the following is tool for task of description.

a) Probability b) Statistics
c) Economics d) All of the above

14) _____ models are that use the mathematics of decision making to choose a course of action, design or policy.

a) Prescriptive b) Descriptive
c) Analog d) Real

SLR-GF-502

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed

Section – I

Q.2 Solve any four of following. **20**

a) Explain concept of system development with example.
b) Explain monetary & non-monetary outcomes in civil systems.
c) Explain role of operations research & decision making in civil systems development.
d) Explain Traditional tasks of analyzing systems in civil engineering.
e) Explain examples of tasks at each phase of civil system development.
f) Explain development of civil engineering system.

Q.3 Solve any two of following. **08**

a) Explain various classifications of system.
b) Classify different models with examples.
c) Explain hierarchy of desired outcomes: Values, Goals, Objectives.

Section – II

Q.4 Solve any four of following. **20**

a) Explain engineering design process in detail with sketch.
b) Explain process for system planning.
c) Explain classification of engineering design with examples.
d) Explain various principles of planning in detail.
e) Explain various of mechanisms for need assessment of system

Q.5 Solve any two of following. **08**

a) Explain applications of engineering design.
b) Explain.
i) Initial vs Recurring needs.
ii) Growing vs Sudden needs.
c) Explain dimensions of system planning.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) From _____ perspective, the system inputs considered in system planning could have short term, moderate term & long term effects.
a) Temporal b) Operational
c) Phase d) None

2) Which of the following is classification of design?
a) Selection Design b) Configuration Design
c) Both of the above d) None of the above

3) In Preliminary Design, analysis & evaluation of design is done on _____stage.
a) Detailed b) Conceptual
c) Multiple d) Preliminary

4) In ____ design, analysis & evaluation of alternative designs is done in details.
a) Conceptual b) Preliminary
c) Detailed d) None

5) _____ is set of components that work together for overall objectives.
a) System b) Goals
c) Objective d) None of these

6) _____ is termed as performance measure, simply an objective that stated in measurable terms.
a) Measure of Effectiveness b) Dimension
c) Planning d) None

7) Which of the following is not property of desired MOE?
a) Appropriateness b) Measurability
c) Realistic d) Cost Saving

8) The super systems are _____.
a) Higher level systems b) Lower level systems
c) Both d) None of these

9) _____ models describe the amount of money needed to undertake specific action.

a) Demand b) Cost
c) Real d) Supply

10) Which of the following is tool for task of description.

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11) _____ models are that use the mathematics of decision making to choose a course of action, design or policy.

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c) Analog d) Real

12) _____ Provides basis for predicting the need for proposed civil system.

a) Planning b) Need Assessment
c) Controlling d) None

13) A _____ may be defined as deficiency, an unfulfilled requirement, lack of product that is necessary.

a) Supply b) Need
c) None d) All of these

14) Which of the following is the stakeholder of system?

a) Users b) Community
c) System Owner d) All

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Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed

Section – I

Q.2 Solve any four of following. **20**

a) Explain concept of system development with example.
b) Explain monetary & non-monetary outcomes in civil systems.
c) Explain role of operations research & decision making in civil systems development.
d) Explain Traditional tasks of analyzing systems in civil engineering.
e) Explain examples of tasks at each phase of civil system development.
f) Explain development of civil engineering system.

Q.3 Solve any two of following. **08**

a) Explain various classifications of system.
b) Classify different models with examples.
c) Explain hierarchy of desired outcomes: Values, Goals, Objectives.

Section – II

Q.4 Solve any four of following. **20**

a) Explain engineering design process in detail with sketch.
b) Explain process for system planning.
c) Explain classification of engineering design with examples.
d) Explain various principles of planning in detail.
e) Explain various of mechanisms for need assessment of system

Q.5 Solve any two of following. **08**

a) Explain applications of engineering design.
b) Explain.
i) Initial vs Recurring needs.
ii) Growing vs Sudden needs.
c) Explain dimensions of system planning.

Seat No.	

Set | S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of the following is tool for task of description.
a) Probability b) Statistics
c) Economics d) All of the above

2) _____ models are that use the mathematics of decision making to choose a course of action, design or policy.
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c) Analog d) Real

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a) Planning b) Need Assessment
c) Controlling d) None

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c) Multiple d) Preliminary

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c) Detailed d) None

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c) Objective d) None of these

11) _____ is termed as performance measure, simply an objective that stated in measurable terms.
a) Measure of Effectiveness b) Dimension
c) Planning d) None

12) Which of the following is not property of desired MOE?
a) Appropriateness b) Measurability
c) Realistic d) Cost Saving

13) The super systems are _____.
a) Higher level systems b) Lower level systems
c) Both d) None of these

14) _____ models describe the amount of money needed to undertake specific action.
a) Demand b) Cost
c) Real d) Supply

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Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Civil Engineering System Analysis and Design (BTN01720)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed

Section – I

Q.2 Solve any four of following. **20**

a) Explain concept of system development with example.
b) Explain monetary & non-monetary outcomes in civil systems.
c) Explain role of operations research & decision making in civil systems development.
d) Explain Traditional tasks of analyzing systems in civil engineering.
e) Explain examples of tasks at each phase of civil system development.
f) Explain development of civil engineering system.

Q.3 Solve any two of following. **08**

a) Explain various classifications of system.
b) Classify different models with examples.
c) Explain hierarchy of desired outcomes: Values, Goals, Objectives.

Section – II

Q.4 Solve any four of following. **20**

a) Explain engineering design process in detail with sketch.
b) Explain process for system planning.
c) Explain classification of engineering design with examples.
d) Explain various principles of planning in detail.
e) Explain various of mechanisms for need assessment of system

Q.5 Solve any two of following. **08**

a) Explain applications of engineering design.
b) Explain.
i) Initial vs Recurring needs.
ii) Growing vs Sudden needs.
c) Explain dimensions of system planning.

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Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IOT- Architecting IOT Solutions (BTN06715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What does AWS stand for?
a) Advanced Web Services b) Amazon Web Services
c) All Web Solutions d) Agile Web Systems

2) In the context of AWS architecture, what is an Availability Zone (AZ)?
a) A physical data center b) A virtual private network
c) A database instance d) An application server

3) Which of the following design principles is associated with ensuring that resources can automatically respond to changes in demand?
a) Elasticity b) Cost Optimization
c) Scalability d) Reliability

4) What are the primary design principles in the AWS Well-Architected Framework's Operational Excellence pillar?
a) Scalability and cost optimization
b) Automation and performance efficiency
c) Security and reliability
d) Documentation and efficiency

5) In the context of the Security pillar of the AWS Well-Architected Framework, what is the principle of defense in depth?
a) Relying on a single layer of security
b) Implementing multiple security layers to protect assets
c) Ignoring security concerns for cost savings
d) Focusing on a single security protocol

6) Which AWS Well-Architected Framework pillar emphasizes the importance of efficiently using resources to reduce costs without sacrificing performance?
a) Cost Optimization b) Operational Excellence
c) Reliability d) Performance Efficiency

7) What is the first step in the AWS Well-Architected Framework's Five Pillars for designing a well-architected system?
a) Operational Excellence b) Organization
c) Prepare d) Operate

8) In the context of the AWS Well-Architected Framework, which pillar focuses on optimizing and managing ongoing workloads to deliver business value?
a) Operational Excellence b) Organization
c) Prepare d) Operate

9) What is the main focus of the Operational Excellence pillar in the AWS Well-Architected Framework?
a) Ensuring high availability of resources
b) Optimizing and automating processes
c) Security and compliance
d) Cost optimization

10) Which pillar of cloud security primarily deals with controlling who has access to your cloud resources and what actions they can perform?
a) Detection
b) Data Protection
c) Identity and Access Management
d) Infrastructure Protection

11) In the context of cloud security, what is the main goal of Data Protection?
a) Monitoring and alerting
b) Securing the physical infrastructure
c) Protecting sensitive data from unauthorized access and disclosure
d) Responding to security incidents

12) Which aspect of cloud security focuses on the ability to identify, respond to, and recover from security incidents?
a) Identity and Access Management
b) Detection
c) Infrastructure Protection
d) Data Protection

13) Which part of the AWS Well-Architected Framework for Failure Management focuses on designing systems to recover from failures automatically?
a) Foundations b) Workload Architecture
c) Change Management d) Resiliency

14) What is the main goal of Change Management within the Reliability pillar of the AWS Well-Architected Framework?
a) Promoting frequent and uncontrolled changes
b) Reducing the overall cost of change
c) Maintaining system stability while making changes
d) Avoiding any changes to the system

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Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IOT- Architecting IOT Solutions (BTN06715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any THREE. **12**

a) Describe the general architecture of AWS.
b) Explain the significance of defining the scope of an AWS project.
c) Explain the key design principles associated with Operational Excellence in the AWS Well-Architected Framework.
d) What are some key design principles that AWS follows in its framework?

Q.3 Attempt any TWO. **16**

a) Provide an in-depth introduction to Amazon Web Services (AWS) and its evolution in the cloud computing industry. Include some key milestones in AWS's history.
b) Explain the significance of resources in the context of the AWS Well-Architected Framework. How can resources be effectively managed and optimized?
c) Provide examples of tools and technologies that can assist organizations in managing and optimizing their cloud operations efficiently.

Section – II

Q.4 Attempt any THREE. **12**

a) Explain the principles and best practices associated with IAM within the context of cloud security.
b) What are the foundational principles of reliability in cloud computing, and why is reliability critical for organizations?
c) What is the significance of Identity and Access Management (IAM) in cloud security, and how does it contribute to a secure cloud environment?
d) What is the significance of Performance Efficiency in cloud computing, and how does it impact the overall user experience and cost management?

Q.5 Attempt any TWO. **16**

a) Share best practices for practicing cloud financial management and maintaining a culture of expenditure and usage awareness within an organization’s cloud operations.
b) How can organizations effectively monitor the reliability of their cloud-based workloads and detect potential issues or failures proactively?
c) Provide examples of security incidents that organizations might face in a cloud environment and explain how the principles and strategies outlined in the syllabus can help mitigate these incidents.

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Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IOT- Architecting IOT Solutions (BTN06715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) In the context of the AWS Well-Architected Framework, which pillar focuses on optimizing and managing ongoing workloads to deliver business value?
a) Operational Excellence b) Organization
c) Prepare d) Operate

2) What is the main focus of the Operational Excellence pillar in the AWS Well-Architected Framework?
a) Ensuring high availability of resources
b) Optimizing and automating processes
c) Security and compliance
d) Cost optimization

3) Which pillar of cloud security primarily deals with controlling who has access to your cloud resources and what actions they can perform?
a) Detection
b) Data Protection
c) Identity and Access Management
d) Infrastructure Protection

4) In the context of cloud security, what is the main goal of Data Protection?
a) Monitoring and alerting
b) Securing the physical infrastructure
c) Protecting sensitive data from unauthorized access and disclosure
d) Responding to security incidents

5) Which aspect of cloud security focuses on the ability to identify, respond to, and recover from security incidents?
a) Identity and Access Management
b) Detection
c) Infrastructure Protection
d) Data Protection

6) Which part of the AWS Well-Architected Framework for Failure Management focuses on designing systems to recover from failures automatically?

a) Foundations
b) Workload Architecture
c) Change Management
d) Resiliency

7) What is the main goal of Change Management within the Reliability pillar of the AWS Well-Architected Framework?

a) Promoting frequent and uncontrolled changes
b) Reducing the overall cost of change
c) Maintaining system stability while making changes
d) Avoiding any changes to the system

8) What does AWS stand for?

a) Advanced Web Services
b) Amazon Web Services
c) All Web Solutions
d) Agile Web Systems

9) In the context of AWS architecture, what is an Availability Zone (AZ)?

a) A physical data center
b) A virtual private network
c) A database instance
d) An application server

10) Which of the following design principles is associated with ensuring that resources can automatically respond to changes in demand?

a) Elasticity
b) Cost Optimization
c) Scalability
d) Reliability

11) What are the primary design principles in the AWS Well-Architected Framework's Operational Excellence pillar?

a) Scalability and cost optimization
b) Automation and performance efficiency
c) Security and reliability
d) Documentation and efficiency

12) In the context of the Security pillar of the AWS Well-Architected Framework, what is the principle of defense in depth?

a) Relying on a single layer of security
b) Implementing multiple security layers to protect assets
c) Ignoring security concerns for cost savings
d) Focusing on a single security protocol

13) Which AWS Well-Architected Framework pillar emphasizes the importance of efficiently using resources to reduce costs without sacrificing performance?

a) Cost Optimization
b) Operational Excellence
c) Reliability
d) Performance Efficiency

14) What is the first step in the AWS Well-Architected Framework's Five Pillars for designing a well-architected system?

a) Operational Excellence
b) Organization
c) Prepare
d) Operate

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Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IOT- Architecting IOT Solutions (BTN06715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any THREE. **12**

a) Describe the general architecture of AWS.
b) Explain the significance of defining the scope of an AWS project.
c) Explain the key design principles associated with Operational Excellence in the AWS Well-Architected Framework.
d) What are some key design principles that AWS follows in its framework?

Q.3 Attempt any TWO. **16**

a) Provide an in-depth introduction to Amazon Web Services (AWS) and its evolution in the cloud computing industry. Include some key milestones in AWS's history.
b) Explain the significance of resources in the context of the AWS Well-Architected Framework. How can resources be effectively managed and optimized?
c) Provide examples of tools and technologies that can assist organizations in managing and optimizing their cloud operations efficiently.

Section – II

Q.4 Attempt any THREE. **12**

a) Explain the principles and best practices associated with IAM within the context of cloud security.
b) What are the foundational principles of reliability in cloud computing, and why is reliability critical for organizations?
c) What is the significance of Identity and Access Management (IAM) in cloud security, and how does it contribute to a secure cloud environment?
d) What is the significance of Performance Efficiency in cloud computing, and how does it impact the overall user experience and cost management?

Q.5 Attempt any TWO. **16**

a) Share best practices for practicing cloud financial management and maintaining a culture of expenditure and usage awareness within an organization’s cloud operations.
b) How can organizations effectively monitor the reliability of their cloud-based workloads and detect potential issues or failures proactively?
c) Provide examples of security incidents that organizations might face in a cloud environment and explain how the principles and strategies outlined in the syllabus can help mitigate these incidents.

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IOT- Architecting IOT Solutions (BTN06715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) In the context of cloud security, what is the main goal of Data Protection?
a) Monitoring and alerting
b) Securing the physical infrastructure
c) Protecting sensitive data from unauthorized access and disclosure
d) Responding to security incidents

2) Which aspect of cloud security focuses on the ability to identify, respond to, and recover from security incidents?
a) Identity and Access Management
b) Detection
c) Infrastructure Protection
d) Data Protection

3) Which part of the AWS Well-Architected Framework for Failure Management focuses on designing systems to recover from failures automatically?
a) Foundations b) Workload Architecture
c) Change Management d) Resiliency

4) What is the main goal of Change Management within the Reliability pillar of the AWS Well-Architected Framework?
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8) What are the primary design principles in the AWS Well-Architected Framework's Operational Excellence pillar?
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c) Security and reliability
d) Documentation and efficiency

9) In the context of the Security pillar of the AWS Well-Architected Framework, what is the principle of defense in depth?
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c) Reliability d) Performance Efficiency

11) What is the first step in the AWS Well-Architected Framework's Five Pillars for designing a well-architected system?
a) Operational Excellence b) Organization
c) Prepare d) Operate

12) In the context of the AWS Well-Architected Framework, which pillar focuses on optimizing and managing ongoing workloads to deliver business value?
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c) Prepare d) Operate

13) What is the main focus of the Operational Excellence pillar in the AWS Well-Architected Framework?
a) Ensuring high availability of resources
b) Optimizing and automating processes
c) Security and compliance
d) Cost optimization

14) Which pillar of cloud security primarily deals with controlling who has access to your cloud resources and what actions they can perform?
a) Detection
b) Data Protection
c) Identity and Access Management
d) Infrastructure Protection

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Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IOT- Architecting IOT Solutions (BTN06715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any THREE. **12**

a) Describe the general architecture of AWS.
b) Explain the significance of defining the scope of an AWS project.
c) Explain the key design principles associated with Operational Excellence in the AWS Well-Architected Framework.
d) What are some key design principles that AWS follows in its framework?

Q.3 Attempt any TWO. **16**

a) Provide an in-depth introduction to Amazon Web Services (AWS) and its evolution in the cloud computing industry. Include some key milestones in AWS's history.
b) Explain the significance of resources in the context of the AWS Well-Architected Framework. How can resources be effectively managed and optimized?
c) Provide examples of tools and technologies that can assist organizations in managing and optimizing their cloud operations efficiently.

Section – II

Q.4 Attempt any THREE. **12**

a) Explain the principles and best practices associated with IAM within the context of cloud security.
b) What are the foundational principles of reliability in cloud computing, and why is reliability critical for organizations?
c) What is the significance of Identity and Access Management (IAM) in cloud security, and how does it contribute to a secure cloud environment?
d) What is the significance of Performance Efficiency in cloud computing, and how does it impact the overall user experience and cost management?

Q.5 Attempt any TWO. **16**

a) Share best practices for practicing cloud financial management and maintaining a culture of expenditure and usage awareness within an organization’s cloud operations.
b) How can organizations effectively monitor the reliability of their cloud-based workloads and detect potential issues or failures proactively?
c) Provide examples of security incidents that organizations might face in a cloud environment and explain how the principles and strategies outlined in the syllabus can help mitigate these incidents.

SLR-GF-503

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IOT- Architecting IOT Solutions (BTN06715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which AWS Well-Architected Framework pillar emphasizes the importance of efficiently using resources to reduce costs without sacrificing performance?
a) Cost Optimization b) Operational Excellence
c) Reliability d) Performance Efficiency

2) What is the first step in the AWS Well-Architected Framework's Five Pillars for designing a well-architected system?
a) Operational Excellence b) Organization
c) Prepare d) Operate

3) In the context of the AWS Well-Architected Framework, which pillar focuses on optimizing and managing ongoing workloads to deliver business value?
a) Operational Excellence b) Organization
c) Prepare d) Operate

4) What is the main focus of the Operational Excellence pillar in the AWS Well-Architected Framework?
a) Ensuring high availability of resources
b) Optimizing and automating processes
c) Security and compliance
d) Cost optimization

5) Which pillar of cloud security primarily deals with controlling who has access to your cloud resources and what actions they can perform?
a) Detection
b) Data Protection
c) Identity and Access Management
d) Infrastructure Protection

6) In the context of cloud security, what is the main goal of Data Protection?
a) Monitoring and alerting
b) Securing the physical infrastructure
c) Protecting sensitive data from unauthorized access and disclosure
d) Responding to security incidents

7) Which aspect of cloud security focuses on the ability to identify, respond to, and recover from security incidents?
a) Identity and Access Management
b) Detection
c) Infrastructure Protection
d) Data Protection

8) Which part of the AWS Well-Architected Framework for Failure Management focuses on designing systems to recover from failures automatically?
a) Foundations
b) Workload Architecture
c) Change Management
d) Resiliency

9) What is the main goal of Change Management within the Reliability pillar of the AWS Well-Architected Framework?
a) Promoting frequent and uncontrolled changes
b) Reducing the overall cost of change
c) Maintaining system stability while making changes
d) Avoiding any changes to the system

10) What does AWS stand for?
a) Advanced Web Services
b) Amazon Web Services
c) All Web Solutions
d) Agile Web Systems

11) In the context of AWS architecture, what is an Availability Zone (AZ)?
a) A physical data center
b) A virtual private network
c) A database instance
d) An application server

12) Which of the following design principles is associated with ensuring that resources can automatically respond to changes in demand?
a) Elasticity
b) Cost Optimization
c) Scalability
d) Reliability

13) What are the primary design principles in the AWS Well-Architected Framework's Operational Excellence pillar?
a) Scalability and cost optimization
b) Automation and performance efficiency
c) Security and reliability
d) Documentation and efficiency

14) In the context of the Security pillar of the AWS Well-Architected Framework, what is the principle of defense in depth?
a) Relying on a single layer of security
b) Implementing multiple security layers to protect assets
c) Ignoring security concerns for cost savings
d) Focusing on a single security protocol

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SLR-GF-503

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
IOT- Architecting IOT Solutions (BTN06715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any THREE. **12**

a) Describe the general architecture of AWS.
b) Explain the significance of defining the scope of an AWS project.
c) Explain the key design principles associated with Operational Excellence in the AWS Well-Architected Framework.
d) What are some key design principles that AWS follows in its framework?

Q.3 Attempt any TWO. **16**

a) Provide an in-depth introduction to Amazon Web Services (AWS) and its evolution in the cloud computing industry. Include some key milestones in AWS's history.
b) Explain the significance of resources in the context of the AWS Well-Architected Framework. How can resources be effectively managed and optimized?
c) Provide examples of tools and technologies that can assist organizations in managing and optimizing their cloud operations efficiently.

Section – II

Q.4 Attempt any THREE. **12**

a) Explain the principles and best practices associated with IAM within the context of cloud security.
b) What are the foundational principles of reliability in cloud computing, and why is reliability critical for organizations?
c) What is the significance of Identity and Access Management (IAM) in cloud security, and how does it contribute to a secure cloud environment?
d) What is the significance of Performance Efficiency in cloud computing, and how does it impact the overall user experience and cost management?

Q.5 Attempt any TWO. **16**

a) Share best practices for practicing cloud financial management and maintaining a culture of expenditure and usage awareness within an organization’s cloud operations.
b) How can organizations effectively monitor the reliability of their cloud-based workloads and detect potential issues or failures proactively?
c) Provide examples of security incidents that organizations might face in a cloud environment and explain how the principles and strategies outlined in the syllabus can help mitigate these incidents.

SLR-GF-505

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) _____ is a railway signaling system that uses telecommunications between the train and track equipment.
a) Communications-based train control (CBTC)
b) Long distance communication
c) IOT Based system
d) Telephonic System

2) _____ Communication system is the backbone of Railways.
a) LTE b) OFC
c) Single Line d) Multiline

3) _____ for monitoring of stations, tracks and passengers.
a) Train Tracking b) Train signaling
c) Train surveillance d) Train Monitoring

4) The hard-wired analogue cabling approach which has generally been replaced by _____ that operate over TCP/IP networks.
a) LAN b) CCTV
c) VSS d) WAN

5) IoT technologies in Railways is _____.
a) Non-real time b) Real-time
c) Backend d) Safety alert

6) The reception signal is _____.
a) outer signal only
b) starter only
c) neither (outer signal) nor (starter)
d) both (outer signal) and (starter)

7) In a shunting signal, if the red band is inclined at 45°, it indicates.
a) proceed cautiously b) stop
c) do not stop d) none of these

8) Which one is the default 'word Processor' for Microsoft Windows?
a) MS Word b) MS Paint
c) Word Pad d) Notepad

9) In a railway network system, the primary "STOP" signal is known as _____.
a) Home Signal b) Distant Signal
c) Clear Signal d) Wait Signal

10) Which operating system doesn't support networking between computers?
a) Windows 3.1 b) Windows 95
c) Windows 2000 d) Windows NT

11) Which of following is not Preventive maintenance.
a) Periodical b) non-periodical
c) Predictive d) Condition based

12) Which of the following Operating systems is better for implementing a Client Server network.
a) MS DOS b) Windows 95
c) Windows 98 d) Windows 2000

13) Intermediate Block Signaling using MSDAC system consists of the following component.
a) Axle Detectors b) Electronics Field Units
c) Central Evaluator d) All of the above

14) The stations which do not have any signal are known as _____.
a) A-class stations b) B-class stations
c) Crossing stations d) Terminal stations

SLR-GF-505

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four **16**

a) Give Interlocking - Importance and Types
b) Explain LTE for Railways (LTE-R)
c) What is the importance of railway signaling?
d) What is NextGen ATP for Automatic Train Operations?
e) Write note on trains through two-way satellite communication.

Q.3 Attempt Any Two **12**

a) Explain the IP based Video Surveillance System (VSS).
b) Give importance of IoT (Internet of Things) in Railways.
c) What is Networked PA System in Railways.

Section – II

Q.4 Attempt Any Four **16**

a) What is VoIP based Train Control communication System (TCCS)? Give details.
b) Give Safety Slogans for Signal Department.
c) Explain the Role of the Signaling & Telecommunications Department.
d) What is UHF Digital (License free band radio) Handheld Trans-receivers? Explain.
e) Give Interlocking - Importance and Types.

Q.5 Attempt Any Two **12**

a) Explain Technologies and processes to meet the challenges of signaling system maintenance.
b) What is Software based Embedded Systems for Railway Signaling Applications? Explain.
c) What is Future Railway Mobile Communications System? Give details.

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which one is the default 'word Processor' for Microsoft Windows?
a) MS Word b) MS Paint
c) Word Pad d) Notepad

2) In a railway network system, the primary "STOP" signal is known as _____.
a) Home Signal b) Distant Signal
c) Clear Signal d) Wait Signal

3) Which operating system doesn't support networking between computers?
a) Windows 3.1 b) Windows 95
c) Windows 2000 d) Windows NT

4) Which of following is not Preventive maintenance.
a) Periodical b) non-periodical
c) Predictive d) Condition based

5) Which of the following Operating systems is better for implementing a Client Server network.
a) MS DOS b) Windows 95
c) Windows 98 d) Windows 2000

6) Intermediate Block Signaling using MSDAC system consists of the following component.
a) Axle Detectors b) Electronics Field Units
c) Central Evaluator d) All of the above

7) The stations which do not have any signal are known as _____.
a) A-class stations b) B-class stations
c) Crossing stations d) Terminal stations

8) _____ is a railway signaling system that uses telecommunications between the train and track equipment.
a) Communications-based train control (CBTC)
b) Long distance communication
c) IOT Based system
d) Telephonic System

9) _____ Communication system is the backbone of Railways.
a) LTE b) OFC
c) Single Line d) Multiline

10) _____ for monitoring of stations, tracks and passengers.
a) Train Tracking b) Train signaling
c) Train surveillance d) Train Monitoring

11) The hard-wired analogue cabling approach which has generally been replaced by _____ that operate over TCP/IP networks.
a) LAN b) CCTV
c) VSS d) WAN

12) IoT technologies in Railways is _____.
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c) Backend d) Safety alert

13) The reception signal is _____.
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b) starter only
c) neither (outer signal) nor (starter)
d) both (outer signal) and (starter)

14) In a shunting signal, if the red band is inclined at 45°, it indicates.
a) proceed cautiously b) stop
c) do not stop d) none of these

SLR-GF-505

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four **16**

a) Give Interlocking - Importance and Types
b) Explain LTE for Railways (LTE-R)
c) What is the importance of railway signaling?
d) What is NextGen ATP for Automatic Train Operations?
e) Write note on trains through two-way satellite communication.

Q.3 Attempt Any Two **12**

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b) Give importance of IoT (Internet of Things) in Railways.
c) What is Networked PA System in Railways.

Section – II

Q.4 Attempt Any Four **16**

a) What is VoIP based Train Control communication System (TCCS)? Give details.
b) Give Safety Slogans for Signal Department.
c) Explain the Role of the Signaling & Telecommunications Department.
d) What is UHF Digital (License free band radio) Handheld Trans-receivers? Explain.
e) Give Interlocking - Importance and Types.

Q.5 Attempt Any Two **12**

a) Explain Technologies and processes to meet the challenges of signaling system maintenance.
b) What is Software based Embedded Systems for Railway Signaling Applications? Explain.
c) What is Future Railway Mobile Communications System? Give details.

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of following is not Preventive maintenance.
a) Periodical b) non-periodical
c) Predictive d) Condition based

2) Which of the following Operating systems is better for implementing a Client Server network.
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Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four **16**

a) Give Interlocking - Importance and Types
b) Explain LTE for Railways (LTE-R)
c) What is the importance of railway signaling?
d) What is NextGen ATP for Automatic Train Operations?
e) Write note on trains through two-way satellite communication.

Q.3 Attempt Any Two **12**

a) Explain the IP based Video Surveillance System (VSS).
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c) What is Networked PA System in Railways.

Section – II

Q.4 Attempt Any Four **16**

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c) Explain the Role of the Signaling & Telecommunications Department.
d) What is UHF Digital (License free band radio) Handheld Trans-receivers? Explain.
e) Give Interlocking - Importance and Types.

Q.5 Attempt Any Two **12**

a) Explain Technologies and processes to meet the challenges of signaling system maintenance.
b) What is Software based Embedded Systems for Railway Signaling Applications? Explain.
c) What is Future Railway Mobile Communications System? Give details.

SLR-GF-505

Seat No.	

Set S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The reception signal is _____.
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b) starter only
c) neither (outer signal) nor (starter)
d) both (outer signal) and (starter)

2) In a shunting signal, if the red band is inclined at 45°, it indicates.
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c) VSS d) WAN

14) IoT technologies in Railways is _____.
a) Non-real time b) Real-time
c) Backend d) Safety alert

SLR-GF-505

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering - Advanced Communication and Modern Signaling in Railway (BTN06717)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four **16**

a) Give Interlocking - Importance and Types
b) Explain LTE for Railways (LTE-R)
c) What is the importance of railway signaling?
d) What is NextGen ATP for Automatic Train Operations?
e) Write note on trains through two-way satellite communication.

Q.3 Attempt Any Two **12**

a) Explain the IP based Video Surveillance System (VSS).
b) Give importance of IoT (Internet of Things) in Railways.
c) What is Networked PA System in Railways.

Section – II

Q.4 Attempt Any Four **16**

a) What is VoIP based Train Control communication System (TCCS)? Give details.
b) Give Safety Slogans for Signal Department.
c) Explain the Role of the Signaling & Telecommunications Department.
d) What is UHF Digital (License free band radio) Handheld Trans-receivers? Explain.
e) Give Interlocking - Importance and Types.

Q.5 Attempt Any Two **12**

a) Explain Technologies and processes to meet the challenges of signaling system maintenance.
b) What is Software based Embedded Systems for Railway Signaling Applications? Explain.
c) What is Future Railway Mobile Communications System? Give details.

SLR-GF-507

Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary
5) Use of nonprogrammable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The data of research is _____
a) Qualitative only b) Quantitative only
c) Both (a) and (b) d) Neither (a) nor (b)

2) The purpose of research is: _____
a) That the empirical work should be testing a theory.
b) To extend the conceptual understanding of a topic.
c) To produce work of publishable quality.
d) Primarily to get more data.

3) What is the primary purpose of stating research objectives in a study?
a) To summarize the research findings
b) To provide a background of the research topic
c) To clarify the purpose and direction of the research
d) To list the research team members

4) Which of the following is NOT a criterion for evaluating the quality of research?
a) Ethical considerations
b) Reproducibility of results
c) Validity of research instruments
d) Researcher's age and experience

5) Which of the following is the first step in the research process?
a) Formulating a research question
b) Data collection
c) Data analysis
d) Writing the research report

6) What is the purpose of citations and Acknowledgments in a report or thesis?
a) To demonstrate the author's expertise in the subject matter
b) To fill space in the document
c) To give credit to the original sources and individuals who contributed to the research
d) To avoid the need for a bibliography

7) A comprehensive full Report of the research process is called _____
a) Thesis
b) Summary Report
c) Abstract
d) Article

8) What is the primary role of an ethical Committee in research institutions?
a) To increase research funding
b) To speed up the publication process
c) To review and approve research proposals for ethical compliance
d) To conduct experiments on behalf of researchers

9) In research, what does "objectivity" mean?
a) Manipulating data to support a hypothesis
b) Presenting research findings in a biased manner
c) Remaining impartial and unbiased in data collection and analysis
d) Ignoring ethical considerations

10) What is a research design?
a) A plan for data analysis
b) A method for data collection
c) A statistical technique
d) A framework for conducting research

11) Which criterion is NOT typically considered when selecting a sampling procedure?
a) Cost-effectiveness
b) Representativeness
c) Availability of sample units
d) Length of the research report

12) What does the term "variable" mean in research design?
a) A constant value that does not change
b) A factor or characteristic that can be measured or manipulated
c) An unimportant aspect of research
d) A qualitative data type

13) Deciding what data is best for your research analysis depends upon which of the following?
a) The research question
b) The nature of the participants
c) The researcher's personal preferences
d) All of these

14) The chi-square test is:
a) A mean
b) A multi-question test
c) A statistical mistake
d) A statistic

SLR-GF-507

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary
4) Use of nonprogrammable calculator is allowed.

Section – I

Q.2 Solve any Four of the Followings **16**

a) What are the needs and objectives of research? Explain in detail.
b) Define Research and explain the types of research with an example.
c) Defining the formulation of research Problem.
d) Importance of Literature review in defining a problem.
e) Illustrate the different steps in research design according your Final Year project.

Q.3 Solve any two of the following **12**

a) Write difference between method & Methodology? Explain the types of research with its significance in modern times and industrial economy with an example.
b) What do you mean by “sample design”? What points should be taken into consideration by a researcher in developing a sample design for this research project.
c) What is literature review in research? What are the sources of literature? Explain its importance and methods.

Section – II

Q.4 Solve any Four of the following **16**

a) Explain the guidelines for constructing questionnaire and schedule.
b) Explain the Chi-square method.
c) Write a sort note in plagiarism.
d) Write the basic principle of ethics which is used in Research.
e) Different steps using to writing a thesis.

Q.5 Solve any two of the followings **12**

a) What do you think about Citation, Bibliography, referencing and footnotes?
b) Explain ethical issues in research and explain its ethical and legal aspects in research.
c) What is sampling? Explain different sampling methods with example.

Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary
5) Use of nonprogrammable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What is the primary role of an ethical Committee in research institutions?
a) To increase research funding
b) To speed up the publication process
c) To review and approve research proposals for ethical compliance
d) To conduct experiments on behalf of researchers

2) In research, what does "objectivity" mean?
a) Manipulating data to support a hypothesis
b) Presenting research findings in a biased manner
c) Remaining impartial and unbiased in data collection and analysis
d) Ignoring ethical considerations

3) What is a research design?
a) A plan for data analysis
b) A method for data collection
c) A statistical technique
d) A framework for conducting research

4) Which criterion is NOT typically considered when selecting a sampling procedure?
a) Cost-effectiveness b) Representativeness
c) Availability of sample units d) Length of the research report

5) What does the term "variable" mean in research design?
a) A constant value that does not change
b) A factor or characteristic that can be measured or manipulated
c) An unimportant aspect of research
d) A qualitative data type

6) Deciding what data is best for your research analysis depends upon which of the following?
a) The research question
b) The nature of the participants
c) The researcher's personal preferences
d) All of these

7) The chi-square test is:
a) A mean
b) A multi-question test
c) A statistical mistake
d) A statistic

8) The data of research is _____
a) Qualitative only
b) Quantitative only
c) Both (a) and (b)
d) Neither (a) nor (b)

9) The purpose of research is: _____
a) That the empirical work should be testing a theory.
b) To extend the conceptual understanding of a topic.
c) To produce work of publishable quality.
d) Primarily to get more data.

10) What is the primary purpose of stating research objectives in a study?
a) To summarize the research findings
b) To provide a background of the research topic
c) To clarify the purpose and direction of the research
d) To list the research team members

11) Which of the following is NOT a criterion for evaluating the quality of research?
a) Ethical considerations
b) Reproducibility of results
c) Validity of research instruments
d) Researcher's age and experience

12) Which of the following is the first step in the research process?
a) Formulating a research question
b) Data collection
c) Data analysis
d) Writing the research report

13) What is the purpose of citations and Acknowledgments in a report or thesis?
a) To demonstrate the author's expertise in the subject matter
b) To fill space in the document
c) To give credit to the original sources and individuals who contributed to the research
d) To avoid the need for a bibliography

14) A comprehensive full Report of the research process is called _____
a) Thesis
b) Summary Report
c) Abstract
d) Article

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Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary
4) Use of nonprogrammable calculator is allowed.

Section – I

Q.2 Solve any Four of the Followings **16**

a) What are the needs and objectives of research? Explain in detail.
b) Define Research and explain the types of research with an example.
c) Defining the formulation of research Problem.
d) Importance of Literature review in defining a problem.
e) Illustrate the different steps in research design according your Final Year project.

Q.3 Solve any two of the following **12**

a) Write difference between method & Methodology? Explain the types of research with its significance in modern times and industrial economy with an example.
b) What do you mean by “sample design”? What points should be taken into consideration by a researcher in developing a sample design for this research project.
c) What is literature review in research? What are the sources of literature? Explain its importance and methods.

Section – II

Q.4 Solve any Four of the following **16**

a) Explain the guidelines for constructing questionnaire and schedule.
b) Explain the Chi-square method.
c) Write a sort note in plagiarism.
d) Write the basic principle of ethics which is used in Research.
e) Different steps using to writing a thesis.

Q.5 Solve any two of the followings **12**

a) What do you think about Citation, Bibliography, referencing and footnotes?
b) Explain ethical issues in research and explain its ethical and legal aspects in research.
c) What is sampling? Explain different sampling methods with example.

Seat No.		Set	R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary
5) Use of nonprogrammable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which criterion is NOT typically considered when selecting a sampling procedure?
a) Cost-effectiveness b) Representativeness
c) Availability of sample units d) Length of the research report

2) What does the term "variable" mean in research design?
a) A constant value that does not change
b) A factor or characteristic that can be measured or manipulated
c) An unimportant aspect of research
d) A qualitative data type

3) Deciding what data is best for your research analysis depends upon which of the following?
a) The research question
b) The nature of the participants
c) The researcher's personal preferences
d) All of these

4) The chi-square test is:
a) A mean b) A multi-question test
c) A statistical mistake d) A statistic

5) The data of research is _____
a) Qualitative only b) Quantitative only
c) Both (a) and (b) d) Neither (a) nor (b)

6) The purpose of research is: _____
a) That the empirical work should be testing a theory.
b) To extend the conceptual understanding of a topic.
c) To produce work of publishable quality.
d) Primarily to get more data.

7) What is the primary purpose of stating research objectives in a study?
- a) To summarize the research findings
- b) To provide a background of the research topic
- c) To clarify the purpose and direction of the research
- d) To list the research team members

8) Which of the following is NOT a criterion for evaluating the quality of research?
- a) Ethical considerations
- b) Reproducibility of results
- c) Validity of research instruments
- d) Researcher's age and experience

9) Which of the following is the first step in the research process?
- a) Formulating a research question
- b) Data collection
- c) Data analysis
- d) Writing the research report

10) What is the purpose of citations and Acknowledgments in a report or thesis?
- a) To demonstrate the author's expertise in the subject matter
- b) To fill space in the document
- c) To give credit to the original sources and individuals who contributed to the research
- d) To avoid the need for a bibliography

11) A comprehensive full Report of the research process is called _____
- a) Thesis
- b) Summary Report
- c) Abstract
- d) Article

12) What is the primary role of an ethical Committee in research institutions?
- a) To increase research funding
- b) To speed up the publication process
- c) To review and approve research proposals for ethical compliance
- d) To conduct experiments on behalf of researchers

13) In research, what does "objectivity" mean?
- a) Manipulating data to support a hypothesis
- b) Presenting research findings in a biased manner
- c) Remaining impartial and unbiased in data collection and analysis
- d) Ignoring ethical considerations

14) What is a research design?
- a) A plan for data analysis
- b) A method for data collection
- c) A statistical technique
- d) A framework for conducting research

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary
4) Use of nonprogrammable calculator is allowed.

Section – I

Q.2 Solve any Four of the Followings **16**

a) What are the needs and objectives of research? Explain in detail.
b) Define Research and explain the types of research with an example.
c) Defining the formulation of research Problem.
d) Importance of Literature review in defining a problem.
e) Illustrate the different steps in research design according your Final Year project.

Q.3 Solve any two of the following **12**

a) Write difference between method & Methodology? Explain the types of research with its significance in modern times and industrial economy with an example.
b) What do you mean by “sample design”? What points should be taken into consideration by a researcher in developing a sample design for this research project.
c) What is literature review in research? What are the sources of literature? Explain its importance and methods.

Section – II

Q.4 Solve any Four of the following **16**

a) Explain the guidelines for constructing questionnaire and schedule.
b) Explain the Chi-square method.
c) Write a sort note in plagiarism.
d) Write the basic principle of ethics which is used in Research.
e) Different steps using to writing a thesis.

Q.5 Solve any two of the followings **12**

a) What do you think about Citation, Bibliography, referencing and footnotes?
b) Explain ethical issues in research and explain its ethical and legal aspects in research.
c) What is sampling? Explain different sampling methods with example.

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary
5) Use of nonprogrammable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What is the purpose of citations and Acknowledgments in a report or thesis?
a) To demonstrate the author's expertise in the subject matter
b) To fill space in the document
c) To give credit to the original sources and individuals who contributed to the research
d) To avoid the need for a bibliography

2) A comprehensive full Report of the research process is called _____
a) Thesis b) Summary Report
c) Abstract d) Article

3) What is the primary role of an ethical Committee in research institutions?
a) To increase research funding
b) To speed up the publication process
c) To review and approve research proposals for ethical compliance
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4) In research, what does "objectivity" mean?
a) Manipulating data to support a hypothesis
b) Presenting research findings in a biased manner
c) Remaining impartial and unbiased in data collection and analysis
d) Ignoring ethical considerations

5) What is a research design?
a) A plan for data analysis
b) A method for data collection
c) A statistical technique
d) A framework for conducting research

6) Which criterion is NOT typically considered when selecting a sampling procedure?
a) Cost-effectiveness b) Representativeness
c) Availability of sample units d) Length of the research report

7) What does the term "variable" mean in research design?
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b) A factor or characteristic that can be measured or manipulated
c) An unimportant aspect of research
d) A qualitative data type

8) Deciding what data is best for your research analysis depends upon which of the following?
a) The research question
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a) A mean
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c) To produce work of publishable quality.
d) Primarily to get more data.

12) What is the primary purpose of stating research objectives in a study?
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c) To clarify the purpose and direction of the research
d) To list the research team members

13) Which of the following is NOT a criterion for evaluating the quality of research?
a) Ethical considerations
b) Reproducibility of results
c) Validity of research instruments
d) Researcher’s age and experience

14) Which of the following is the first step in the research process?
a) Formulating a research question
b) Data collection
c) Data analysis
d) Writing the research report

SLR-GF-507

Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Research Methodology (BTN06704)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary
4) Use of nonprogrammable calculator is allowed.

Section – I

Q.2 Solve any Four of the Followings **16**

a) What are the needs and objectives of research? Explain in detail.
b) Define Research and explain the types of research with an example.
c) Defining the formulation of research Problem.
d) Importance of Literature review in defining a problem.
e) Illustrate the different steps in research design according your Final Year project.

Q.3 Solve any two of the following **12**

a) Write difference between method & Methodology? Explain the types of research with its significance in modern times and industrial economy with an example.
b) What do you mean by “sample design”? What points should be taken into consideration by a researcher in developing a sample design for this research project.
c) What is literature review in research? What are the sources of literature? Explain its importance and methods.

Section – II

Q.4 Solve any Four of the following **16**

a) Explain the guidelines for constructing questionnaire and schedule.
b) Explain the Chi-square method.
c) Write a sort note in plagiarism.
d) Write the basic principle of ethics which is used in Research.
e) Different steps using to writing a thesis.

Q.5 Solve any two of the followings **12**

a) What do you think about Citation, Bibliography, referencing and footnotes?
b) Explain ethical issues in research and explain its ethical and legal aspects in research.
c) What is sampling? Explain different sampling methods with example.

SLR-GF-508

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
Testing & Certification of Electric & Hybrid vehicles (BTN07719)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which is/are necessary for the description of an automobile?
a) Make b) Model
c) Capacity d) All of the mentioned

2) Vehicles having at least four wheels and used for the carriage of passengers, this category of vehicle is _____
a) L b) M
c) N d) O

3) An electric vehicle uses one or more _____ for propulsion.
a) Internal combustion engines b) Electric motors
c) All of the above d) None of the above

4) Which of the following is a classification of automobiles based on Load?
a) Heavy transport vehicle (HTV) b) Sedan Hatchback car
c) Four-wheeler vehicle d) Front-wheel drive

5) The rolling resistance is because of the friction between the _____
a) Wheel rim and tyre b) Tyre and the road surface
c) Wheel rim and road surface d) None of these

6) Rolling resistance does not depend on which of the following factors?
a) Load on each road wheel b) Radius of driving wheel
c) Wheel inflation pressure d) Nature of road surface

7) How to increase the range of electric vehicles?
a) By increasing the battery capacity
b) By reducing battery capacity
c) By installing a turbocharger
d) By installing another DC motor

8) The function of anti-lock brake system (ABS) is that is _____.
a) Reduces the stopping distance
b) Minimizes the brake fade
c) Maintains directional control during braking by preventing the wheels from locking
d) Prevents nose dives during braking and thereby postpones locking of the wheels

9) A vehicle driving performance is usually evaluated by _____.
a) Acceleration time b) Maximum speed
c) Gradeability d) All of the above

10) The torque available at the contact between road and driving wheel is called _____.
a) Brake power b) Friction power
c) Tractive effort d) Engine torque

11) 'Head restraints' are an _____
a) Automotive style feature
b) Automotive safety feature
c) Automotive performance feature
d) None of the mentioned

12) In automobiles G.V.W. refers to _____.
a) Gross vehicle width b) Gross vehicle weight
c) Gross vehicle wheel base d) Gross vehicle wheel track

13) Which vehicle has the smallest number of principle components?
a) Traditional vehicle b) Hybrid vehicle
c) Electric vehicle d) None of these

14) Why 'Bumpers' are used in cars?
a) To reduce the impact in case of low-speed collisions
b) To improve the aerodynamics of a car
c) To increase the engine performance
d) None of the mentioned

SLR-GF-508

Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
Testing & Certification of Electric & Hybrid Vehicles (BTN07719)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Describe M, N & O categories of vehicle.
b) Explain the specifications of electric vehicle.
c) Describe the factors for physical verification of vehicle.
d) Describe tyre tread depth test in detail.
e) Explain the procedure of constant speed fuel consumption test of vehicle.
f) What is dynamic testing of vehicle? Explain the factors affecting dynamic testing.

Q.3 Solve any Two **12**

a) What is homologation? Explain the process of vehicle homologation in India.
b) Explain the arrangement of foot controls for M1 type vehicle.
c) Explain electric vehicle range test. Also state the factors affecting the range of an EV.

Section – II

Q.4 Solve Any Four **16**

a) Explain horn testing of vehicle.
b) Describe hinges and latches test of vehicle.
c) Explain drivers field of vision.
d) Explain Seat anchorages & head restraints test of vehicle.
e) Describe the requirements of Electric Vehicle Conductive DC Charging System.
f) State and explain hybrid electric vehicles tests (M and N category).

Q.5 Solve any Two **12**

a) Explain the tests for safety requirements of traction batteries.
b) Describe the requirements of Electric Vehicle Conductive AC Charging System.
c) Tests for Hybrid Electric system Intended for Retro-fitment on vehicles of M and N Category (GVW < 3500 kg).

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
Testing & Certification of Electric & Hybrid vehicles (BTN07719)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The function of anti-lock brake system (ABS) is that is _____.
a) Reduces the stopping distance
b) Minimizes the brake fade
c) Maintains directional control during braking by preventing the wheels from locking
d) Prevents nose dives during braking and thereby postpones locking of the wheels

2) A vehicle driving performance is usually evaluated by _____.
a) Acceleration time b) Maximum speed
c) Gradeability d) All of the above

3) The torque available at the contact between road and driving wheel is called _____.
a) Brake power b) Friction power
c) Tractive effort d) Engine torque

4) 'Head restraints' are an _____
a) Automotive style feature
b) Automotive safety feature
c) Automotive performance feature
d) None of the mentioned

5) In automobiles G.V.W. refers to _____.
a) Gross vehicle width b) Gross vehicle weight
c) Gross vehicle wheel base d) Gross vehicle wheel track

6) Which vehicle has the smallest number of principle components?
a) Traditional vehicle b) Hybrid vehicle
c) Electric vehicle d) None of these

7) Why 'Bumpers' are used in cars?
a) To reduce the impact in case of low-speed collisions
b) To improve the aerodynamics of a car
c) To increase the engine performance
d) None of the mentioned

8) Which is/are necessary for the description of an automobile?
a) Make b) Model
c) Capacity d) All of the mentioned

9) Vehicles having at least four wheels and used for the carriage of passengers, this category of vehicle is _____
a) L b) M
c) N d) O

10) An electric vehicle uses one or more _____ for propulsion.
a) Internal combustion engines b) Electric motors
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11) Which of the following is a classification of automobiles based on Load?
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12) The rolling resistance is because of the friction between the _____
a) Wheel rim and tyre b) Tyre and the road surface
c) Wheel rim and road surface d) None of these

13) Rolling resistance does not depend on which of the following factors?
a) Load on each road wheel b) Radius of driving wheel
c) Wheel inflation pressure d) Nature of road surface

14) How to increase the range of electric vehicles?
a) By increasing the battery capacity
b) By reducing battery capacity
c) By installing a turbocharger
d) By installing another DC motor

SLR-GF-508

Seat No.	

Set Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
Testing & Certification of Electric & Hybrid Vehicles (BTN07719)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Describe M, N & O categories of vehicle.
b) Explain the specifications of electric vehicle.
c) Describe the factors for physical verification of vehicle.
d) Describe tyre tread depth test in detail.
e) Explain the procedure of constant speed fuel consumption test of vehicle.
f) What is dynamic testing of vehicle? Explain the factors affecting dynamic testing.

Q.3 Solve any Two **12**

a) What is homologation? Explain the process of vehicle homologation in India.
b) Explain the arrangement of foot controls for M1 type vehicle.
c) Explain electric vehicle range test. Also state the factors affecting the range of an EV.

Section – II

Q.4 Solve Any Four **16**

a) Explain horn testing of vehicle.
b) Describe hinges and latches test of vehicle.
c) Explain drivers field of vision.
d) Explain Seat anchorages & head restraints test of vehicle.
e) Describe the requirements of Electric Vehicle Conductive DC Charging System.
f) State and explain hybrid electric vehicles tests (M and N category).

Q.5 Solve any Two **12**

a) Explain the tests for safety requirements of traction batteries.
b) Describe the requirements of Electric Vehicle Conductive AC Charging System.
c) Tests for Hybrid Electric system Intended for Retro-fitment on vehicles of M and N Category (GVW < 3500 kg).

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
Testing & Certification of Electric & Hybrid vehicles (BTN07719)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) 'Head restraints' are an _____
a) Automotive style feature
b) Automotive safety feature
c) Automotive performance feature
d) None of the mentioned

2) In automobiles G.V.W. refers to _____.
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c) Gross vehicle wheel base d) Gross vehicle wheel track

3) Which vehicle has the smallest number of principle components?
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a) To reduce the impact in case of low-speed collisions
b) To improve the aerodynamics of a car
c) To increase the engine performance
d) None of the mentioned

5) Which is/are necessary for the description of an automobile?
a) Make b) Model
c) Capacity d) All of the mentioned

6) Vehicles having at least four wheels and used for the carriage of passengers, this category of vehicle is _____
a) L b) M
c) N d) O

7) An electric vehicle uses one or more _____ for propulsion.
a) Internal combustion engines b) Electric motors
c) All of the above d) None of the above

8) Which of the following is a classification of automobiles based on Load?
a) Heavy transport vehicle (HTV) b) Sedan Hatchback car
c) Four-wheeler vehicle d) Front-wheel drive

9) The rolling resistance is because of the friction between the _____
a) Wheel rim and tyre
b) Tyre and the road surface
c) Wheel rim and road surface
d) None of these

10) Rolling resistance does not depend on which of the following factors?
a) Load on each road wheel
b) Radius of driving wheel
c) Wheel inflation pressure
d) Nature of road surface

11) How to increase the range of electric vehicles?
a) By increasing the battery capacity
b) By reducing battery capacity
c) By installing a turbocharger
d) By installing another DC motor

12) The function of anti-lock brake system (ABS) is that is _____.
a) Reduces the stopping distance
b) Minimizes the brake fade
c) Maintains directional control during braking by preventing the wheels from locking
d) Prevents nose dives during braking and thereby postpones locking of the wheels

13) A vehicle driving performance is usually evaluated by _____.
a) Acceleration time
b) Maximum speed
c) Gradeability
d) All of the above

14) The torque available at the contact between road and driving wheel is called _____.
a) Brake power
b) Friction power
c) Tractive effort
d) Engine torque

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Seat No.	

Set R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
Testing & Certification of Electric & Hybrid Vehicles (BTN07719)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Describe M, N & O categories of vehicle.
b) Explain the specifications of electric vehicle.
c) Describe the factors for physical verification of vehicle.
d) Describe tyre tread depth test in detail.
e) Explain the procedure of constant speed fuel consumption test of vehicle.
f) What is dynamic testing of vehicle? Explain the factors affecting dynamic testing.

Q.3 Solve any Two **12**

a) What is homologation? Explain the process of vehicle homologation in India.
b) Explain the arrangement of foot controls for M1 type vehicle.
c) Explain electric vehicle range test. Also state the factors affecting the range of an EV.

Section – II

Q.4 Solve Any Four **16**

a) Explain horn testing of vehicle.
b) Describe hinges and latches test of vehicle.
c) Explain drivers field of vision.
d) Explain Seat anchorages & head restraints test of vehicle.
e) Describe the requirements of Electric Vehicle Conductive DC Charging System.
f) State and explain hybrid electric vehicles tests (M and N category).

Q.5 Solve any Two **12**

a) Explain the tests for safety requirements of traction batteries.
b) Describe the requirements of Electric Vehicle Conductive AC Charging System.
c) Tests for Hybrid Electric system Intended for Retro-fitment on vehicles of M and N Category (GVW < 3500 kg).

Seat No.	

Set | S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
Testing & Certification of Electric & Hybrid vehicles (BTN07719)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Rolling resistance does not depend on which of the following factors?
a) Load on each road wheel b) Radius of driving wheel
c) Wheel inflation pressure d) Nature of road surface

2) How to increase the range of electric vehicles?
a) By increasing the battery capacity
b) By reducing battery capacity
c) By installing a turbocharger
d) By installing another DC motor

3) The function of anti-lock brake system (ABS) is that is _____.
a) Reduces the stopping distance
b) Minimizes the brake fade
c) Maintains directional control during braking by preventing the wheels from locking
d) Prevents nose dives during braking and thereby postpones locking of the wheels

4) A vehicle driving performance is usually evaluated by _____.
a) Acceleration time b) Maximum speed
c) Gradeability d) All of the above

5) The torque available at the contact between road and driving wheel is called _____.
a) Brake power b) Friction power
c) Tractive effort d) Engine torque

6) 'Head restraints' are an _____
a) Automotive style feature
b) Automotive safety feature
c) Automotive performance feature
d) None of the mentioned

7) In automobiles G.V.W. refers to _____.
a) Gross vehicle width b) Gross vehicle weight
c) Gross vehicle wheel base d) Gross vehicle wheel track

8) Which vehicle has the smallest number of principle components?
a) Traditional vehicle b) Hybrid vehicle
c) Electric vehicle d) None of these

9) Why 'Bumpers' are used in cars?
a) To reduce the impact in case of low-speed collisions
b) To improve the aerodynamics of a car
c) To increase the engine performance
d) None of the mentioned

10) Which is/are necessary for the description of an automobile?
a) Make b) Model
c) Capacity d) All of the mentioned

11) Vehicles having at least four wheels and used for the carriage of passengers, this category of vehicle is _____
a) L b) M
c) N d) O

12) An electric vehicle uses one or more _____ for propulsion.
a) Internal combustion engines b) Electric motors
c) All of the above d) None of the above

13) Which of the following is a classification of automobiles based on Load?
a) Heavy transport vehicle (HTV) b) Sedan Hatchback car
c) Four-wheeler vehicle d) Front-wheel drive

14) The rolling resistance is because of the friction between the _____
a) Wheel rim and tyre b) Tyre and the road surface
c) Wheel rim and road surface d) None of these

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Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
Testing & Certification of Electric & Hybrid Vehicles (BTN07719)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) Describe M, N & O categories of vehicle.
b) Explain the specifications of electric vehicle.
c) Describe the factors for physical verification of vehicle.
d) Describe tyre tread depth test in detail.
e) Explain the procedure of constant speed fuel consumption test of vehicle.
f) What is dynamic testing of vehicle? Explain the factors affecting dynamic testing.

Q.3 Solve any Two **12**

a) What is homologation? Explain the process of vehicle homologation in India.
b) Explain the arrangement of foot controls for M1 type vehicle.
c) Explain electric vehicle range test. Also state the factors affecting the range of an EV.

Section – II

Q.4 Solve Any Four **16**

a) Explain horn testing of vehicle.
b) Describe hinges and latches test of vehicle.
c) Explain drivers field of vision.
d) Explain Seat anchorages & head restraints test of vehicle.
e) Describe the requirements of Electric Vehicle Conductive DC Charging System.
f) State and explain hybrid electric vehicles tests (M and N category).

Q.5 Solve any Two **12**

a) Explain the tests for safety requirements of traction batteries.
b) Describe the requirements of Electric Vehicle Conductive AC Charging System.
c) Tests for Hybrid Electric system Intended for Retro-fitment on vehicles of M and N Category (GVW < 3500 kg).

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Seat No.	

Set P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
AI Application to Power System Management (BTN07717)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What are the components of an AI program?
a) Input and Output b) Data and Control
c) Knowledge and Inference d) Both a) & b)

2) What are the issues related to knowledge representation in AI?
a) Storage capacity b) Retrieval speed
c) Expressiveness and efficiency d) None of the Above

3) What is logic programming in AI?
a) Programming using symbolic logic
b) Programming using low-level machine instructions
c) Programming using only visual elements
d) All the Above

4) What is the role of control knowledge in AI systems?
a) Determining the input and output
b) Regulating the flow of the reasoning process
c) Managing the database
d) All the Above

5) Bayes' Theorem is used to:
a) Calculate probabilities based on prior knowledge and new evidence
b) Determine the certainty of an event
c) Find the absolute occurrence of an event
d) Both b) & c)

6) What does the Dempster-Shafer theorem provide a framework for?
a) Probability theory
b) Fuzzy logic
c) Reasoning with uncertainty and combining evidence
d) None of the Above

7) What are "Scripts" in the context of knowledge representation?
a) Computer programming code
b) Protocols or expected sequences of events in a particular situation
c) Statistical analysis tools
d) All the Above

8) What does an automatic pattern recognition scheme involve?
a) Manual input of patterns
b) Automated identification and classification of patterns
c) Ignoring patterns altogether
d) None of the Above

9) What is the purpose of statistical classifier design algorithms?
a) To introduce randomness in classification
b) To optimize the selection of features
c) To design algorithms for accurate pattern classification
d) All the Above

10) What does LMSE stand for in the context of statistical classifier design algorithms?
a) Least Mean Squared Error
b) Large Magnitude Standard Estimation
c) Linear Model for Statistical Evaluation
d) Lost Member Search Engine

11) What is the primary advantage of using multilayer neural networks over single-layer networks?
a) Simplicity
b) Capability to handle complex relationships
c) Faster computation
d) None of the Above

12) What do Hopfield networks specialize in?
a) Forward reasoning
b) Clustering data points
c) Handling supervised learning
d) Both a) and c)

13) In supervised learning, what does the neural network have access to during training?
a) Labeled data
b) Only input features
c) Only output labels
d) None of the Above

14) What role does the inference engine play in an expert system?
a) It provides expert opinions
b) It processes the knowledge to derive conclusions or make decisions
c) It designs the user interface
d) All the Above

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Seat No.		Set	P

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
AI Application to Power System Management (BTN07717)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following **16**

a) Explain knowledge-based systems in different domains. Discuss the role of knowledge representation in these systems.
b) What is Artificial Intelligence? Give its Applications.
c) Define automatic pattern recognition and highlight its significance in various fields.
d) Discuss the importance of classifiers and their role in pattern recognition systems.
e) What is Feature Selection? What are Different Feature Selection Models explain any one.

Q.3 Solve any two of the following **12**

a) Explain Bayes' theorem and provide a real-world example where it can be applied.
b) Discuss the advantages and limitations of using means and covariance's for feature selection.
c) Explain the LMSE (Least Mean Square Error) algorithm for statistical classifier design.

Section – II

Q.4 Solve any four of the following. **16**

a) Explain how neural networks enhance the performance in these applications. Give two examples where ANN is used.
b) What is Neural Network? Give Applications of Artificial Neural Networks.
c) Describe the architecture of a multilayer neural network.
d) Define supervised learning in the context of artificial neural networks.
e) Explain Expert system development process.

Q.5 Solve any two of the following. **12**

a) Compare single layer and multilayer neural nets in Artificial Neural Network.
b) Discuss the role of expert system building tools and shells in the development of intelligent systems.
c) Explore the characteristics of rule-based systems. Discuss the advantage and limitations of using rule-based approaches in expert system design.

Seat No.	

Set **Q**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
AI Application to Power System Management (BTN07717)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What does an automatic pattern recognition scheme involve?
a) Manual input of patterns
b) Automated identification and classification of patterns
c) Ignoring patterns altogether
d) None of the Above

2) What is the purpose of statistical classifier design algorithms?
a) To introduce randomness in classification
b) To optimize the selection of features
c) To design algorithms for accurate pattern classification
d) All the Above

3) What does LMSE stand for in the context of statistical classifier design algorithms?
a) Least Mean Squared Error
b) Large Magnitude Standard Estimation
c) Linear Model for Statistical Evaluation
d) Lost Member Search Engine

4) What is the primary advantage of using multilayer neural networks over single-layer networks?
a) Simplicity
b) Capability to handle complex relationships
c) Faster computation
d) None of the Above

5) What do Hopfield networks specialize in?
a) Forward reasoning b) Clustering data points
c) Handling supervised learning d) Both a) and c)

6) In supervised learning, what does the neural network have access to during training?
a) Labeled data b) Only input features
c) Only output labels d) None of the Above

7) What role does the inference engine play in an expert system?
a) It provides expert opinions
b) It processes the knowledge to derive conclusions or make decisions
c) It designs the user interface
d) All the Above

8) What are the components of an AI program?
a) Input and Output b) Data and Control
c) Knowledge and Inference d) Both a) & b)

9) What are the issues related to knowledge representation in AI?
a) Storage capacity b) Retrieval speed
c) Expressiveness and efficiency d) None of the Above

10) What is logic programming in AI?
a) Programming using symbolic logic
b) Programming using low-level machine instructions
c) Programming using only visual elements
d) All the Above

11) What is the role of control knowledge in AI systems?
a) Determining the input and output
b) Regulating the flow of the reasoning process
c) Managing the database
d) All the Above

12) Bayes' Theorem is used to:
a) Calculate probabilities based on prior knowledge and new evidence
b) Determine the certainty of an event
c) Find the absolute occurrence of an event
d) Both b) & c)

13) What does the Dempster-Shafer theorem provide a framework for?
a) Probability theory
b) Fuzzy logic
c) Reasoning with uncertainty and combining evidence
d) None of the Above

14) What are "Scripts" in the context of knowledge representation?
a) Computer programming code
b) Protocols or expected sequences of events in a particular situation
c) Statistical analysis tools
d) All the Above

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Seat No.		Set	Q

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
AI Application to Power System Management (BTN07717)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following **16**

a) Explain knowledge-based systems in different domains. Discuss the role of knowledge representation in these systems.
b) What is Artificial Intelligence? Give its Applications.
c) Define automatic pattern recognition and highlight its significance in various fields.
d) Discuss the importance of classifiers and their role in pattern recognition systems.
e) What is Feature Selection? What are Different Feature Selection Models explain any one.

Q.3 Solve any two of the following **12**

a) Explain Bayes' theorem and provide a real-world example where it can be applied.
b) Discuss the advantages and limitations of using means and covariance's for feature selection.
c) Explain the LMSE (Least Mean Square Error) algorithm for statistical classifier design.

Section – II

Q.4 Solve any four of the following. **16**

a) Explain how neural networks enhance the performance in these applications. Give two examples where ANN is used.
b) What is Neural Network? Give Applications of Artificial Neural Networks.
c) Describe the architecture of a multilayer neural network.
d) Define supervised learning in the context of artificial neural networks.
e) Explain Expert system development process.

Q.5 Solve any two of the following. **12**

a) Compare single layer and multilayer neural nets in Artificial Neural Network.
b) Discuss the role of expert system building tools and shells in the development of intelligent systems.
c) Explore the characteristics of rule-based systems. Discuss the advantage and limitations of using rule-based approaches in expert system design.

Seat No.	

Set **R**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
AI Application to Power System Management (BTN07717)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What is the primary advantage of using multilayer neural networks over single-layer networks?
a) Simplicity
b) Capability to handle complex relationships
c) Faster computation
d) None of the Above

2) What do Hopfield networks specialize in?
a) Forward reasoning b) Clustering data points
c) Handling supervised learning d) Both a) and c)

3) In supervised learning, what does the neural network have access to during training?
a) Labeled data b) Only input features
c) Only output labels d) None of the Above

4) What role does the inference engine play in an expert system?
a) It provides expert opinions
b) It processes the knowledge to derive conclusions or make decisions
c) It designs the user interface
d) All the Above

5) What are the components of an AI program?
a) Input and Output b) Data and Control
c) Knowledge and Inference d) Both a) & b)

6) What are the issues related to knowledge representation in AI?
a) Storage capacity b) Retrieval speed
c) Expressiveness and efficiency d) None of the Above

7) What is logic programming in AI?
a) Programming using symbolic logic
b) Programming using low-level machine instructions
c) Programming using only visual elements
d) All the Above

8) What is the role of control knowledge in Al systems?
a) Determining the input and output
b) Regulating the flow of the reasoning process
c) Managing the database
d) All the Above

9) Bayes' Theorem is used to:
a) Calculate probabilities based on prior knowledge and new evidence
b) Determine the certainty of an event
c) Find the absolute occurrence of an event
d) Both b) & c)

10) What does the Dempster-Shafer theorem provide a framework for?
a) Probability theory
b) Fuzzy logic
c) Reasoning with uncertainty and combining evidence
d) None of the Above

11) What are "Scripts" in the context of knowledge representation?
a) Computer programming code
b) Protocols or expected sequences of events in a particular situation
c) Statistical analysis tools
d) All the Above

12) What does an automatic pattern recognition scheme involve?
a) Manual input of patterns
b) Automated identification and classification of patterns
c) Ignoring patterns altogether
d) None of the Above

13) What is the purpose of statistical classifier design algorithms?
a) To introduce randomness in classification
b) To optimize the selection of features
c) To design algorithms for accurate pattern classification
d) All the Above

14) What does LMSE stand for in the context of statistical classifier design algorithms?
a) Least Mean Squared Error
b) Large Magnitude Standard Estimation
c) Linear Model for Statistical Evaluation
d) Lost Member Search Engine

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Seat No.		Set	R

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
AI Application to Power System Management (BTN07717)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following **16**

a) Explain knowledge-based systems in different domains. Discuss the role of knowledge representation in these systems.
b) What is Artificial Intelligence? Give its Applications.
c) Define automatic pattern recognition and highlight its significance in various fields.
d) Discuss the importance of classifiers and their role in pattern recognition systems.
e) What is Feature Selection? What are Different Feature Selection Models explain any one.

Q.3 Solve any two of the following **12**

a) Explain Bayes' theorem and provide a real-world example where it can be applied.
b) Discuss the advantages and limitations of using means and covariance's for feature selection.
c) Explain the LMSE (Least Mean Square Error) algorithm for statistical classifier design.

Section – II

Q.4 Solve any four of the following. **16**

a) Explain how neural networks enhance the performance in these applications. Give two examples where ANN is used.
b) What is Neural Network? Give Applications of Artificial Neural Networks.
c) Describe the architecture of a multilayer neural network.
d) Define supervised learning in the context of artificial neural networks.
e) Explain Expert system development process.

Q.5 Solve any two of the following. **12**

a) Compare single layer and multilayer neural nets in Artificial Neural Network.
b) Discuss the role of expert system building tools and shells in the development of intelligent systems.
c) Explore the characteristics of rule-based systems. Discuss the advantage and limitations of using rule-based approaches in expert system design.

Seat No.	

Set **S**

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
AI Application to Power System Management (BTN07717)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What does the Dempster-Shafer theorem provide a framework for?
a) Probability theory
b) Fuzzy logic
c) Reasoning with uncertainty and combining evidence
d) None of the Above

2) What are "Scripts" in the context of knowledge representation?
a) Computer programming code
b) Protocols or expected sequences of events in a particular situation
c) Statistical analysis tools
d) All the Above

3) What does an automatic pattern recognition scheme involve?
a) Manual input of patterns
b) Automated identification and classification of patterns
c) Ignoring patterns altogether
d) None of the Above

4) What is the purpose of statistical classifier design algorithms?
a) To introduce randomness in classification
b) To optimize the selection of features
c) To design algorithms for accurate pattern classification
d) All the Above

5) What does LMSE stand for in the context of statistical classifier design algorithms?
a) Least Mean Squared Error
b) Large Magnitude Standard Estimation
c) Linear Model for Statistical Evaluation
d) Lost Member Search Engine

6) What is the primary advantage of using multilayer neural networks over single-layer networks?
a) Simplicity
b) Capability to handle complex relationships
c) Faster computation
d) None of the Above

7) What do Hopfield networks specialize in?
a) Forward reasoning
b) Clustering data points
c) Handling supervised learning
d) Both a) and c)

8) In supervised learning, what does the neural network have access to during training?
a) Labeled data
b) Only input features
c) Only output labels
d) None of the Above

9) What role does the inference engine play in an expert system?
a) It provides expert opinions
b) It processes the knowledge to derive conclusions or make decisions
c) It designs the user interface
d) All the Above

10) What are the components of an Al program?
a) Input and Output
b) Data and Control
c) Knowledge and Inference
d) Both a) & b)

11) What are the issues related to knowledge representation in Al?
a) Storage capacity
b) Retrieval speed
c) Expressiveness and efficiency
d) None of the Above

12) What is logic programming in Al?
a) Programming using symbolic logic
b) Programming using low-level machine instructions
c) Programming using only visual elements
d) All the Above

13) What is the role of control knowledge in Al systems?
a) Determining the input and output
b) Regulating the flow of the reasoning process
c) Managing the database
d) All the Above

14) Bayes' Theorem is used to:
a) Calculate probabilities based on prior knowledge and new evidence
b) Determine the certainty of an event
c) Find the absolute occurrence of an event
d) Both b) & c)

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Seat No.		Set	S

Fourth. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Electrical Engineering
AI Application to Power System Management (BTN07717)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following **16**

a) Explain knowledge-based systems in different domains. Discuss the role of knowledge representation in these systems.
b) What is Artificial Intelligence? Give its Applications.
c) Define automatic pattern recognition and highlight its significance in various fields.
d) Discuss the importance of classifiers and their role in pattern recognition systems.
e) What is Feature Selection? What are Different Feature Selection Models explain any one.

Q.3 Solve any two of the following **12**

a) Explain Bayes' theorem and provide a real-world example where it can be applied.
b) Discuss the advantages and limitations of using means and covariance's for feature selection.
c) Explain the LMSE (Least Mean Square Error) algorithm for statistical classifier design.

Section – II

Q.4 Solve any four of the following. **16**

a) Explain how neural networks enhance the performance in these applications. Give two examples where ANN is used.
b) What is Neural Network? Give Applications of Artificial Neural Networks.
c) Describe the architecture of a multilayer neural network.
d) Define supervised learning in the context of artificial neural networks.
e) Explain Expert system development process.

Q.5 Solve any two of the following. **12**

a) Compare single layer and multilayer neural nets in Artificial Neural Network.
b) Discuss the role of expert system building tools and shells in the development of intelligent systems.
c) Explore the characteristics of rule-based systems. Discuss the advantage and limitations of using rule-based approaches in expert system design.

SLR-GF-515

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Deep Learning (BTN05713)

Day & Date: Thursday 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) All questions are compulsory.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What is a tensor in Tensor Flow _____.
a) A machine learning model
b) A type of data structure
c) A database management system
d) A programming language

2) What is the default data type of Tensor Flow tensors?
a) int64 b) float32
c) double d) int32

3) What is a placeholder in Tensor Flow?
a) A variable that holds the output of a neural network
b) A variable that holds the input data for a neural network
c) A variable that holds the weights of a neural network
d) A variable that holds the bias of a neural network

4) How many backend engines does Keras consist of?
a) 2 b) 3
c) 4 d) 9

5) What is the primary purpose of a Convolutional Neural Network (CNN)?
a) Object detection b) Image classification
c) Text generation d) Reinforcement learning

6) What is the purpose of the stride parameter in a convolutional layer?
a) To determine the size of the receptive field
b) To control the step size of the convolution operation
c) To adjust the learning rate during training
d) None of the above

7) What is the primary purpose of a Recurrent Neural Network (RNN)?
a) Image classification b) Text generation
c) Reinforcement learning d) Object detection

8) Which layer type is typically used to capture sequential dependencies in an RNN _____?

a) Input layer
b) Hidden layer
c) Output layer
d) Activation layer

9) What is the advantage of using recurrent layers in an RNN?

a) They can handle variable-length inputs
b) They can capture temporal dependencies in the input data
c) They can generate synthetic data
d) They can handle non-linear transformations

10) What is the purpose of the hidden state in an RNN?

a) To adjust the learning rate during training
b) To store the information from the previous time step
c) To compute the gradients for back propagation
d) None of the above

11) Which activation function is commonly used in the recurrent layers of an RNN?

a) ReLU (Rectified Linear Unit)
b) Tanh (Hyperbolic Tangent)
c) Sigmoid
d) Softmax

12) What is the purpose of the time step parameter in an RNN?

a) To determine the number of recurrent layers in the network
b) To specify the length of the input sequence
c) To adjust the learning rate during training
d) None of the above

13) Which of the following is a subset of machine learning?

a) Numpy
b) SciPy
c) Deep Learning
d) All of the above

14) The first layer in ANN is called the?

a) inner layer
b) outer layer
c) hidden layer
d) None of the above

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Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Deep Learning (BTN05713)

Day & Date: Thursday 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer Any Three **12**

a) What is Keras? List its features.
b) What is a feed-forward network? Illustrate.
c) What is Gradient based learning? Develop a mathematical model.
d) Illustrate the working of tensor flow environment.

Q.3 Answer Any One **08**

a) Develop a complete schema to illustrate the Back propagation Algorithm with its characteristics.
b) Illustrate the working of Gradient based Learning and the involvement of Deep Neural networks into it.

Q.4 Attempt the following **08**

Develop a Keras model? How is it installed? give detailed steps.

Section – II

Q.5 Attempt Any Three following **12**

a) What is the convolution principle? How is it applied to computer Vision tasks?
b) What are the types of auto encoders? Illustrate each.
c) Develop an environment to apply RNNs and LSTMs.
d) How Long Short Memory works?

Q.6 Answer Any One **08**

a) Illustrate how hyper tuning is done for Deep Neural Networks.
b) Demonstrate the use of pooling and Normalisation techniques to assist convolution.

Q.7 Attempt the following **08**

Illustrate different Recurrent Neural Network topologies.

Seat No.		Set	Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Deep Learning (BTN05713)

Day & Date: Thursday 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) All questions are compulsory.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which layer type is typically used to capture sequential dependencies in an RNN _____?
a) Input layer b) Hidden layer
c) Output layer d) Activation layer

2) What is the advantage of using recurrent layers in an RNN?
a) They can handle variable-length inputs
b) They can capture temporal dependencies in the input data
c) They can generate synthetic data
d) They can handle non-linear transformations

3) What is the purpose of the hidden state in an RNN?
a) To adjust the learning rate during training
b) To store the information from the previous time step
c) To compute the gradients for back propagation
d) None of the above

4) Which activation function is commonly used in the recurrent layers of an RNN?
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b) Tanh (Hyperbolic Tangent)
c) Sigmoid
d) Softmax

5) What is the purpose of the time step parameter in an RNN?
a) To determine the number of recurrent layers in the network
b) To specify the length of the input sequence
c) To adjust the learning rate during training
d) None of the above

6) Which of the following is a subset of machine learning?
a) Numpy b) SciPy
c) Deep Learning d) All of the above

7) The first layer in ANN is called the?
a) inner layer b) outer layer
c) hidden layer d) None of the above

8) What is a tensor in Tensor Flow _____.
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b) A type of data structure
c) A database management system
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9) What is the default data type of Tensor Flow tensors?
a) int64 b) float32
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d) A variable that holds the bias of a neural network

11) How many backend engines does Keras consist of?
a) 2 b) 3
c) 4 d) 9

12) What is the primary purpose of a Convolutional Neural Network (CNN)?
a) Object detection b) Image classification
c) Text generation d) Reinforcement learning

13) What is the purpose of the stride parameter in a convolutional layer?
a) To determine the size of the receptive field
b) To control the step size of the convolution operation
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d) None of the above

14) What is the primary purpose of a Recurrent Neural Network (RNN)?
a) Image classification b) Text generation
c) Reinforcement learning d) Object detection

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Deep Learning (BTN05713)

Day & Date: Thursday 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer Any Three **12**

a) What is Keras? List its features.
b) What is a feed-forward network? Illustrate.
c) What is Gradient based learning? Develop a mathematical model.
d) Illustrate the working of tensor flow environment.

Q.3 Answer Any One **08**

a) Develop a complete schema to illustrate the Back propagation Algorithm with its characteristics.
b) Illustrate the working of Gradient based Learning and the involvement of Deep Neural networks into it.

Q.4 Attempt the following **08**

Develop a Keras model? How is it installed? give detailed steps.

Section – II

Q.5 Attempt Any Three following **12**

a) What is the convolution principle? How is it applied to computer Vision tasks?
b) What are the types of auto encoders? Illustrate each.
c) Develop an environment to apply RNNs and LSTMs.
d) How Long Short Memory works?

Q.6 Answer Any One **08**

a) Illustrate how hyper tuning is done for Deep Neural Networks.
b) Demonstrate the use of pooling and Normalisation techniques to assist convolution.

Q.7 Attempt the following **08**

Illustrate different Recurrent Neural Network topologies.

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Seat No.		Set	R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Deep Learning (BTN05713)

Day & Date: Thursday 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) All questions are compulsory.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which activation function is commonly used in the recurrent layers of an RNN?
a) ReLU (Rectified Linear Unit)
b) Tanh (Hyperbolic Tangent)
c) Sigmoid
d) Softmax

2) What is the purpose of the time step parameter in an RNN?
a) To determine the number of recurrent layers in the network
b) To specify the length of the input sequence
c) To adjust the learning rate during training
d) None of the above

3) Which of the following is a subset of machine learning?
a) Numpy b) SciPy
c) Deep Learning d) All of the above

4) The first layer in ANN is called the?
a) inner layer b) outer layer
c) hidden layer d) None of the above

5) What is a tensor in Tensor Flow _____.
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b) A type of data structure
c) A database management system
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6) What is the default data type of Tensor Flow tensors?
a) int64 b) float32
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7) What is a placeholder in Tensor Flow?
a) A variable that holds the output of a neural network
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a) 2 b) 3
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9) What is the primary purpose of a Convolutional Neural Network (CNN)?
a) Object detection b) Image classification
c) Text generation d) Reinforcement learning

10) What is the purpose of the stride parameter in a convolutional layer?
a) To determine the size of the receptive field
b) To control the step size of the convolution operation
c) To adjust the learning rate during training
d) None of the above

11) What is the primary purpose of a Recurrent Neural Network (RNN)?
a) Image classification b) Text generation
c) Reinforcement learning d) Object detection

12) Which layer type is typically used to capture sequential dependencies in an RNN _____?
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c) Output layer d) Activation layer

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a) They can handle variable-length inputs
b) They can capture temporal dependencies in the input data
c) They can generate synthetic data
d) They can handle non-linear transformations

14) What is the purpose of the hidden state in an RNN?
a) To adjust the learning rate during training
b) To store the information from the previous time step
c) To compute the gradients for back propagation
d) None of the above

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Deep Learning (BTN05713)

Day & Date: Thursday 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer Any Three **12**

a) What is Keras? List its features.
b) What is a feed-forward network? Illustrate.
c) What is Gradient based learning? Develop a mathematical model.
d) Illustrate the working of tensor flow environment.

Q.3 Answer Any One **08**

a) Develop a complete schema to illustrate the Back propagation Algorithm with its characteristics.
b) Illustrate the working of Gradient based Learning and the involvement of Deep Neural networks into it.

Q.4 Attempt the following **08**

Develop a Keras model? How is it installed? give detailed steps.

Section – II

Q.5 Attempt Any Three following **12**

a) What is the convolution principle? How is it applied to computer Vision tasks?
b) What are the types of auto encoders? Illustrate each.
c) Develop an environment to apply RNNs and LSTMs.
d) How Long Short Memory works?

Q.6 Answer Any One **08**

a) Illustrate how hyper tuning is done for Deep Neural Networks.
b) Demonstrate the use of pooling and Normalisation techniques to assist convolution.

Q.7 Attempt the following **08**

Illustrate different Recurrent Neural Network topologies.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Deep Learning (BTN05713)

Day & Date: Thursday 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.
5) All questions are compulsory.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) What is the purpose of the stride parameter in a convolutional layer?
a) To determine the size of the receptive field
b) To control the step size of the convolution operation
c) To adjust the learning rate during training
d) None of the above

2) What is the primary purpose of a Recurrent Neural Network (RNN)?
a) Image classification b) Text generation
c) Reinforcement learning d) Object detection

3) Which layer type is typically used to capture sequential dependencies in an RNN _____?
a) Input layer b) Hidden layer
c) Output layer d) Activation layer

4) What is the advantage of using recurrent layers in an RNN?
a) They can handle variable-length inputs
b) They can capture temporal dependencies in the input data
c) They can generate synthetic data
d) They can handle non-linear transformations

5) What is the purpose of the hidden state in an RNN?
a) To adjust the learning rate during training
b) To store the information from the previous time step
c) To compute the gradients for back propagation
d) None of the above

6) Which activation function is commonly used in the recurrent layers of an RNN?
a) ReLU (Rectified Linear Unit)
b) Tanh (Hyperbolic Tangent)
c) Sigmoid
d) Softmax

7) What is the purpose of the time step parameter in an RNN?

a) To determine the number of recurrent layers in the network
b) To specify the length of the input sequence
c) To adjust the learning rate during training
d) None of the above

8) Which of the following is a subset of machine learning?

a) Numpy b) SciPy
c) Deep Learning d) All of the above

9) The first layer in ANN is called the?

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c) hidden layer d) None of the above

10) What is a tensor in Tensor Flow _____.

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b) A type of data structure
c) A database management system
d) A programming language

11) What is the default data type of Tensor Flow tensors?

a) int64 b) float32
c) double d) int32

12) What is a placeholder in Tensor Flow?

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b) A variable that holds the input data for a neural network
c) A variable that holds the weights of a neural network
d) A variable that holds the bias of a neural network

13) How many backend engines does Keras consist of?

a) 2 b) 3
c) 4 d) 9

14) What is the primary purpose of a Convolutional Neural Network (CNN)?

a) Object detection b) Image classification
c) Text generation d) Reinforcement learning

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Deep Learning (BTN05713)

Day & Date: Thursday 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer Any Three **12**

a) What is Keras? List its features.
b) What is a feed-forward network? Illustrate.
c) What is Gradient based learning? Develop a mathematical model.
d) Illustrate the working of tensor flow environment.

Q.3 Answer Any One **08**

a) Develop a complete schema to illustrate the Back propagation Algorithm with its characteristics.
b) Illustrate the working of Gradient based Learning and the involvement of Deep Neural networks into it.

Q.4 Attempt the following **08**

Develop a Keras model? How is it installed? give detailed steps.

Section – II

Q.5 Attempt Any Three following **12**

a) What is the convolution principle? How is it applied to computer Vision tasks?
b) What are the types of auto encoders? Illustrate each.
c) Develop an environment to apply RNNs and LSTMs.
d) How Long Short Memory works?

Q.6 Answer Any One **08**

a) Illustrate how hyper tuning is done for Deep Neural Networks.
b) Demonstrate the use of pooling and Normalisation techniques to assist convolution.

Q.7 Attempt the following **08**

Illustrate different Recurrent Neural Network topologies.

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Predictive Analytics (BTN05715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ analysis is best suited for large datasets.
a) data driven b) user driven
c) system driven d) none of these

2) _____ is the process of refining that data resource, using business knowledge to extract hidden value from those newly discovered patterns.
a) Data Mining b) Predicative Analytics
c) Machine Learning d) Business Intelligence

3) _____ shall set clear metrics - ways to quantify and measure the outcome of the project.
a) Data Analyst b) Domain Expert
c) Data Engineer d) Mathematician

4) The rate at which data being generated, delivered and captured is called ____.
a) Data Variety b) Data Velocity
c) Data Value d) Data Veracity

5) _____ search is based on contextual meaning of search terms as they appear in the searchable data space.
a) keyword based b) semantic based
c) contextual search d) all of the above

6) Zip code is an example of _____ attribute.
a) nominal b) ordinal
c) interval d) continuous

7) For clustering, we do not require _____.
a) Labeled data b) Unlabeled data
c) Numerical data d) Categorical data

8) Which of the following method can be used to combine different classifiers?
a) Model stacking b) Model combining
c) Model structuring d) Model Ensembling

9) Amongst which of the following is the types of predictive analytics techniques.
a) Predictive models b) Descriptive models
c) Decision models d) All of the mentioned above

10) Which of the following is not a type of decision tree node?
a) Root node b) Leaf node
c) Decision node d) Branch node

11) Which of the following is a clustering algorithm?
a) Linear regression b) K-means
c) Random forest d) Support vector machine

12) The process of ____ involves spotting missing values, duplicate records, and outliers.
a) Data Preprocessing b) Data Visualization
c) Data Analysis d) Data Modeling

13) The nucleus that makes sense out of big data is called _____.
a) Big Data centre b) smart data
c) Noise d) sensible data

14) In flocking bird data representation, _____ rules means flock mates move in the same average direction as their neighbors.
a) separation b) alignment
c) cohesion d) none of these

SLR-GF-516

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Predictive Analytics (BTN05715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**
- **a)** Explain Item based collaborative filtering.
- **b)** Explain properties of big data.
- **c)** Explain semantic based search.
- **d)** How predictive analytics will empower any organization?

Q.3 Attempt the following (Any One) **08**
- **a)** Explain different ways of generating predictive analytics.
- **b)** Explain data visualizations: Tabular, word cloud, flocking birds, graph charts

Q.4 Compare following data types based on various characteristics. **08**
- **a)** Structured and unstructured data
- **b)** Static and streamed data
- **c)** Attitudinal and Behavioral data

Section – II

Q.5 Attempt the following (Any Three) **12**
- **a)** Explain density-based algorithm.
- **b)** Explain data classification and data clustering with example.
- **c)** Explain rapid prototyping.
- **d)** Explain working of flock by leader algorithm.

Q.6 Attempt the following (Any One) **08**
- **a)** Find Association Rules using apriori algorithm with minimum support 50% and minimum confidence of 60%.

Transaction	List of items
T1	I1, I2, I3
T2	I2, I3, I4
T3	I4,I5
T4	I1, I2, I4
T5	I1, I2, I3, I5
T6	I1, I2, I3, I4

- **b)** Explain Support Vector Machine classification algorithm and ensemble model.

Q.7 Consider following dataset. **08**

For given instance X= (single parent, young, High), whether person will buy the car. Find out the prediction using Naïve bays algorithm?

Type of family structure	Age group	Income status	Will they buy a car?
Nuclear	Young	Low	Yes
Extended	Old	Low	No
Childless	Middle- aged	Low	No
Childless	Young	Medium	Yes
Single parent	Middle- aged	Medium	Yes
Childless	Young	Low	No
Nuclear	Old	High	Yes
Nuclear	Middle- aged	Medium	Yes
Extended	Middle- aged	High	Yes
Single parent	Old	Low	No

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Predictive Analytics (BTN05715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Predictive Analytics (BTN05715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt the following (Any Three) **12**
- **a)** Explain Item based collaborative filtering.
- **b)** Explain properties of big data.
- **c)** Explain semantic based search.
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- **c)** Attitudinal and Behavioral data

Section – II

Q.5 Attempt the following (Any Three) **12**
- **a)** Explain density-based algorithm.
- **b)** Explain data classification and data clustering with example.
- **c)** Explain rapid prototyping.
- **d)** Explain working of flock by leader algorithm.

Q.6 Attempt the following (Any One) **08**
- **a)** Find Association Rules using apriori algorithm with minimum support 50% and minimum confidence of 60%.

Transaction	List of items
T1	I1, I2, I3
T2	I2, I3, I4
T3	I4,I5
T4	I1, I2, I4
T5	I1, I2, I3, I5
T6	I1, I2, I3, I4

- **b)** Explain Support Vector Machine classification algorithm and ensemble model.

Q.7 Consider following dataset. **08**

For given instance X= (single parent, young, High), whether person will buy the car. Find out the prediction using Naïve bays algorithm?

Type of family structure	Age group	Income status	Will they buy a car?
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Extended	Old	Low	No
Childless	Middle- aged	Low	No
Childless	Young	Medium	Yes
Single parent	Middle- aged	Medium	Yes
Childless	Young	Low	No
Nuclear	Old	High	Yes
Nuclear	Middle- aged	Medium	Yes
Extended	Middle- aged	High	Yes
Single parent	Old	Low	No

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Predictive Analytics (BTN05715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is a clustering algorithm?
a) Linear regression b) K-means
c) Random forest d) Support vector machine

2) The process of ____ involves spotting missing values, duplicate records, and outliers.
a) Data Preprocessing b) Data Visualization
c) Data Analysis d) Data Modeling

3) The nucleus that makes sense out of big data is called _____.
a) Big Data centre b) smart data
c) Noise d) sensible data

4) In flocking bird data representation, _____ rules means flock mates move in the same average direction as their neighbors.
a) separation b) alignment
c) cohesion d) none of these

5) _____ analysis is best suited for large datasets.
a) data driven b) user driven
c) system driven d) none of these

6) _____ is the process of refining that data resource, using business knowledge to extract hidden value from those newly discovered patterns.
a) Data Mining b) Predicative Analytics
c) Machine Learning d) Business Intelligence

7) _____ shall set clear metrics - ways to quantify and measure the outcome of the project.
a) Data Analyst b) Domain Expert
c) Data Engineer d) Mathematician

8) The rate at which data being generated, delivered and captured is called ____.
a) Data Variety b) Data Velocity
c) Data Value d) Data Veracity

9) _____ search is based on contextual meaning of search terms as they appear in the searchable data space.
a) keyword based b) semantic based
c) contextual search d) all of the above

10) Zip code is an example of _____ attribute.
a) nominal b) ordinal
c) interval d) continuous

11) For clustering, we do not require _____.
a) Labeled data b) Unlabeled data
c) Numerical data d) Categorical data

12) Which of the following method can be used to combine different classifiers?
a) Model stacking b) Model combining
c) Model structuring d) Model Ensembling

13) Amongst which of the following is the types of predictive analytics techniques.
a) Predictive models b) Descriptive models
c) Decision models d) All of the mentioned above

14) Which of the following is not a type of decision tree node?
a) Root node b) Leaf node
c) Decision node d) Branch node

SLR-GF-516

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Predictive Analytics (BTN05715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**
- **a)** Explain Item based collaborative filtering.
- **b)** Explain properties of big data.
- **c)** Explain semantic based search.
- **d)** How predictive analytics will empower any organization?

Q.3 Attempt the following (Any One) **08**
- **a)** Explain different ways of generating predictive analytics.
- **b)** Explain data visualizations: Tabular, word cloud, flocking birds, graph charts

Q.4 Compare following data types based on various characteristics. **08**
- **a)** Structured and unstructured data
- **b)** Static and streamed data
- **c)** Attitudinal and Behavioral data

Section – II

Q.5 Attempt the following (Any Three) **12**
- **a)** Explain density-based algorithm.
- **b)** Explain data classification and data clustering with example.
- **c)** Explain rapid prototyping.
- **d)** Explain working of flock by leader algorithm.

Q.6 Attempt the following (Any One) **08**
- **a)** Find Association Rules using apriori algorithm with minimum support 50% and minimum confidence of 60%.

Transaction	List of items
T1	I1, I2, I3
T2	I2, I3, I4
T3	I4,I5
T4	I1, I2, I4
T5	I1, I2, I3, I5
T6	I1, I2, I3, I4

- **b)** Explain Support Vector Machine classification algorithm and ensemble model.

Q.7 Consider following dataset. **08**

For given instance X= (single parent, young, High), whether person will buy the car. Find out the prediction using Naïve bays algorithm?

Type of family structure	Age group	Income status	Will they buy a car?
Nuclear	Young	Low	Yes
Extended	Old	Low	No
Childless	Middle- aged	Low	No
Childless	Young	Medium	Yes
Single parent	Middle- aged	Medium	Yes
Childless	Young	Low	No
Nuclear	Old	High	Yes
Nuclear	Middle- aged	Medium	Yes
Extended	Middle- aged	High	Yes
Single parent	Old	Low	No

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Predictive Analytics (BTN05715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Zip code is an example of _____ attribute.
a) nominal b) ordinal
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2) For clustering, we do not require _____.
a) Labeled data b) Unlabeled data
c) Numerical data d) Categorical data

3) Which of the following method can be used to combine different classifiers?
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5) Which of the following is not a type of decision tree node?
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c) Data Value d) Data Veracity

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c) contextual search d) all of the above

SLR-GF-516

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Predictive Analytics (BTN05715)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**
- **a)** Explain Item based collaborative filtering.
- **b)** Explain properties of big data.
- **c)** Explain semantic based search.
- **d)** How predictive analytics will empower any organization?

Q.3 Attempt the following (Any One) **08**
- **a)** Explain different ways of generating predictive analytics.
- **b)** Explain data visualizations: Tabular, word cloud, flocking birds, graph charts

Q.4 Compare following data types based on various characteristics. **08**
- **a)** Structured and unstructured data
- **b)** Static and streamed data
- **c)** Attitudinal and Behavioral data

Section – II

Q.5 Attempt the following (Any Three) **12**
- **a)** Explain density-based algorithm.
- **b)** Explain data classification and data clustering with example.
- **c)** Explain rapid prototyping.
- **d)** Explain working of flock by leader algorithm.

Q.6 Attempt the following (Any One) **08**
- **a)** Find Association Rules using apriori algorithm with minimum support 50% and minimum confidence of 60%.

Transaction	List of items
T1	I1, I2, I3
T2	I2, I3, I4
T3	I4,I5
T4	I1, I2, I4
T5	I1, I2, I3, I5
T6	I1, I2, I3, I4

- **b)** Explain Support Vector Machine classification algorithm and ensemble model.

Q.7 Consider following dataset. **08**

For given instance X= (single parent, young, High), whether person will buy the car. Find out the prediction using Naïve bays algorithm?

Type of family structure	Age group	Income status	Will they buy a car?
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Extended	Old	Low	No
Childless	Middle- aged	Low	No
Childless	Young	Medium	Yes
Single parent	Middle- aged	Medium	Yes
Childless	Young	Low	No
Nuclear	Old	High	Yes
Nuclear	Middle- aged	Medium	Yes
Extended	Middle- aged	High	Yes
Single parent	Old	Low	No

SLR-GF-518

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Sunday, 07-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) In the JSON syntax, data is in _____ pairs?
a) class/object b) name/value
c) datatype/variable d) value/=

2) Which of the following is correct about JavaScript?
a) JavaScript is an Object-Based language
b) JavaScript is Assembly-language
c) JavaScript is an Object-Oriented language
d) JavaScript is a High-level language

3) Which of the following number object function returns the value of the number in Java Script?
a) toString() b) valueOf()
c) toLocaleString() d) toPrecision()

4) Which of the following CSS property is used to set the background image of an element?
a) background-attachment b) background-image
c) background-color d) None of these

5) What does ES6 stand for?
a) ECMAScript 6 b) ECMA6
c) ECMAJavaScript 6 d) EJavaScript 6

6) Which of the following number object function returns the value of the number in Java Script?
a) toString() b) valueOf()
c) toLocaleString() d) toPrecision()

7) What is a CSS selector?

a) A CSS selector is the CSS class name
b) A CSS selector is the set of properties that are going to be applied on HTML elements
c) A CSS selector is name of CSS file.
d) A CSS selector is the first part of a CSS Rule. It may an HTML element or pattern of elements

8) Which of the following tags is used to create a combo box (or drop-down box)?

a) <list>
b) <select>
c) <input type = "dropdown">
d)

9) Which of the following is the correct way to create a function in PHP?

a) Create myFunction()
b) New_function myFunction()
c) function myFunction()
d) None of the above

10) Which of the following variables takes precedence over the others if the names are the same?

a) Global variable
b) The local element
c) The two of the above
d) None of the above

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Sunday, 07-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Attempt any 4 questions from Question no 2 to Question no 7.

Q.2 **Write short notes.** **10**
a) What are some of the Key new features of HTML5?
b) Differences between GET and POST methods?

Q.3 Explain CSS and its types with examples. **10**

Q.4 What is JavaScript Array, explain JavaScript Objects in Arrays & Arrays in Objects. **10**

Q.5 Explain JSON and how the JSON Data Transfer Between Client and Server **10**

Q.6 Explain JQuery Selectors with examples. **10**

Q.7 **Write short notes.** **10**
a) Explain Bootstrap and components.
b) What are the different types of variables present in PHP and What are the rules for naming a PHP variable?

Seat No.	

Set **Q**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Sunday, 07-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. **10**

1) Which of the following number object function returns the value of the number in Java Script?
a) toString() b) valueOf()
c) toLocaleString() d) toPrecision()

2) What is a CSS selector?
a) A CSS selector is the CSS class name
b) A CSS selector is the set of properties that are going to be applied on HTML elements
c) A CSS selector is name of CSS file.
d) A CSS selector is the first part of a CSS Rule. It may an HTML element or pattern of elements

3) Which of the following tags is used to create a combo box (or drop-down box)?
a) <list> b) <select>
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4) Which of the following is the correct way to create a function in PHP?
a) Create myFunction() b) New_function myFunction()
c) function myFunction() d) None of the above

5) Which of the following variables takes precedence over the others if the names are the same?
a) Global variable b) The local element
c) The two of the above d) None of the above

6) In the JSON syntax, data is in _____ pairs?
a) class/object b) name/value
c) datatype/variable d) value/=

7) Which of the following is correct about JavaScript?
a) JavaScript is an Object-Based language
b) JavaScript is Assembly-language
c) JavaScript is an Object-Oriented language
d) JavaScript is a High-level language

8) Which of the following number object function returns the value of the number in Java Script?

a) toString()
b) valueOf()
c) toLocaleString()
d) toPrecision()

9) Which of the following CSS property is used to set the background image of an element?

a) background-attachment
b) background-image
c) background-color
d) None of these

10) What does ES6 stand for?

a) ECMAScript 6
b) ECMA6
c) ECMAJavaScript 6
d) EJavaScript 6

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Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Sunday, 07-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Attempt any 4 questions from Question no 2 to Question no 7.

Q.2 **Write short notes.** **10**
a) What are some of the Key new features of HTML5?
b) Differences between GET and POST methods?

Q.3 Explain CSS and its types with examples. **10**

Q.4 What is JavaScript Array, explain JavaScript Objects in Arrays & Arrays in Objects. **10**

Q.5 Explain JSON and how the JSON Data Transfer Between Client and Server **10**

Q.6 Explain JQuery Selectors with examples. **10**

Q.7 **Write short notes.** **10**
a) Explain Bootstrap and components.
b) What are the different types of variables present in PHP and What are the rules for naming a PHP variable?

Seat No.	

Set **R**

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Sunday, 07-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. **10**

1) Which of the following is the correct way to create a function in PHP?
a) Create myFunction() b) New_function myFunction()
c) function myFunction() d) None of the above

2) Which of the following variables takes precedence over the others if the names are the same?
a) Global variable b) The local element
c) The two of the above d) None of the above

3) In the JSON syntax, data is in _____ pairs?
a) class/object b) name/value
c) datatype/variable d) value/=

4) Which of the following is correct about JavaScript?
a) JavaScript is an Object-Based language
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d) JavaScript is a High-level language

5) Which of the following number object function returns the value of the number in Java Script?
a) toString() b) valueOf()
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a) ECMAScript 6 b) ECMA6
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b) A CSS selector is the set of properties that are going to be applied on HTML elements
c) A CSS selector is name of CSS file.
d) A CSS selector is the first part of a CSS Rule. It may an HTML element or pattern of elements

10) Which of the following tags is used to create a combo box (or drop-down box)?

a) <list> b) <select>
c) <input type = "dropdown"> d)

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Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Sunday, 07-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Attempt any 4 questions from Question no 2 to Question no 7.

Q.2 **Write short notes.** **10**
a) What are some of the Key new features of HTML5?
b) Differences between GET and POST methods?

Q.3 Explain CSS and its types with examples. **10**

Q.4 What is JavaScript Array, explain JavaScript Objects in Arrays & Arrays in Objects. **10**

Q.5 Explain JSON and how the JSON Data Transfer Between Client and Server **10**

Q.6 Explain JQuery Selectors with examples. **10**

Q.7 **Write short notes.** **10**
a) Explain Bootstrap and components.
b) What are the different types of variables present in PHP and What are the rules for naming a PHP variable?

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Sunday, 07-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 20 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
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MCQ/Objective Type Questions

Duration: 20 Minutes Marks:10

Q.1 Choose the correct alternatives from the given options. 10

1) Which of the following number object function returns the value of the number in Java Script?
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a) class/object
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10) Which of the following is correct about JavaScript?

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SLR-GF-518

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
UI/UX Technology (BTN03719)

Day & Date: Sunday, 07-01-2024 Max. Marks: 40
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Attempt any 4 questions from Question no 2 to Question no 7.

Q.2 **Write short notes.** **10**
a) What are some of the Key new features of HTML5?
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Q.3 Explain CSS and its types with examples. **10**

Q.4 What is JavaScript Array, explain JavaScript Objects in Arrays & Arrays in Objects. **10**

Q.5 Explain JSON and how the JSON Data Transfer Between Client and Server **10**

Q.6 Explain JQuery Selectors with examples. **10**

Q.7 **Write short notes.** **10**
a) Explain Bootstrap and components.
b) What are the different types of variables present in PHP and What are the rules for naming a PHP variable?

SLR-GF-519

Seat No.	

Set P

Fourth. Y. (B. Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Software Licences and Practices (BTN03720)

Day & Date: Sunday, 07-01-2024 Max. Marks: 50
Time: 10:00 AM To 12:00 PM

Instructions: 1) All questions are compulsory
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Q.1 Attempt any five of the following. **30**

a) Differentiate between Copyright and Patent.
b) Explain GNU - General Public Licensing
c) Write a short note on the MIT License
d) Describe the characteristics of Open Source Definition in Content of
i) Free Distribution
ii) Source Code
e) Briefly describe the concept of contract and copyright
f) Write a short note on Classic Proprietary License

Q.2 Attempt any two of the following. **20**

a) What are the negative effects of Open Source and Free Software Licensing? Provide relevant example
b) Compare between Proprietary and Non-Proprietary Licenses. Exemplify each difference with proper example.
c) Discuss the legal impacts of Open Source and Free Software Licensing giving relevant examples.

SLR-GF-521

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI Applications (BTN04710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Artificial Intelligence is about _____.
a) Playing a game on Computer
b) Making a machine Intelligent
c) Programming on Machine with your own Intelligence
d) Putting your intelligence in Machine.

2) The main tasks of an AI agent are _____.
a) Input and Output
b) Moment and Humanly Actions
c) Perceiving, thinking, and acting on the environment
d) None of the above

3) The main function of problem-solving agent is to _____
a) Solve the given problem and reach the goal
b) Find out which sequence of action will get it to the goal state.
c) Both a & b
d) None of these

4) The component of an Expert system is _____.
a) Knowledge Base b) Inference Engine
c) User interface d) All of these

5) The inference engine works on _____.
a) Forward Chaining b) Backward Chaining
c) Both A and B d) None of these

6) Web Crawler is an example of _____.
a) Intelligent Agent b) Problem-solving Agent
c) Simple reflex Agent d) Model-based Agent

7) Which of the given statement is true for Conditional Probability?
a) Conditional Probability gives 100% accurate results.
b) Conditional Probability can be applied to a single event.
c) Conditional Probability has no effect or relevance on independent events.
d) None of the above.

8) If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the _____.
a) Mobile b) Non-Servo
c) Open Loop d) Intelligent

9) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihood d) All of these

10) Who is known as the -Father of Al"?
a) Fisher Ada b) Alan Turing
c) John McCarthy d) Allen Newell

11) Which term describes the common-sense of the judgmental part of problem-solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

12) An Al agent perceives and acts upon the environment using ____.
a) Sensors b) Perceiver
c) Actuators d) Both A and C

13) Which Al technique enables the computers to understand the associations and relationships between objects and events?
a) Heuristic Processing b) Cognitive Science
c) Relative Symbolism d) Pattern Matching

14) A technique that was developed to determine whether a machine could or could not demonstrate the artificial intelligence known as the ____.
a) Boolean Algebra b) Turing Test
c) Logarithm d) Algorithm

SLR-GF-521

Seat No.		Set	P

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI Applications (BTN04710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four **16**

a) State & Explain different types of Intelligent Agents.
b) Explain the various Branches of AI in brief.
c) Explain Man Vs Computers in brief.
d) Explain the Visual perception in AI in brief.
e) Explain the Pattern Recognition in brief.

Q.3 Solve Any Two **12**

a) Explain the major components of Intelligent System.
b) Explain the Knowledge, acquisition, Expert system tools in brief.
c) Explain the Basic architecture of an Expert system

Section – II

Q.4 Solve Any Four **16**

a) Explain the Language Models of NLP in brief.
b) Explain the Planning Uncertain in Robotics.
c) Explain the Augmented Grammars and Semantic in brief.
d) Discuss the Robotic Perception in brief.
e) Explain the Passive Reinforcement Learning in brief.

Q.5 Solve Any Two. **12**

a) Explain the Speech Recognition and Machine Translation in NLP in detail.
b) Explain the Robotic Software Architectures in brief.
c) Explain the Applications of Reinforcement Learning in brief.

Seat No.	

Set **Q**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI Applications (BTN04710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the _____.
a) Mobile b) Non-Servo
c) Open Loop d) Intelligent

2) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihood d) All of these

3) Who is known as the -Father of Al"?
a) Fisher Ada b) Alan Turing
c) John McCarthy d) Allen Newell

4) Which term describes the common-sense of the judgmental part of problem-solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

5) An Al agent perceives and acts upon the environment using ____.
a) Sensors b) Perceiver
c) Actuators d) Both A and C

6) Which Al technique enables the computers to understand the associations and relationships between objects and events?
a) Heuristic Processing b) Cognitive Science
c) Relative Symbolism d) Pattern Matching

7) A technique that was developed to determine whether a machine could or could not demonstrate the artificial intelligence known as the ____.
a) Boolean Algebra b) Turing Test
c) Logarithm d) Algorithm

8) Artificial Intelligence is about _____.
   a) Playing a game on Computer
   b) Making a machine Intelligent
   c) Programming on Machine with your own Intelligence
   d) Putting your intelligence in Machine.

9) The main tasks of an AI agent are _____.
   a) Input and Output
   b) Moment and Humanly Actions
   c) Perceiving, thinking, and acting on the environment
   d) None of the above

10) The main function of problem-solving agent is to _____
   a) Solve the given problem and reach the goal
   b) Find out which sequence of action will get it to the goal state.
   c) Both a & b
   d) None of these

11) The component of an Expert system is _____.
   a) Knowledge Base b) Inference Engine
   c) User interface d) All of these

12) The inference engine works on _____.
   a) Forward Chaining b) Backward Chaining
   c) Both A and B d) None of these

13) Web Crawler is an example of _____.
   a) Intelligent Agent b) Problem-solving Agent
   c) Simple reflex Agent d) Model-based Agent

14) Which of the given statement is true for Conditional Probability?
   a) Conditional Probability gives 100% accurate results.
   b) Conditional Probability can be applied to a single event.
   c) Conditional Probability has no effect or relevance on independent events.
   d) None of the above.

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Seat No.	

Set Q

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI Applications (BTN04710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four **16**

a) State & Explain different types of Intelligent Agents.
b) Explain the various Branches of AI in brief.
c) Explain Man Vs Computers in brief.
d) Explain the Visual perception in AI in brief.
e) Explain the Pattern Recognition in brief.

Q.3 Solve Any Two **12**

a) Explain the major components of Intelligent System.
b) Explain the Knowledge, acquisition, Expert system tools in brief.
c) Explain the Basic architecture of an Expert system

Section – II

Q.4 Solve Any Four **16**

a) Explain the Language Models of NLP in brief.
b) Explain the Planning Uncertain in Robotics.
c) Explain the Augmented Grammars and Semantic in brief.
d) Discuss the Robotic Perception in brief.
e) Explain the Passive Reinforcement Learning in brief.

Q.5 Solve Any Two. **12**

a) Explain the Speech Recognition and Machine Translation in NLP in detail.
b) Explain the Robotic Software Architectures in brief.
c) Explain the Applications of Reinforcement Learning in brief.

Seat No.	

Set **R**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI Applications (BTN04710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which term describes the common-sense of the judgmental part of problem-solving?
a) Values-based b) Critical
c) Analytical d) Heuristic

2) An AI agent perceives and acts upon the environment using ____.
a) Sensors b) Perceiver
c) Actuators d) Both A and C

3) Which AI technique enables the computers to understand the associations and relationships between objects and events?
a) Heuristic Processing b) Cognitive Science
c) Relative Symbolism d) Pattern Matching

4) A technique that was developed to determine whether a machine could or could not demonstrate the artificial intelligence known as the ____.
a) Boolean Algebra b) Turing Test
c) Logarithm d) Algorithm

5) Artificial Intelligence is about _____.
a) Playing a game on Computer
b) Making a machine Intelligent
c) Programming on Machine with your own Intelligence
d) Putting your intelligence in Machine.

6) The main tasks of an AI agent are _____.
a) Input and Output
b) Moment and Humanly Actions
c) Perceiving, thinking, and acting on the environment
d) None of the above

7) The main function of problem-solving agent is to _____
a) Solve the given problem and reach the goal
b) Find out which sequence of action will get it to the goal state.
c) Both a & b
d) None of these

8) The component of an Expert system is _____.
a) Knowledge Base b) Inference Engine
c) User interface d) All of these

9) The inference engine works on _____.
a) Forward Chaining b) Backward Chaining
c) Both A and B d) None of these

10) Web Crawler is an example of _____.
a) Intelligent Agent b) Problem-solving Agent
c) Simple reflex Agent d) Model-based Agent

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b) Conditional Probability can be applied to a single event.
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d) None of the above.

12) If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the _____.
a) Mobile b) Non-Servo
c) Open Loop d) Intelligent

13) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihood d) All of these

14) Who is known as the -Father of Al"?
a) Fisher Ada b) Alan Turing
c) John McCarthy d) Allen Newell

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Seat No.	

Set R

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI Applications (BTN04710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four **16**

a) State & Explain different types of Intelligent Agents.
b) Explain the various Branches of AI in brief.
c) Explain Man Vs Computers in brief.
d) Explain the Visual perception in AI in brief.
e) Explain the Pattern Recognition in brief.

Q.3 Solve Any Two **12**

a) Explain the major components of Intelligent System.
b) Explain the Knowledge, acquisition, Expert system tools in brief.
c) Explain the Basic architecture of an Expert system

Section – II

Q.4 Solve Any Four **16**

a) Explain the Language Models of NLP in brief.
b) Explain the Planning Uncertain in Robotics.
c) Explain the Augmented Grammars and Semantic in brief.
d) Discuss the Robotic Perception in brief.
e) Explain the Passive Reinforcement Learning in brief.

Q.5 Solve Any Two. **12**

a) Explain the Speech Recognition and Machine Translation in NLP in detail.
b) Explain the Robotic Software Architectures in brief.
c) Explain the Applications of Reinforcement Learning in brief.

Seat No.	

Set **S**

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI Applications (BTN04710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Web Crawler is an example of _____.
a) Intelligent Agent b) Problem-solving Agent
c) Simple reflex Agent d) Model-based Agent

2) Which of the given statement is true for Conditional Probability?
a) Conditional Probability gives 100% accurate results.
b) Conditional Probability can be applied to a single event.
c) Conditional Probability has no effect or relevance on independent events.
d) None of the above.

3) If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the _____.
a) Mobile b) Non-Servo
c) Open Loop d) Intelligent

4) The probabilistic reasoning depends upon _____.
a) Estimation b) Observations
c) Likelihood d) All of these

5) Who is known as the -Father of Al"?
a) Fisher Ada b) Alan Turing
c) John McCarthy d) Allen Newell

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a) Values-based b) Critical
c) Analytical d) Heuristic

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c) Actuators d) Both A and C

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a) Heuristic Processing b) Cognitive Science
c) Relative Symbolism d) Pattern Matching

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c) Logarithm d) Algorithm

10) Artificial Intelligence is about _____.

a) Playing a game on Computer
b) Making a machine Intelligent
c) Programming on Machine with your own Intelligence
d) Putting your intelligence in Machine.

11) The main tasks of an Al agent are _____.

a) Input and Output
b) Moment and Humanly Actions
c) Perceiving, thinking, and acting on the environment
d) None of the above

12) The main function of problem-solving agent is to _____

a) Solve the given problem and reach the goal
b) Find out which sequence of action will get it to the goal state.
c) Both a & b
d) None of these

13) The component of an Expert system is _____.

a) Knowledge Base b) Inference Engine
c) User interface d) All of these

14) The inference engine works on _____.

a) Forward Chaining b) Backward Chaining
c) Both A and B d) None of these

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Seat No.		Set	S

Fourth Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
AI Applications (BTN04710)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve Any Four **16**

a) State & Explain different types of Intelligent Agents.
b) Explain the various Branches of AI in brief.
c) Explain Man Vs Computers in brief.
d) Explain the Visual perception in AI in brief.
e) Explain the Pattern Recognition in brief.

Q.3 Solve Any Two **12**

a) Explain the major components of Intelligent System.
b) Explain the Knowledge, acquisition, Expert system tools in brief.
c) Explain the Basic architecture of an Expert system

Section – II

Q.4 Solve Any Four **16**

a) Explain the Language Models of NLP in brief.
b) Explain the Planning Uncertain in Robotics.
c) Explain the Augmented Grammars and Semantic in brief.
d) Discuss the Robotic Perception in brief.
e) Explain the Passive Reinforcement Learning in brief.

Q.5 Solve Any Two. **12**

a) Explain the Speech Recognition and Machine Translation in NLP in detail.
b) Explain the Robotic Software Architectures in brief.
c) Explain the Applications of Reinforcement Learning in brief.

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science- Business Intelligence (BTN04712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is a broad category of applications and technologies for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions.
a) Data Mart b) Data mining
c) Business intelligence d) Artificial intelligence

2) _____ is a system where operations like data extraction, transformation and loading operations are executed.
a) Data staging b) Data integration
c) ETL d) Data mart

3) A _____ can be considered as a functional or departmental data warehouse of a smaller size and a more specific type than the overall company data warehouse.
a) Warehouse b) Database
c) Data mart d) Data Table

4) _____ is the outcome of extraction and processing activities on data.
a) Knowledge b) Information
c) Data d) Raw Data

5) Decision support systems are essential for _____.
a) Day-to-day operation of an organization
b) Providing statutory information.
c) Top level strategic decision making.
d) Ensuring that organizations are profitable.

6) Full form of OLAP:
a) Online analytical process b) Online analog process
c) Online anal process d) Online analogy process

7) i) A decision support system helps in decision making but does not necessarily give a decision itself.
ii) decision support system is a computer-based application that collects organizes and analyses business data to facilitate quality business decision making for management, operations, and planning.
a) only i) is correct
b) only ii) is correct
c) both are correct.
d) both are wrong.

8) What kind of chart is described as an enhanced version of a scatter plot?
a) heat map
b) bullet
c) pie chart
d) bubble chart

9) Which term refers to the process of presenting data in a visual format to facilitate understanding and decision-making?
a) Business Intelligence
b) Data Visualization
c) Data Analysis
d) Report Generation

10) Which of the following best describes relational marketing in the context of business intelligence (BI) applications?
a) Focusing on one-time sales and transactions
b) Building and maintaining long-term customer relationships
c) Analyzing financial data for marketing purposes
d) Implementing a single customer management platform

11) _____ is a performance management tool that recapitulates an organization's performance from several standpoints on a single page.
a) Dashboard
b) Data Cube
c) Balanced Scorecard
d) All of the mentioned

12) Which of the following statements best describes Six Sigma?
a) A quality control program
b) A process improvement methodology
c) A customer satisfaction initiative
d) A human resource management strategy

13) Which type of models are commonly used for logistics planning to determine the most cost-effective distribution routes and schedules?
a) Descriptive models
b) Predictive models
c) Optimization models
d) Diagnostic models

14) A _____ encompasses all activities associated with the flow and transformation of goods from the raw material stage, through to the end user, as well as the associated information flows.
a) Production line
b) Supply chain
c) Marketing channel
d) Warehouse

Seat No.		Set	P

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science- Business Intelligence (BTN04712)

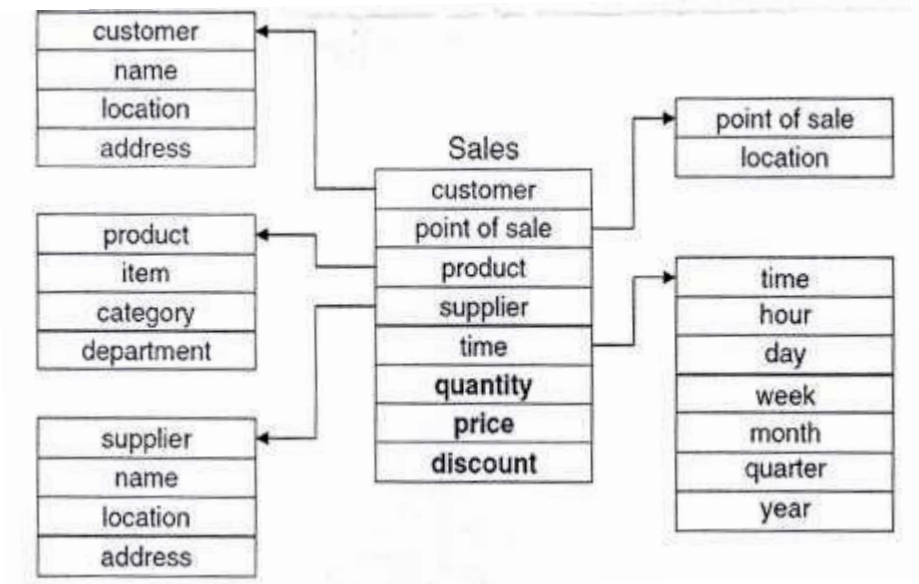
Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain importance of effective & timely decision.
b) What is data mining? List the real life application of data mining.
c) What are dimension tables? What are Fact Tables? What is the schema in the following diagram? Identify the fact tables and dimension tables in this schema.



d) What is decision support system (DSS)? Explain representation of DSS in brief.
e) What is ETL? Explain the process of extraction, transformation and loading of data in Data warehouse.

Q.3 Attempt Any Two. **12**

a) Explain the process of data mining with suitable diagram.
b) Describe the structure of Decision Support System with diagram
c) Explain business intelligence architecture with a neat diagram.

Section – II

Q.4 Attempt Any Four. **16**

a) What is a Business report? Outline the main components of a business reporting system.

b) Describe the concept of cross selling and up selling on optimization models for logistics planning.

c) Describe the objectives of salesforce management.

d) What is supply chain? In what ways can supply chain optimization be tailored to address specific challenges and demands encountered in logistic planning?

e) List and briefly describe the four phases of the business performance management cycle.

Q.5 Attempt Any Two. **12**

a) What is relational marketing? Describe the different components in an environment for relational marketing analysis.

b) What is revenue management systems? Describe the decision processes in revenue management.

c) Describe the use of bar charts, pie charts, bubble chart, line charts and scatter plot in data visualization with examples of situations where each type of chart is most effective.

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science- Business Intelligence (BTN04712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What kind of chart is described as an enhanced version of a scatter plot?
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2) Which term refers to the process of presenting data in a visual format to facilitate understanding and decision-making?
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4) _____ is a performance management tool that recapitulates an organization's performance from several standpoints on a single page.
a) Dashboard b) Data Cube
c) Balanced Scorecard d) All of the mentioned

5) Which of the following statements best describes Six Sigma?
a) A quality control program
b) A process improvement methodology
c) A customer satisfaction initiative
d) A human resource management strategy

6) Which type of models are commonly used for logistics planning to determine the most cost-effective distribution routes and schedules?
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a) Data staging
b) Data integration
c) ETL
d) Data mart

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a) only i) is correct
b) only ii) is correct
c) both are correct.
d) both are wrong.

Seat No.		Set	Q

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science- Business Intelligence (BTN04712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain importance of effective & timely decision.
b) What is data mining? List the real life application of data mining.
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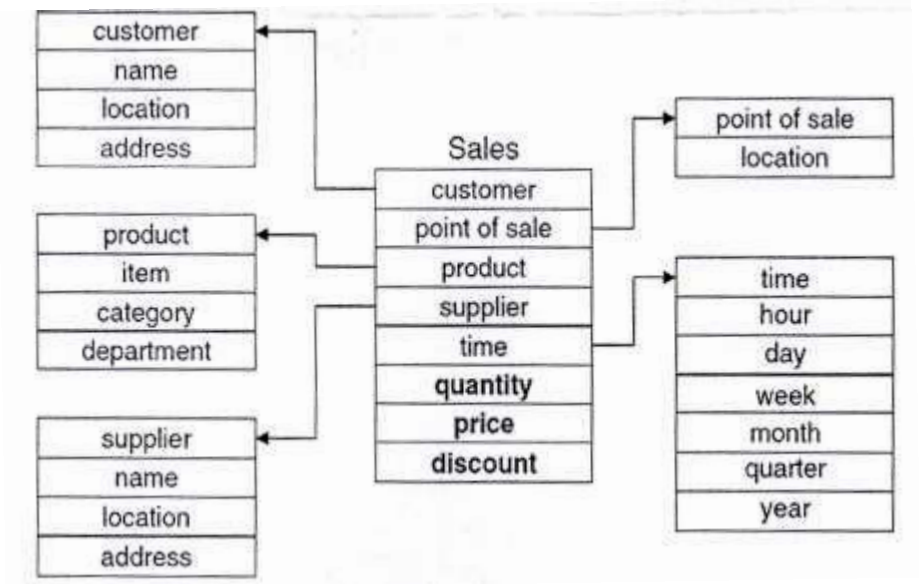

d) What is decision support system (DSS)? Explain representation of DSS in brief.
e) What is ETL? Explain the process of extraction, transformation and loading of data in Data warehouse.

Q.3 Attempt Any Two. **12**

a) Explain the process of data mining with suitable diagram.
b) Describe the structure of Decision Support System with diagram
c) Explain business intelligence architecture with a neat diagram.

Section – II

Q.4 Attempt Any Four. **16**

a) What is a Business report? Outline the main components of a business reporting system.

b) Describe the concept of cross selling and up selling on optimization models for logistics planning.

c) Describe the objectives of salesforce management.

d) What is supply chain? In what ways can supply chain optimization be tailored to address specific challenges and demands encountered in logistic planning?

e) List and briefly describe the four phases of the business performance management cycle.

Q.5 Attempt Any Two. **12**

a) What is relational marketing? Describe the different components in an environment for relational marketing analysis.

b) What is revenue management systems? Describe the decision processes in revenue management.

c) Describe the use of bar charts, pie charts, bubble chart, line charts and scatter plot in data visualization with examples of situations where each type of chart is most effective.

Seat No.	

Set **R**

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science- Business Intelligence (BTN04712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ is a performance management tool that recapitulates an organization's performance from several standpoints on a single page.
a) Dashboard b) Data Cube
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2) Which of the following statements best describes Six Sigma?
a) A quality control program
b) A process improvement methodology
c) A customer satisfaction initiative
d) A human resource management strategy

3) Which type of models are commonly used for logistics planning to determine the most cost-effective distribution routes and schedules?
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c) Optimization models d) Diagnostic models

4) A _____ encompasses all activities associated with the flow and transformation of goods from the raw material stage, through to the end user, as well as the associated information flows.
a) Production line b) Supply chain
c) Marketing channel d) Warehouse

5) _____ is a broad category of applications and technologies for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions.
a) Data Mart b) Data mining
c) Business intelligence d) Artificial intelligence

6) _____ is a system where operations like data extraction, transformation and loading operations are executed.
a) Data staging b) Data integration
c) ETL d) Data mart

7) A _____ can be considered as a functional or departmental data warehouse of a smaller size and a more specific type than the overall company data warehouse.
a) Warehouse b) Database
c) Data mart d) Data Table

8) _____ is the outcome of extraction and processing activities on data.
a) Knowledge b) Information
c) Data d) Raw Data

9) Decision support systems are essential for _____.
a) Day-to-day operation of an organization
b) Providing statutory information.
c) Top level strategic decision making.
d) Ensuring that organizations are profitable.

10) Full form of OLAP:
a) Online analytical process b) Online analog process
c) Online anal process d) Online analogy process

11) i) A decision support system helps in decision making but does not necessarily give a decision itself.
ii) decision support system is a computer-based application that collects organizes and analyses business data to facilitate quality business decision making for management, operations, and planning.
a) only i) is correct b) only ii) is correct
c) both are correct. d) both are wrong.

12) What kind of chart is described as an enhanced version of a scatter plot?
a) heat map b) bullet
c) pie chart d) bubble chart

13) Which term refers to the process of presenting data in a visual format to facilitate understanding and decision-making?
a) Business Intelligence b) Data Visualization
c) Data Analysis d) Report Generation

14) Which of the following best describes relational marketing in the context of business intelligence (BI) applications?
a) Focusing on one-time sales and transactions
b) Building and maintaining long-term customer relationships
c) Analyzing financial data for marketing purposes
d) Implementing a single customer management platform

Seat No.		Set	R

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science- Business Intelligence (BTN04712)

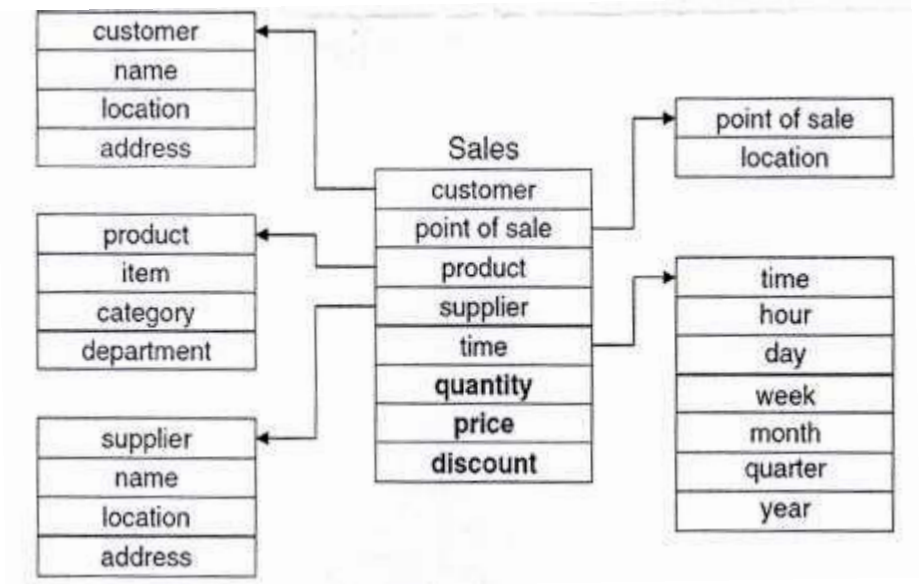
Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain importance of effective & timely decision.
b) What is data mining? List the real life application of data mining.
c) What are dimension tables? What are Fact Tables? What is the schema in the following diagram? Identify the fact tables and dimension tables in this schema.



d) What is decision support system (DSS)? Explain representation of DSS in brief.
e) What is ETL? Explain the process of extraction, transformation and loading of data in Data warehouse.

Q.3 Attempt Any Two. **12**

a) Explain the process of data mining with suitable diagram.
b) Describe the structure of Decision Support System with diagram
c) Explain business intelligence architecture with a neat diagram.

Section – II

Q.4 Attempt Any Four. **16**

a) What is a Business report? Outline the main components of a business reporting system.

b) Describe the concept of cross selling and up selling on optimization models for logistics planning.

c) Describe the objectives of salesforce management.

d) What is supply chain? In what ways can supply chain optimization be tailored to address specific challenges and demands encountered in logistic planning?

e) List and briefly describe the four phases of the business performance management cycle.

Q.5 Attempt Any Two. **12**

a) What is relational marketing? Describe the different components in an environment for relational marketing analysis.

b) What is revenue management systems? Describe the decision processes in revenue management.

c) Describe the use of bar charts, pie charts, bubble chart, line charts and scatter plot in data visualization with examples of situations where each type of chart is most effective.

SLR-GF-522

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science- Business Intelligence (BTN04712)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Full form of OLAP:
a) Online analytical process b) Online analog process
c) Online anal process d) Online analogy process

2) i) A decision support system helps in decision making but does not necessarily give a decision itself.
ii) decision support system is a computer-based application that collects organizes and analyses business data to facilitate quality business decision making for management, operations, and planning.
a) only i) is correct b) only ii) is correct
c) both are correct. d) both are wrong.

3) What kind of chart is described as an enhanced version of a scatter plot?
a) heat map b) bullet
c) pie chart d) bubble chart

4) Which term refers to the process of presenting data in a visual format to facilitate understanding and decision-making?
a) Business Intelligence b) Data Visualization
c) Data Analysis d) Report Generation

5) Which of the following best describes relational marketing in the context of business intelligence (BI) applications?
a) Focusing on one-time sales and transactions
b) Building and maintaining long-term customer relationships
c) Analyzing financial data for marketing purposes
d) Implementing a single customer management platform

6) _____ is a performance management tool that recapitulates an organization's performance from several standpoints on a single page.
a) Dashboard b) Data Cube
c) Balanced Scorecard d) All of the mentioned

7) Which of the following statements best describes Six Sigma?
a) A quality control program
b) A process improvement methodology
c) A customer satisfaction initiative
d) A human resource management strategy

8) Which type of models are commonly used for logistics planning to determine the most cost-effective distribution routes and schedules?
a) Descriptive models
b) Predictive models
c) Optimization models
d) Diagnostic models

9) A _____ encompasses all activities associated with the flow and transformation of goods from the raw material stage, through to the end user, as well as the associated information flows.
a) Production line
b) Supply chain
c) Marketing channel
d) Warehouse

10) _____ is a broad category of applications and technologies for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions.
a) Data Mart
b) Data mining
c) Business intelligence
d) Artificial intelligence

11) _____ is a system where operations like data extraction, transformation and loading operations are executed.
a) Data staging
b) Data integration
c) ETL
d) Data mart

12) A _____ can be considered as a functional or departmental data warehouse of a smaller size and a more specific type than the overall company data warehouse.
a) Warehouse
b) Database
c) Data mart
d) Data Table

13) _____ is the outcome of extraction and processing activities on data.
a) Knowledge
b) Information
c) Data
d) Raw Data

14) Decision support systems are essential for _____.
a) Day-to-day operation of an organization
b) Providing statutory information.
c) Top level strategic decision making.
d) Ensuring that organizations are profitable.

SLR-GF-522

Seat No.		Set	S

Fourth Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Science- Business Intelligence (BTN04712)

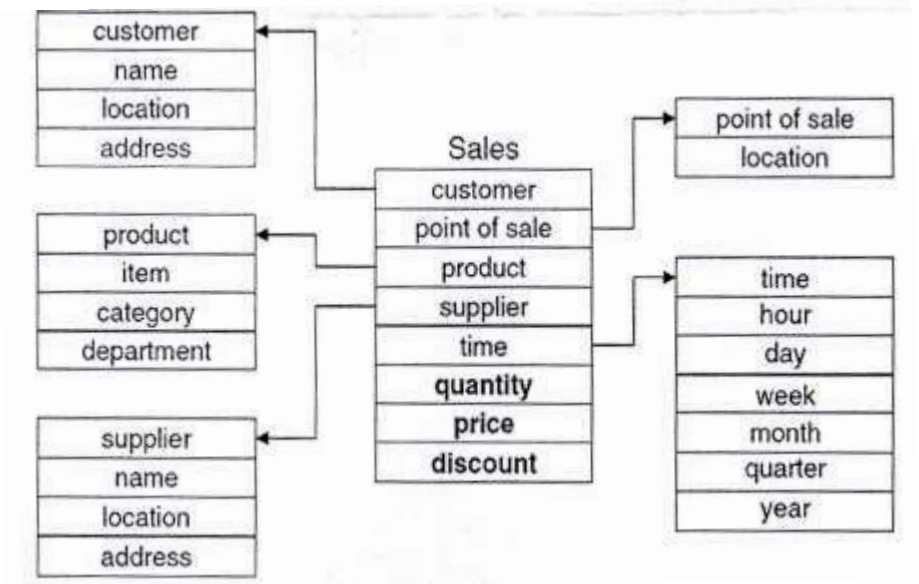
Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain importance of effective & timely decision.
b) What is data mining? List the real life application of data mining.
c) What are dimension tables? What are Fact Tables? What is the schema in the following diagram? Identify the fact tables and dimension tables in this schema.



d) What is decision support system (DSS)? Explain representation of DSS in brief.
e) What is ETL? Explain the process of extraction, transformation and loading of data in Data warehouse.

Q.3 Attempt Any Two. **12**

a) Explain the process of data mining with suitable diagram.
b) Describe the structure of Decision Support System with diagram
c) Explain business intelligence architecture with a neat diagram.

Section – II

Q.4 Attempt Any Four. **16**

a) What is a Business report? Outline the main components of a business reporting system.

b) Describe the concept of cross selling and up selling on optimization models for logistics planning.

c) Describe the objectives of salesforce management.

d) What is supply chain? In what ways can supply chain optimization be tailored to address specific challenges and demands encountered in logistic planning?

e) List and briefly describe the four phases of the business performance management cycle.

Q.5 Attempt Any Two. **12**

a) What is relational marketing? Describe the different components in an environment for relational marketing analysis.

b) What is revenue management systems? Describe the decision processes in revenue management.

c) Describe the use of bar charts, pie charts, bubble chart, line charts and scatter plot in data visualization with examples of situations where each type of chart is most effective.

SLR-GF-523

Seat No.		Set	P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What does AWS stand for?
a) Advanced Web Services b) Amazon Web Services
c) All Web Solutions d) Agile Web Systems

2) In the context of AWS architecture, what is an Availability Zone (AZ)?
a) A physical data center b) A virtual private network
c) A database instance d) An application server

3) Which of the following design principles is associated with ensuring that resources can automatically respond to changes in demand?
a) Elasticity b) Cost Optimization
c) Scalability d) Reliability

4) What are the primary design principles in the AWS Well-Architected Framework's Operational Excellence pillar?
a) Scalability and cost optimization
b) Automation and performance efficiency
c) Security and reliability
d) Documentation and efficiency

5) In the context of the Security pillar of the AWS Well-Architected Framework, what is the principle of defense in depth?
a) Relying on a single layer of security
b) Implementing multiple security layers to protect assets
c) Ignoring security concerns for cost savings
d) Focusing on a single security protocol

6) Which AWS Well-Architected Framework pillar emphasizes the importance of efficiently using resources to reduce costs without sacrificing performance?
a) Cost Optimization b) Operational Excellence
c) Reliability d) Performance Efficiency

7) What is the first step in the AWS Well-Architected Framework's Five Pillars for designing a well-architected system?

a) Operational Excellence b) Organization
c) Prepare d) Operate

8) In the context of the AWS Well-Architected Framework, which pillar focuses on optimizing and managing ongoing workloads to deliver business value?

a) Operational Excellence b) Organization
c) Prepare d) Operate

9) What is the main focus of the Operational Excellence pillar in the AWS Well-Architected Framework?

a) Ensuring high availability of resources
b) Optimizing and automating processes
c) Security and compliance
d) Cost optimization

10) Which pillar of cloud security primarily deals with controlling who has access to your cloud resources and what actions they can perform?

a) Detection
b) Data Protection
c) Identity and Access Management
d) Infrastructure Protection

11) In the context of cloud security, what is the main goal of Data Protection?

a) Monitoring and alerting
b) Securing the physical infrastructure
c) Protecting sensitive data from unauthorized access and disclosure
d) Responding to security incidents

12) Which aspect of cloud security focuses on the ability to identify, respond to, and recover from security incidents?

a) Identity and Access Management
b) Detection
c) Infrastructure Protection
d) Data Protection

13) Which part of the AWS Well-Architected Framework for Failure Management focuses on designing systems to recover from failures automatically?

a) Foundations b) Workload Architecture
c) Change Management d) Resiliency

14) What is the main goal of Change Management within the Reliability pillar of the AWS Well-Architected Framework?

a) Promoting frequent and uncontrolled changes
b) Reducing the overall cost of change
c) Maintaining system stability while making changes
d) Avoiding any changes to the system

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SLR-GF-523

Seat No.	

Set P

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any THREE. **12**

a) Describe the general architecture of AWS.
b) Explain the significance of defining the scope of an AWS project.
c) Explain the key design principles associated with Operational Excellence in the AWS Well-Architected Framework.
d) What are some key design principles that AWS follows in its framework?

Q.3 Attempt any TWO. **16**

a) Provide an in-depth introduction to Amazon Web Services (AWS) and its evolution in the cloud computing industry. Include some key milestones in AWS's history.
b) Explain the significance of resources in the context of the AWS Well-Architected Framework. How can resources be effectively managed and optimized?
c) Provide examples of tools and technologies that can assist organizations in managing and optimizing their cloud operations efficiently.

Section – II

Q.4 Attempt any THREE. **12**

a) Explain the principles and best practices associated with IAM within the context of cloud security.
b) What are the foundational principles of reliability in cloud computing, and why is reliability critical for organizations?
c) What is the significance of Identity and Access Management (IAM) in cloud security, and how does it contribute to a secure cloud environment?
d) What is the significance of Performance Efficiency in cloud computing, and how does it impact the overall user experience and cost management?

Q.5 Attempt any TWO. **16**

a) Share best practices for practicing cloud financial management and maintaining a culture of expenditure and usage awareness within an organization’s cloud operations.
b) How can organizations effectively monitor the reliability of their cloud-based workloads and detect potential issues or failures proactively?
c) Provide examples of security incidents that organizations might face in a cloud environment and explain how the principles and strategies outlined in the syllabus can help mitigate these incidents.

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Seat No.		Set	Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) In the context of the AWS Well-Architected Framework, which pillar focuses on optimizing and managing ongoing workloads to deliver business value?
a) Operational Excellence b) Organization
c) Prepare d) Operate

2) What is the main focus of the Operational Excellence pillar in the AWS Well-Architected Framework?
a) Ensuring high availability of resources
b) Optimizing and automating processes
c) Security and compliance
d) Cost optimization

3) Which pillar of cloud security primarily deals with controlling who has access to your cloud resources and what actions they can perform?
a) Detection
b) Data Protection
c) Identity and Access Management
d) Infrastructure Protection

4) In the context of cloud security, what is the main goal of Data Protection?
a) Monitoring and alerting
b) Securing the physical infrastructure
c) Protecting sensitive data from unauthorized access and disclosure
d) Responding to security incidents

5) Which aspect of cloud security focuses on the ability to identify, respond to, and recover from security incidents?
a) Identity and Access Management
b) Detection
c) Infrastructure Protection
d) Data Protection

6) Which part of the AWS Well-Architected Framework for Failure Management focuses on designing systems to recover from failures automatically?

a) Foundations
b) Workload Architecture
c) Change Management
d) Resiliency

7) What is the main goal of Change Management within the Reliability pillar of the AWS Well-Architected Framework?

a) Promoting frequent and uncontrolled changes
b) Reducing the overall cost of change
c) Maintaining system stability while making changes
d) Avoiding any changes to the system

8) What does AWS stand for?

a) Advanced Web Services
b) Amazon Web Services
c) All Web Solutions
d) Agile Web Systems

9) In the context of AWS architecture, what is an Availability Zone (AZ)?

a) A physical data center
b) A virtual private network
c) A database instance
d) An application server

10) Which of the following design principles is associated with ensuring that resources can automatically respond to changes in demand?

a) Elasticity
b) Cost Optimization
c) Scalability
d) Reliability

11) What are the primary design principles in the AWS Well-Architected Framework's Operational Excellence pillar?

a) Scalability and cost optimization
b) Automation and performance efficiency
c) Security and reliability
d) Documentation and efficiency

12) In the context of the Security pillar of the AWS Well-Architected Framework, what is the principle of defense in depth?

a) Relying on a single layer of security
b) Implementing multiple security layers to protect assets
c) Ignoring security concerns for cost savings
d) Focusing on a single security protocol

13) Which AWS Well-Architected Framework pillar emphasizes the importance of efficiently using resources to reduce costs without sacrificing performance?

a) Cost Optimization
b) Operational Excellence
c) Reliability
d) Performance Efficiency

14) What is the first step in the AWS Well-Architected Framework's Five Pillars for designing a well-architected system?

a) Operational Excellence
b) Organization
c) Prepare
d) Operate

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SLR-GF-523

Seat No.	

Set Q

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any THREE. **12**

a) Describe the general architecture of AWS.
b) Explain the significance of defining the scope of an AWS project.
c) Explain the key design principles associated with Operational Excellence in the AWS Well-Architected Framework.
d) What are some key design principles that AWS follows in its framework?

Q.3 Attempt any TWO. **16**

a) Provide an in-depth introduction to Amazon Web Services (AWS) and its evolution in the cloud computing industry. Include some key milestones in AWS's history.
b) Explain the significance of resources in the context of the AWS Well-Architected Framework. How can resources be effectively managed and optimized?
c) Provide examples of tools and technologies that can assist organizations in managing and optimizing their cloud operations efficiently.

Section – II

Q.4 Attempt any THREE. **12**

a) Explain the principles and best practices associated with IAM within the context of cloud security.
b) What are the foundational principles of reliability in cloud computing, and why is reliability critical for organizations?
c) What is the significance of Identity and Access Management (IAM) in cloud security, and how does it contribute to a secure cloud environment?
d) What is the significance of Performance Efficiency in cloud computing, and how does it impact the overall user experience and cost management?

Q.5 Attempt any TWO. **16**

a) Share best practices for practicing cloud financial management and maintaining a culture of expenditure and usage awareness within an organization’s cloud operations.
b) How can organizations effectively monitor the reliability of their cloud-based workloads and detect potential issues or failures proactively?
c) Provide examples of security incidents that organizations might face in a cloud environment and explain how the principles and strategies outlined in the syllabus can help mitigate these incidents.

Seat No.		Set	R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) In the context of cloud security, what is the main goal of Data Protection?
a) Monitoring and alerting
b) Securing the physical infrastructure
c) Protecting sensitive data from unauthorized access and disclosure
d) Responding to security incidents

2) Which aspect of cloud security focuses on the ability to identify, respond to, and recover from security incidents?
a) Identity and Access Management
b) Detection
c) Infrastructure Protection
d) Data Protection

3) Which part of the AWS Well-Architected Framework for Failure Management focuses on designing systems to recover from failures automatically?
a) Foundations b) Workload Architecture
c) Change Management d) Resiliency

4) What is the main goal of Change Management within the Reliability pillar of the AWS Well-Architected Framework?
a) Promoting frequent and uncontrolled changes
b) Reducing the overall cost of change
c) Maintaining system stability while making changes
d) Avoiding any changes to the system

5) What does AWS stand for?
a) Advanced Web Services b) Amazon Web Services
c) All Web Solutions d) Agile Web Systems

6) In the context of AWS architecture, what is an Availability Zone (AZ)?
a) A physical data center b) A virtual private network
c) A database instance d) An application server

7) Which of the following design principles is associated with ensuring that resources can automatically respond to changes in demand?
a) Elasticity b) Cost Optimization
c) Scalability d) Reliability

8) What are the primary design principles in the AWS Well-Architected Framework's Operational Excellence pillar?
a) Scalability and cost optimization
b) Automation and performance efficiency
c) Security and reliability
d) Documentation and efficiency

9) In the context of the Security pillar of the AWS Well-Architected Framework, what is the principle of defense in depth?
a) Relying on a single layer of security
b) Implementing multiple security layers to protect assets
c) Ignoring security concerns for cost savings
d) Focusing on a single security protocol

10) Which AWS Well-Architected Framework pillar emphasizes the importance of efficiently using resources to reduce costs without sacrificing performance?
a) Cost Optimization b) Operational Excellence
c) Reliability d) Performance Efficiency

11) What is the first step in the AWS Well-Architected Framework's Five Pillars for designing a well-architected system?
a) Operational Excellence b) Organization
c) Prepare d) Operate

12) In the context of the AWS Well-Architected Framework, which pillar focuses on optimizing and managing ongoing workloads to deliver business value?
a) Operational Excellence b) Organization
c) Prepare d) Operate

13) What is the main focus of the Operational Excellence pillar in the AWS Well-Architected Framework?
a) Ensuring high availability of resources
b) Optimizing and automating processes
c) Security and compliance
d) Cost optimization

14) Which pillar of cloud security primarily deals with controlling who has access to your cloud resources and what actions they can perform?
a) Detection
b) Data Protection
c) Identity and Access Management
d) Infrastructure Protection

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SLR-GF-523

Seat No.	

Set R

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any THREE. **12**

a) Describe the general architecture of AWS.
b) Explain the significance of defining the scope of an AWS project.
c) Explain the key design principles associated with Operational Excellence in the AWS Well-Architected Framework.
d) What are some key design principles that AWS follows in its framework?

Q.3 Attempt any TWO. **16**

a) Provide an in-depth introduction to Amazon Web Services (AWS) and its evolution in the cloud computing industry. Include some key milestones in AWS's history.
b) Explain the significance of resources in the context of the AWS Well-Architected Framework. How can resources be effectively managed and optimized?
c) Provide examples of tools and technologies that can assist organizations in managing and optimizing their cloud operations efficiently.

Section – II

Q.4 Attempt any THREE. **12**

a) Explain the principles and best practices associated with IAM within the context of cloud security.
b) What are the foundational principles of reliability in cloud computing, and why is reliability critical for organizations?
c) What is the significance of Identity and Access Management (IAM) in cloud security, and how does it contribute to a secure cloud environment?
d) What is the significance of Performance Efficiency in cloud computing, and how does it impact the overall user experience and cost management?

Q.5 Attempt any TWO. **16**

a) Share best practices for practicing cloud financial management and maintaining a culture of expenditure and usage awareness within an organization’s cloud operations.
b) How can organizations effectively monitor the reliability of their cloud-based workloads and detect potential issues or failures proactively?
c) Provide examples of security incidents that organizations might face in a cloud environment and explain how the principles and strategies outlined in the syllabus can help mitigate these incidents.

SLR-GF-523

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which AWS Well-Architected Framework pillar emphasizes the importance of efficiently using resources to reduce costs without sacrificing performance?
a) Cost Optimization b) Operational Excellence
c) Reliability d) Performance Efficiency

2) What is the first step in the AWS Well-Architected Framework's Five Pillars for designing a well-architected system?
a) Operational Excellence b) Organization
c) Prepare d) Operate

3) In the context of the AWS Well-Architected Framework, which pillar focuses on optimizing and managing ongoing workloads to deliver business value?
a) Operational Excellence b) Organization
c) Prepare d) Operate

4) What is the main focus of the Operational Excellence pillar in the AWS Well-Architected Framework?
a) Ensuring high availability of resources
b) Optimizing and automating processes
c) Security and compliance
d) Cost optimization

5) Which pillar of cloud security primarily deals with controlling who has access to your cloud resources and what actions they can perform?
a) Detection
b) Data Protection
c) Identity and Access Management
d) Infrastructure Protection

6) In the context of cloud security, what is the main goal of Data Protection?
a) Monitoring and alerting
b) Securing the physical infrastructure
c) Protecting sensitive data from unauthorized access and disclosure
d) Responding to security incidents

7) Which aspect of cloud security focuses on the ability to identify, respond to, and recover from security incidents?
a) Identity and Access Management
b) Detection
c) Infrastructure Protection
d) Data Protection

8) Which part of the AWS Well-Architected Framework for Failure Management focuses on designing systems to recover from failures automatically?
a) Foundations
b) Workload Architecture
c) Change Management
d) Resiliency

9) What is the main goal of Change Management within the Reliability pillar of the AWS Well-Architected Framework?
a) Promoting frequent and uncontrolled changes
b) Reducing the overall cost of change
c) Maintaining system stability while making changes
d) Avoiding any changes to the system

10) What does AWS stand for?
a) Advanced Web Services
b) Amazon Web Services
c) All Web Solutions
d) Agile Web Systems

11) In the context of AWS architecture, what is an Availability Zone (AZ)?
a) A physical data center
b) A virtual private network
c) A database instance
d) An application server

12) Which of the following design principles is associated with ensuring that resources can automatically respond to changes in demand?
a) Elasticity
b) Cost Optimization
c) Scalability
d) Reliability

13) What are the primary design principles in the AWS Well-Architected Framework's Operational Excellence pillar?
a) Scalability and cost optimization
b) Automation and performance efficiency
c) Security and reliability
d) Documentation and efficiency

14) In the context of the Security pillar of the AWS Well-Architected Framework, what is the principle of defense in depth?
a) Relying on a single layer of security
b) Implementing multiple security layers to protect assets
c) Ignoring security concerns for cost savings
d) Focusing on a single security protocol

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SLR-GF-523

Seat No.		Set	S

Fourth. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
IOT- Architecting IOT Solutions (BTN04714)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All Question are compulsory.
2) Figures to right indicate full marks.

Section – I

Q.2 Attempt any THREE. **12**

a) Describe the general architecture of AWS.
b) Explain the significance of defining the scope of an AWS project.
c) Explain the key design principles associated with Operational Excellence in the AWS Well-Architected Framework.
d) What are some key design principles that AWS follows in its framework?

Q.3 Attempt any TWO. **16**

a) Provide an in-depth introduction to Amazon Web Services (AWS) and its evolution in the cloud computing industry. Include some key milestones in AWS's history.
b) Explain the significance of resources in the context of the AWS Well-Architected Framework. How can resources be effectively managed and optimized?
c) Provide examples of tools and technologies that can assist organizations in managing and optimizing their cloud operations efficiently.

Section – II

Q.4 Attempt any THREE. **12**

a) Explain the principles and best practices associated with IAM within the context of cloud security.
b) What are the foundational principles of reliability in cloud computing, and why is reliability critical for organizations?
c) What is the significance of Identity and Access Management (IAM) in cloud security, and how does it contribute to a secure cloud environment?
d) What is the significance of Performance Efficiency in cloud computing, and how does it impact the overall user experience and cost management?

Q.5 Attempt any TWO. **16**

a) Share best practices for practicing cloud financial management and maintaining a culture of expenditure and usage awareness within an organization’s cloud operations.
b) How can organizations effectively monitor the reliability of their cloud-based workloads and detect potential issues or failures proactively?
c) Provide examples of security incidents that organizations might face in a cloud environment and explain how the principles and strategies outlined in the syllabus can help mitigate these incidents.

SLR-GF-701

Seat No.	

Set P

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTCE0103) / (BTCSE0103) / (BTETE0103) / (BTEE0103) / (BTME0103)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If $y = \log(2x-3)$ then y_n = _____.

a) $\frac{(-1)^n(n)!}{(2x-3)^n}$ b) $\frac{(-1)^{n-1}(n-1)!}{(2x-3)^n}2^n$

c) $\frac{(-1)^n(n-1)!}{(2x-3)^n}2^n$ d) $\frac{(-1)^{n+1}(n-1)!}{(2x+3)^n}2^n$

2) The expansion of $\log(1+x)$ =_____.

a) $1+x+\frac{x^2}{2!}+\ldots$ b) $x-\frac{x^2}{2}+\frac{x^3}{3}-\frac{x^4}{4}+\ldots$

c) $x+\frac{x^2}{2}+\frac{x^3}{3}+\frac{x^4}{4}+\ldots$ d) $x-\frac{x^2}{2!}+\frac{x^3}{3!}-\frac{x^4}{4!}+\ldots$

3) The system of equations $AX = B$ is inconsistent if _____.

a) rank of $A <$ rank of $[A:B]$
b) rank of $A =$ rank of $[A:B]$
c) rank of A is less than the number of unknows
d) rank of $A =$ rank of B

4) If $y = (3x+4)^{100}$ then y_{101} = _____.

a) $3^{100}.100!$ b) 0
c) 3^{100} d) None of these

5) The Rank of the Matrix $\begin{bmatrix} 201 & 304 & 607 \\ 201 & 304 & 607 \\ 201 & 304 & 607 \end{bmatrix}$ is _____.

a) 3 b) 2
c) 1 d) 0

6) The value of $\lim_{x\to 0}\left(\frac{1-\cos x}{x^2}\right)$ = _____.

a) 2 b) $-1/2$
c) -2 d) $1/2$

7) If zero is one of the Eigen values of matrix A, then A is _____.

a) Singular matrix b) Non-singular matrix
c) Symmetric matrix d) Non-symmetric matrix

8) If $u = \frac{x^{1/4} + y^{1/4}}{x^{1/5} + y^{1/5}}$, then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y}$ = _____.

a) $4u$ b) $20u$
c) $\frac{1}{20}u$ d) $5u$

9) For a vector function $\bar{F}$ there exist a scalar potential when _____.

a) div $\bar{F} = 0$ b) grad $(\text{div}\,\bar{F}) = 0$
c) curl $\bar{F} = 0$ d) $\bar{F} \cdot \text{curl}\,\bar{F} = 0$

10) If $\bar{r} = ae^{3t} + be^{2t}$, then at $t = 0, \frac{d\bar{r}}{dt}$ =_____.

a) a b) b
c) $2b + 3a$ d) $2a + 3b$

11) If $u = x - y, v = y - x$, then $\frac{\partial(u,v)}{\partial(x,y)}$ _____.

a) 0 b) 1
c) -1 d) 2

12) If $\Phi = \frac{1}{2}(x^2 + y^2 + z^2)$, then at $x = 1, y = 1, z = 1, \nabla\Phi$ = _____.

a) $i + j - k$ b) $i + j + k$
c) $i - j + k$ d) $-i + j + k$

13) The function $f(x, y) = 0$ has a saddle point if _____.

a) $rt - s^2 > 0$ b) $rt - s^2 < 0$
c) $rt - s^2 = 0$ d) None of these

14) If δx is an error in x, then $\frac{\delta x}{x}$ is called _____

a) absolute error in x b) percentage error in x
c) relative error in x d) None of these

Seat No.	

Set **P**

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTCE0103) / (BTCSE0103) / (BTETE0103) / (BTEE0103) / (BTME0103)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three of the following question. **09**

a) Find n^{th} derivative of $y = \frac{x}{(x+1)^5}$

b) Expand $x^5 - x^4 + x^3 - x^2 + x - 1$ in power of $(x-1)$ and hence find $f\left(\frac{11}{10}\right)$.

c) Evaluate $\lim_{x\to 0} \frac{x^2 + 2\cos x - 2}{x \sin x}$

d) Change the given matrix into normal form and hence find its rank

$$A = \begin{bmatrix} 1 & -1 & -2 & -3 \\ 4 & 1 & 0 & 2 \\ 0 & 3 & 1 & -2 \\ 0 & 1 & 0 & 2 \end{bmatrix}$$

e) Verify Cayley Hamilton theorem for the matrix A and hence find A^{-1} where

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & -1 & 4 \\ 3 & 1 & -1 \end{bmatrix}$$

Q.3 Attempt any three of the following question. **09**

a) Evaluate $\lim_{x\to 0}(a^x + x)^{1/x}$

b) Expand $\log(1 + e^x)$ in powers of x by using Maclaurin's series.

c) Solve the system of equations $2x + y + z = 3,\ x - y + 2z = 4,\ x + z = 2$

d) Examine whether the vectors $X1 = [2\ -1\ 3\ 2],\ X2 = [1\ 3\ 4\ 2],$ $X3 = [3\ -5\ 2\ 2]$ are linearly dependent or independent?

e) Calculate n^{th} derivative of $y = e^{2x} \sin\left(\frac{x}{2}\right) \cos\left(\frac{x}{2}\right)$

Q.4 Attempt any two of the following. **10**

a) Determine the eigen values and corresponding eigen vectors of the matrix

$$A = \begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}$$

b) If $y = \cos(m\ sin^{-1}x)$ then show that $(1-x^2)y_{n+2} - (2n+1)xy_{n+1} + (m^2 - n^2)y_n = 0$. Hence obtain $y_n(0)$

c) Show that $e^x \log(1+x) = x + \frac{x^2}{2} + \frac{x^3}{3} + \cdots$

Section – II

Q.5 Attempt any three of the following question. **09**

a) Prove that $\frac{\partial u}{\partial x}+\frac{\partial u}{\partial y}+\frac{\partial u}{\partial z}=0$ if $u=f(x-y,y-z,z-x)$

b) If $u=ax+by, v=bx-ay$, find the value of $\left(\frac{\partial u}{\partial x}\right)_y.\left(\frac{\partial x}{\partial u}\right)_v.\left(\frac{\partial y}{\partial v}\right)_x.\left(\frac{\partial v}{\partial y}\right)_u$

c) If $u=x^2, v=y^2$ then P.T. $J.J'=1$

d) A particle moves along the curve $x=t^3+1, y=t^2, z=2t+3$ where t is the time. Find the components of its velocity and acceleration at $t=1$ in the direction $i+j+3k$.

e) Find the angle between the surfaces $x^2+y^2+z^2=12$ and $x^2+y^2-z=6$ at $(-1,2,1)$.

Q.6 Attempt any three of the following question. **09**

a) If $u=\log(x^2+y^2)$ then prove that $\frac{\partial^2 u}{\partial x\,\partial y}=\frac{\partial^2 u}{\partial y\,\partial x}$

b) If $u=2(ax+by)^2-(x^2+y^2)$ and $(a^2+b^2)=4$ Show that $\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}=12$

c) Divide 24 into three parts such that the continued product of the first, square of second & cube of the third may be maximum.

d) Find the directional derivatives of $\phi=4xz^3-3x^2y^2z$ at $(2,-1,2)$ in the direction from this point towards the point $(4,-4,8)$.

e) Find the percentage error in the area of ellipse due to 2% error each in measuring major and minor axes of ellipse.

Q.7 Attempt any two of the following question. **10**

a) If $u=\tan^{-1}(x^2+2y^2)$, then prove that

$$x^2\frac{\partial^2 u}{\partial x^2}+2xy\frac{\partial^2 u}{\partial x.\partial y}+y^2\frac{\partial^2 u}{\partial y^2}=2\sin u\,.\cos 3u$$

b) Find extreme values of $f(x,y)=x^3+y^3-3axy,\ a>0$

c) Show that the vector $\overline{F}=(6xy+z^3)i+(3x^2-z)j+(3x\,z^2-y)k$ is irrotational. Find the function ϕ such that $\overline{F}=-\nabla\phi$

Seat No.	

Set **Q**

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTCE0103) / (BTCSE0103) / (BTETE0103) / (BTEE0103) / (BTME0103)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If $u = \frac{x^{1/4} + y^{1/4}}{x^{1/5} + y^{1/5}}$, then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y}$ = _____.

a) $4u$ b) $20u$
c) $\frac{1}{20}u$ d) $5u$

2) For a vector function $\bar{F}$ there exist a scalar potential when _____.

a) div $\bar{F} = 0$ b) grad $(\text{div}\,\bar{F}) = 0$
c) curl $\bar{F} = 0$ d) $\bar{F} \cdot \text{curl}\,\bar{F} = 0$

3) If $\bar{r} = ae^{3t} + be^{2t}$, then at $t = 0, \frac{d\bar{r}}{dt}$ =_____.

a) a b) b
c) $2b + 3a$ d) $2a + 3b$

4) If $u = x - y, v = y - x$, then $\frac{\partial(u,v)}{\partial(x,y)}$ _____.

a) 0 b) 1
c) -1 d) 2

5) If $\Phi = \frac{1}{2}(x^2 + y^2 + z^2)$, then at $x = 1, y = 1, z = 1, \nabla\Phi$ = _____.

a) $i + j - k$ b) $i + j + k$
c) $i - j + k$ d) $-i + j + k$

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c) $\frac{(-1)^n(n-1)!}{(2x-3)^n}2^n$ d) $\frac{(-1)^{n+1}(n-1)!}{(2x+3)^n}2^n$

9) The expansion of $\log(1+x)$ =_____.

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10) The system of equations $AX = B$ is inconsistent if _____.

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c) 1 d) 0

13) The value of $\lim_{x\to 0}\left(\frac{1-\cos x}{x^2}\right)$ = _____.

a) 2 b) $-1/2$
c) -2 d) $1/2$

14) If zero is one of the Eigen values of matrix A, then A is _____.

a) Singular matrix b) Non-singular matrix
c) Symmetric matrix d) Non-symmetric matrix

Seat No.	

Set **Q**

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTCE0103) / (BTCSE0103) / (BTETE0103) / (BTEE0103) / (BTME0103)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three of the following question. **09**

a) Find n^{th} derivative of $y = \frac{x}{(x+1)^5}$

b) Expand $x^5 - x^4 + x^3 - x^2 + x - 1$ in power of $(x-1)$ and hence find $f\left(\frac{11}{10}\right)$.

c) Evaluate $\lim_{x\to 0} \frac{x^2 + 2\cos x - 2}{x \sin x}$

d) Change the given matrix into normal form and hence find its rank

$$A = \begin{bmatrix} 1 & -1 & -2 & -3 \\ 4 & 1 & 0 & 2 \\ 0 & 3 & 1 & -2 \\ 0 & 1 & 0 & 2 \end{bmatrix}$$

e) Verify Cayley Hamilton theorem for the matrix A and hence find A^{-1} where

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & -1 & 4 \\ 3 & 1 & -1 \end{bmatrix}$$

Q.3 Attempt any three of the following question. **09**

a) Evaluate $\lim_{x\to 0}(a^x + x)^{1/x}$

b) Expand $\log(1 + e^x)$ in powers of x by using Maclaurin's series.

c) Solve the system of equations $2x + y + z = 3,\ x - y + 2z = 4,\ x + z = 2$

d) Examine whether the vectors $X1 = [2\ -1\ 3\ 2],\ X2 = [1\ 3\ 4\ 2],$ $X3 = [3\ -5\ 2\ 2]$ are linearly dependent or independent?

e) Calculate n^{th} derivative of $y = e^{2x} \sin\left(\frac{x}{2}\right) \cos\left(\frac{x}{2}\right)$

Q.4 Attempt any two of the following. **10**

a) Determine the eigen values and corresponding eigen vectors of the matrix

$$A = \begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}$$

b) If $y = \cos(m\ sin^{-1}x)$ then show that $(1-x^2)y_{n+2} - (2n+1)xy_{n+1} + (m^2 - n^2)y_n = 0$. Hence obtain $y_n(0)$

c) Show that $e^x \log(1+x) = x + \frac{x^2}{2} + \frac{x^3}{3} + \cdots$

Section – II

Q.5 Attempt any three of the following question. **09**

a) Prove that $\frac{\partial u}{\partial x}+\frac{\partial u}{\partial y}+\frac{\partial u}{\partial z}=0$ if $u=f(x-y,y-z,z-x)$

b) If $u=ax+by, v=bx-ay$, find the value of $\left(\frac{\partial u}{\partial x}\right)_y.\left(\frac{\partial x}{\partial u}\right)_v.\left(\frac{\partial y}{\partial v}\right)_x.\left(\frac{\partial v}{\partial y}\right)_u$

c) If $u=x^2, v=y^2$ then P.T. $J.J'=1$

d) A particle moves along the curve $x=t^3+1, y=t^2, z=2t+3$ where t is the time. Find the components of its velocity and acceleration at $t=1$ in the direction $i+j+3k$.

e) Find the angle between the surfaces $x^2+y^2+z^2=12$ and $x^2+y^2-z=6$ at $(-1,2,1)$.

Q.6 Attempt any three of the following question. **09**

a) If $u=\log(x^2+y^2)$ then prove that $\frac{\partial^2 u}{\partial x\,\partial y}=\frac{\partial^2 u}{\partial y\,\partial x}$

b) If $u=2(ax+by)^2-(x^2+y^2)$ and $(a^2+b^2)=4$ Show that $\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}=12$

c) Divide 24 into three parts such that the continued product of the first, square of second & cube of the third may be maximum.

d) Find the directional derivatives of $\phi=4xz^3-3x^2y^2z$ at $(2,-1,2)$ in the direction from this point towards the point $(4,-4,8)$.

e) Find the percentage error in the area of ellipse due to 2% error each in measuring major and minor axes of ellipse.

Q.7 Attempt any two of the following question. **10**

a) If $u=\tan^{-1}(x^2+2y^2)$, then prove that

$$x^2\frac{\partial^2 u}{\partial x^2}+2xy\frac{\partial^2 u}{\partial x.\partial y}+y^2\frac{\partial^2 u}{\partial y^2}=2\sin u\,.\cos 3u$$

b) Find extreme values of $f(x,y)=x^3+y^3-3axy,\ a>0$

c) Show that the vector $\overline{F}=(6xy+z^3)i+(3x^2-z)j+(3x\,z^2-y)k$ is irrotational. Find the function ϕ such that $\overline{F}=-\nabla\phi$

Seat No.	

Set **R**

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTCE0103) / (BTCSE0103) / (BTETE0103) / (BTEE0103) / (BTME0103)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If $u = x - y, v = y - x$, then $\frac{\partial(u,v)}{\partial(x,y)}$ _____.

a) 0 b) 1
c) -1 d) 2

2) If $\Phi = \frac{1}{2}(x^2 + y^2 + z^2)$, then at $x = 1, y = 1, z = 1, \nabla\Phi =$ _____.

a) $i + j - k$ b) $i + j + k$
c) $i - j + k$ d) $-i + j + k$

3) The function $f(x, y) = 0$ has a saddle point if _____.

a) $rt - s^2 > 0$ b) $rt - s^2 < 0$
c) $rt - s^2 = 0$ d) None of these

4) If δx is an error in x, then $\frac{\delta x}{x}$ is called _____

a) absolute error in x b) percentage error in x
c) relative error in x d) None of these

5) If $y = \log(2x - 3)$ then y_n = _____.

a) $\frac{(-1)^n(n)!}{(2x-3)^n}$ b) $\frac{(-1)^{n-1}(n-1)!}{(2x-3)^n}2^n$
c) $\frac{(-1)^n(n-1)!}{(2x-3)^n}2^n$ d) $\frac{(-1)^{n+1}(n-1)!}{(2x+3)^n}2^n$

6) The expansion of $\log(1 + x) =$_____.

a) $1 + x + \frac{x^2}{2!} + \ldots$ b) $x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \ldots$
c) $x + \frac{x^2}{2} + \frac{x^3}{3} + \frac{x^4}{4} + \ldots$ d) $x - \frac{x^2}{2!} + \frac{x^3}{3!} - \frac{x^4}{4!} + \ldots$

7) The system of equations $AX = B$ is inconsistent if _____.

a) rank of $A <$ rank of $[A:B]$
b) rank of $A =$ rank of $[A:B]$
c) rank of A is less than the number of unknows
d) rank of $A =$ rank of B

8) If $y = (3x + 4)^{100}$ then y_{101} = _____.

a) $3^{100}.100!$ b) 0

c) 3^{100} d) None of these

9) The Rank of the Matrix $\begin{bmatrix} 201 & 304 & 607 \\ 201 & 304 & 607 \\ 201 & 304 & 607 \end{bmatrix}$ is _____.

a) 3 b) 2

c) 1 d) 0

10) The value of $\lim_{x \to 0} \left(\frac{1-\cos x}{x^2} \right)$ = _____.

a) 2 b) $-1/2$

c) -2 d) $1/2$

11) If zero is one of the Eigen values of matrix A, then A is _____.

a) Singular matrix b) Non-singular matrix

c) Symmetric matrix d) Non-symmetric matrix

12) If $u = \frac{x^{1/4} + y^{1/4}}{x^{1/5} + y^{1/5}}$, then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y}$ = _____.

a) $4u$ b) $20u$

c) $\frac{1}{20}u$ d) $5u$

13) For a vector function $\bar{F}$ there exist a scalar potential when _____.

a) div $\bar{F} = 0$ b) grad $(\text{div}\, \bar{F}) = 0$

c) curl $\bar{F} = 0$ d) $\bar{F} \cdot \text{curl}\, \bar{F} = 0$

14) If $\bar{r} = ae^{3t} + be^{2t}$, then at $t = 0, \frac{d\bar{r}}{dt}$ =_____.

a) a b) b

c) $2b + 3a$ d) $2a + 3b$

SLR-GF-701

Seat No.	

Set R

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTCE0103) / (BTCSE0103) / (BTETE0103) / (BTEE0103) / (BTME0103)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three of the following question. **09**

a) Find n^{th} derivative of $y = \frac{x}{(x+1)^5}$

b) Expand $x^5 - x^4 + x^3 - x^2 + x - 1$ in power of $(x-1)$ and hence find $f\left(\frac{11}{10}\right)$.

c) Evaluate $\lim_{x\to 0} \frac{x^2 + 2\cos x - 2}{x \sin x}$

d) Change the given matrix into normal form and hence find its rank

$$A = \begin{bmatrix} 1 & -1 & -2 & -3 \\ 4 & 1 & 0 & 2 \\ 0 & 3 & 1 & -2 \\ 0 & 1 & 0 & 2 \end{bmatrix}$$

e) Verify Cayley Hamilton theorem for the matrix A and hence find A^{-1} where

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & -1 & 4 \\ 3 & 1 & -1 \end{bmatrix}$$

Q.3 Attempt any three of the following question. **09**

a) Evaluate $\lim_{x\to 0}(a^x + x)^{1/x}$

b) Expand $\log(1 + e^x)$ in powers of x by using Maclaurin's series.

c) Solve the system of equations $2x + y + z = 3,\ x - y + 2z = 4,\ x + z = 2$

d) Examine whether the vectors $X1 = [2\ -1\ 3\ 2],\ X2 = [1\ 3\ 4\ 2],$ $X3 = [3\ -5\ 2\ 2]$ are linearly dependent or independent?

e) Calculate n^{th} derivative of $y = e^{2x} \sin\left(\frac{x}{2}\right) \cos\left(\frac{x}{2}\right)$

Q.4 Attempt any two of the following. **10**

a) Determine the eigen values and corresponding eigen vectors of the matrix

$$A = \begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}$$

b) If $y = \cos(m\ sin^{-1}x)$ then show that $(1-x^2)y_{n+2} - (2n+1)xy_{n+1} + (m^2 - n^2)y_n = 0$. Hence obtain $y_n(0)$

c) Show that $e^x \log(1+x) = x + \frac{x^2}{2} + \frac{x^3}{3} + \cdots$

Section – II

Q.5 Attempt any three of the following question. **09**

a) Prove that $\frac{\partial u}{\partial x}+\frac{\partial u}{\partial y}+\frac{\partial u}{\partial z}=0$ if $u=f(x-y,y-z,z-x)$

b) If $u=ax+by, v=bx-ay$, find the value of $\left(\frac{\partial u}{\partial x}\right)_y.\left(\frac{\partial x}{\partial u}\right)_v.\left(\frac{\partial y}{\partial v}\right)_x.\left(\frac{\partial v}{\partial y}\right)_u$

c) If $u=x^2, v=y^2$ then P.T. $J.J'=1$

d) A particle moves along the curve $x=t^3+1, y=t^2, z=2t+3$ where t is the time. Find the components of its velocity and acceleration at $t=1$ in the direction $i+j+3k$.

e) Find the angle between the surfaces $x^2+y^2+z^2=12$ and $x^2+y^2-z=6$ at $(-1,2,1)$.

Q.6 Attempt any three of the following question. **09**

a) If $u=\log(x^2+y^2)$ then prove that $\frac{\partial^2 u}{\partial x\,\partial y}=\frac{\partial^2 u}{\partial y\,\partial x}$

b) If $u=2(ax+by)^2-(x^2+y^2)$ and $(a^2+b^2)=4$ Show that $\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}=12$

c) Divide 24 into three parts such that the continued product of the first, square of second & cube of the third may be maximum.

d) Find the directional derivatives of $\phi=4xz^3-3x^2y^2z$ at $(2,-1,2)$ in the direction from this point towards the point $(4,-4,8)$.

e) Find the percentage error in the area of ellipse due to 2% error each in measuring major and minor axes of ellipse.

Q.7 Attempt any two of the following question. **10**

a) If $u=\tan^{-1}(x^2+2y^2)$, then prove that

$$x^2\frac{\partial^2 u}{\partial x^2}+2xy\frac{\partial^2 u}{\partial x.\partial y}+y^2\frac{\partial^2 u}{\partial y^2}=2\sin u\,.\cos 3u$$

b) Find extreme values of $f(x,y)=x^3+y^3-3axy,\ a>0$

c) Show that the vector $\overline{F}=(6xy+z^3)i+(3x^2-z)j+(3x\,z^2-y)k$ is irrotational. Find the function ϕ such that $\overline{F}=-\nabla\phi$

Seat No.		Set	S

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTCE0103) / (BTCSE0103) / (BTETE0103) / (BTEE0103) / (BTME0103)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The value of $\lim_{x\to 0}\left(\frac{1-\cos x}{x^2}\right)$ = _____.

a) 2 b) $-1/2$
c) -2 d) $1/2$

2) If zero is one of the Eigen values of matrix A, then A is _____.

a) Singular matrix b) Non-singular matrix
c) Symmetric matrix d) Non-symmetric matrix

3) If $u = \frac{x^{1/4}+y^{1/4}}{x^{1/5}+y^{1/5}}$, then $x\frac{\partial u}{\partial x}+y\frac{\partial u}{\partial y}$ = _____.

a) $4u$ b) $20u$
c) $\frac{1}{20}u$ d) $5u$

4) For a vector function $\bar{F}$ there exist a scalar potential when _____.

a) div $\bar{F}=0$ b) grad $(\text{div}\,\bar{F})=0$
c) curl $\bar{F}=0$ d) $\bar{F}\cdot$ curl $\bar{F}=0$

5) If $\bar{r}=ae^{3t}+be^{2t}$, then at $t=0, \frac{d\bar{r}}{dt}$ =_____.

a) a b) b
c) $2b+3a$ d) $2a+3b$

6) If $u=x-y, v=y-x$, then $\frac{\partial(u,v)}{\partial(x,y)}$ _____.

a) 0 b) 1
c) -1 d) 2

7) If $\Phi=\frac{1}{2}(x^2+y^2+z^2)$, then at $x=1, y=1, z=1, \nabla\Phi$ = _____.

a) $i+j-k$ b) $i+j+k$
c) $i-j+k$ d) $-i+j+k$

8) The function $f(x,y)=0$ has a saddle point if _____.

a) $rt-s^2>0$ b) $rt-s^2<0$
c) $rt-s^2=0$ d) None of these

9) If δx is an error in x, then $\frac{\delta x}{x}$ is called _____

a) absolute error in x b) percentage error in x
c) relative error in x d) None of these

10) If $y = \log(2x-3)$ then y_n = _____.

a) $\frac{(-1)^n(n)!}{(2x-3)^n}$ b) $\frac{(-1)^{n-1}(n-1)!}{(2x-3)^n}2^n$
c) $\frac{(-1)^n(n-1)!}{(2x-3)^n}2^n$ d) $\frac{(-1)^{n+1}(n-1)!}{(2x+3)^n}2^n$

11) The expansion of $\log(1+x)$ =_____.

a) $1+x+\frac{x^2}{2!}+\ldots$ b) $x-\frac{x^2}{2}+\frac{x^3}{3}-\frac{x^4}{4}+\ldots$
c) $x+\frac{x^2}{2}+\frac{x^3}{3}+\frac{x^4}{4}+\ldots$ d) $x-\frac{x^2}{2!}+\frac{x^3}{3!}-\frac{x^4}{4!}+\ldots$

12) The system of equations $AX = B$ is inconsistent if _____.

a) rank of $A <$ rank of $[A:B]$
b) rank of $A =$ rank of $[A:B]$
c) rank of A is less than the number of unknows
d) rank of $A =$ rank of B

13) If $y = (3x+4)^{100}$ then y_{101} = _____.

a) $3^{100}.100!$ b) 0
c) 3^{100} d) None of these

14) The Rank of the Matrix $\begin{bmatrix} 201 & 304 & 607 \\ 201 & 304 & 607 \\ 201 & 304 & 607 \end{bmatrix}$ is _____.

a) 3 b) 2
c) 1 d) 0

SLR-GF-701

Seat No.		Set	S

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTCE0103) / (BTCSE0103) / (BTETE0103) / (BTEE0103) / (BTME0103)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three of the following question. **09**

a) Find n^{th} derivative of $y = \frac{x}{(x+1)^5}$

b) Expand $x^5 - x^4 + x^3 - x^2 + x - 1$ in power of $(x-1)$ and hence find $f\left(\frac{11}{10}\right)$.

c) Evaluate $\lim_{x\to 0} \frac{x^2 + 2\cos x - 2}{x \sin x}$

d) Change the given matrix into normal form and hence find its rank

$$A = \begin{bmatrix} 1 & -1 & -2 & -3 \\ 4 & 1 & 0 & 2 \\ 0 & 3 & 1 & -2 \\ 0 & 1 & 0 & 2 \end{bmatrix}$$

e) Verify Cayley Hamilton theorem for the matrix A and hence find A^{-1} where

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & -1 & 4 \\ 3 & 1 & -1 \end{bmatrix}$$

Q.3 Attempt any three of the following question. **09**

a) Evaluate $\lim_{x\to 0}(a^x + x)^{1/x}$

b) Expand $\log(1 + e^x)$ in powers of x by using Maclaurin's series.

c) Solve the system of equations $2x + y + z = 3,\ x - y + 2z = 4,\ x + z = 2$

d) Examine whether the vectors $X1 = [2\ -1\ 3\ 2],\ X2 = [1\ 3\ 4\ 2],$ $X3 = [3\ -5\ 2\ 2]$ are linearly dependent or independent?

e) Calculate n^{th} derivative of $y = e^{2x} \sin\left(\frac{x}{2}\right) \cos\left(\frac{x}{2}\right)$

Q.4 Attempt any two of the following. **10**

a) Determine the eigen values and corresponding eigen vectors of the matrix

$$A = \begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}$$

b) If $y = \cos(m\ sin^{-1}x)$ then show that $(1-x^2)y_{n+2} - (2n+1)xy_{n+1} + (m^2 - n^2)y_n = 0$. Hence obtain $y_n(0)$

c) Show that $e^x \log(1+x) = x + \frac{x^2}{2} + \frac{x^3}{3} + \cdots$

Section – II

Q.5 Attempt any three of the following question. **09**

a) Prove that $\frac{\partial u}{\partial x}+\frac{\partial u}{\partial y}+\frac{\partial u}{\partial z}=0$ if $u=f(x-y,y-z,z-x)$

b) If $u=ax+by, v=bx-ay$, find the value of $\left(\frac{\partial u}{\partial x}\right)_y.\left(\frac{\partial x}{\partial u}\right)_v.\left(\frac{\partial y}{\partial v}\right)_x.\left(\frac{\partial v}{\partial y}\right)_u$

c) If $u=x^2, v=y^2$ then P.T. $J.J'=1$

d) A particle moves along the curve $x=t^3+1, y=t^2, z=2t+3$ where t is the time. Find the components of its velocity and acceleration at $t=1$ in the direction $i+j+3k$.

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c) Divide 24 into three parts such that the continued product of the first, square of second & cube of the third may be maximum.

d) Find the directional derivatives of $\phi=4xz^3-3x^2y^2z$ at $(2,-1,2)$ in the direction from this point towards the point $(4,-4,8)$.

e) Find the percentage error in the area of ellipse due to 2% error each in measuring major and minor axes of ellipse.

Q.7 Attempt any two of the following question. **10**

a) If $u=\tan^{-1}(x^2+2y^2)$, then prove that

$$x^2\frac{\partial^2 u}{\partial x^2}+2xy\frac{\partial^2 u}{\partial x.\partial y}+y^2\frac{\partial^2 u}{\partial y^2}=2\sin u\,.\cos 3u$$

b) Find extreme values of $f(x,y)=x^3+y^3-3axy,\ a>0$

c) Show that the vector $\overline{F}=(6xy+z^3)i+(3x^2-z)j+(3x\,z^2-y)k$ is irrotational. Find the function ϕ such that $\overline{F}=-\nabla\phi$

SLR-GF-702

Seat No.		Set	P

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
Engineering Physics (BTCE0101) / (BTCSE0101) / (BTETE0101) / (BTEE0101) / (BTME0101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Make suitable assumptions, if necessary.

Constants: 1) Avogadro's no., N = 6.02 x 10^{26} / k.mol.
2) Velocity of light, c = 3 x 10^{8} m/sec.
3) Charge of electron, e = 1.6 x 10^{-19} C.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The band gap energy of Ge is approximately _____.
a) 0.3 eV b) 1.1 eV
c) 0.7 eV d) 2.5 eV

2) The mobility (μ) is given by _____.
a) $\mu = \rho . R_H$ b) $\mu = \rho / R_H$
c) $\mu = \sigma . R_H$ d) $\mu = \sigma / R_H$

3) The atomic radius of BCC lattice is _____.
a) $\frac{\sqrt{2}}{4} \cdot a$ b) $\frac{\sqrt{3}}{4} \cdot a$
c) $\frac{a}{2}$ d) $\frac{a}{4}$

4) The co-ordination number in case of BCC structure is _____.
a) 6 b) 12
c) 8 d) 10

5) The no. of atoms in a unit cell of FCC structure is _____.
a) 1 b) 3
c) 2 d) 4

6) Optimum reverberation time for music is _____.
a) 0.5 to 1 sec b) 0 to 1 sec
c) 1 to 2 sec d) above 5 sec

7) The sound waves with frequency greater than 20 kHz are called _____.
a) audible waves b) infrasonic waves
c) ultrasonic waves d) Above all

8) Light waves are transverse in nature, can be demonstrated by observing the phenomenon of _____.
a) polarization b) diffraction
c) dispersion d) interference

9) The wave front corresponding to 0- ray is ____.
a) Cylindrical b) Elliptical
c) Plane d) Spherical

10) Emission of a photon by an atom without an external impetus (agency) is called _____.
a) stimulated emission b) induced emission
c) amplified emission d) spontaneous emission

11) Stimulated absorption process is mathematically represented by equation _____.
a) $A + hv \rightarrow A^*$ b) $A^* + hv \rightarrow A + 2hv$
c) $A^* \rightarrow A + hv$ d) $A^* + hv \rightarrow A + hv$

12) The hologram records _____ of the object.
a) Both intensity variation and phase distribution
b) Only intensity variation
c) Only phase distribution
d) None

13) Basic principle of fiber is _____.
a) total internal reflection b) refraction
c) reflection d) total internal refraction

14) The chirality of zigzag CNT is _____.
a) (a, a) b) (a, b)
c) $(0, b)$ d) $(a, 0)$

Seat No.		Set	P

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
Engineering Physics (BTCE0101) / (BTCSE0101) / (BTETE0101) / (BTEE0101) / (BTME0101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Six. **18**

a) Classify: insulator, semiconductor and conductor on the basis of energy band structure.

b) Represent with diagrams the position of Fermi level in,
i) P-type
ii) N-type semiconductors

c) Define atomic radius and obtain its values for SC and BCC.

d) Define void space and obtain the values for SC, BCC and FCC structure.

e) State: Properties of ultrasonic waves.

f) What are the basic acoustic requirements of a good auditorium?

g) A semiconducting crystal 12 mm long, 5 mm wide and 1 mm thick has a magnetic flux density of 0.5 wb/m^2 applied from front to back perpendicular to largest faces. When a current of 20 mA flows lengthwise through the specimen, the voltage measured across its width is found to be 37 μV. What is the Hall coefficient of this semiconductor?

h) Lead is FCC with an atomic radius of r = 1.746 A°.
Find the spacing of:
i) (200) planes
ii) (220) planes

Q.3 Attempt any two. **10**

a) State Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H).

b) Explain the term Miller indices. Derive the relation between lattice constant and interplanar spacing for cubic crystal.

$$d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

c) State and explain the factors affecting the architectural acoustics and their remedies.

d) i) Calculate the interplanar spacing (201) planes in a cubic crystal of lattice constant 4.3 x 10^{-8} cm.
ii) The average reverberation time of a hall is 1.5 sec and the area of the interior surface is 3340 m^2. If the volume of the hall is 12000 m^3, find the absorption coefficient.

Section – II

Q.4 Attempt any six. **18**

a) Explain: Positive and negative crystals.

b) Explain: Rayleigh's criterion of resolution.

c) Explain:

i) Population Inversion

ii) Stimulated Emission

d) State properties of LASER.

e) Explain three types of optical fiber with diagram.

f) Write applications of nanotechnology in various fields.

g) What is the highest order spectrum which may be seen with monochromatic light of wavelength 6000 AU by means of diffraction grating with 5000 liens per cm.

h) The numerical aperture of an optical fibre is 0.5 and the core refractive index is 1.5. Find refractive index of the cladding.

Q.5 Attempt any Two. **10**

a) What is diffraction grating? Derive an expression for the resolving power of a diffraction grating ($\lambda/d\lambda$=n.N)

b) Explain: He-Ne gas laser with neat energy and transition diagram.

c) Obtain the expression for acceptance angle, acceptance cone, numerical aperture and fractional refractive index change of an optical fiber.

d) i) A 20 cm long glass tube containing sugar solution rotates the plane of polarization by 11°. If the specific rotation of sugar is 66°, calculate the strength of the solution.

ii) In a step index optical fibre, core index n_1 =1.55 and cladding index n_2 = 1.40. Find

i) NA

ii) Δ

iii) Acceptance angle

Seat No.		Set	Q

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
Engineering Physics (BTCE0101) / (BTCSE0101) / (BTETE0101) / (BTEE0101) / (BTME0101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

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Seat No.		Set	Q

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
Engineering Physics (BTCE0101) / (BTCSE0101) / (BTETE0101) / (BTEE0101) / (BTME0101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

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b) Represent with diagrams the position of Fermi level in,
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c) Define atomic radius and obtain its values for SC and BCC.

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a) State Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H).

b) Explain the term Miller indices. Derive the relation between lattice constant and interplanar spacing for cubic crystal.

$$d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

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b) Explain: Rayleigh's criterion of resolution.

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- i) Population Inversion
- ii) Stimulated Emission

d) State properties of LASER.

e) Explain three types of optical fiber with diagram.

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g) What is the highest order spectrum which may be seen with monochromatic light of wavelength 6000 AU by means of diffraction grating with 5000 liens per cm.

h) The numerical aperture of an optical fibre is 0.5 and the core refractive index is 1.5. Find refractive index of the cladding.

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b) Explain: He-Ne gas laser with neat energy and transition diagram.

c) Obtain the expression for acceptance angle, acceptance cone, numerical aperture and fractional refractive index change of an optical fiber.

d) i) A 20 cm long glass tube containing sugar solution rotates the plane of polarization by 11°. If the specific rotation of sugar is 66°, calculate the strength of the solution.

ii) In a step index optical fibre, core index n_1 =1.55 and cladding index n_2 = 1.40. Find
- i) NA
- ii) Δ
- iii) Acceptance angle

Seat No.	

Set **R**

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
Engineering Physics (BTCE0101) / (BTCSE0101) / (BTETE0101) / (BTEE0101) / (BTME0101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Stimulated absorption process is mathematically represented by equation _____.
a) $A + hv \rightarrow A^*$ b) $A^* + hv \rightarrow A + 2hv$
c) $A^* \rightarrow A + hv$ d) $A^* + hv \rightarrow A + hv$

2) The hologram records _____ of the object.
a) Both intensity variation and phase distribution
b) Only intensity variation
c) Only phase distribution
d) None

3) Basic principle of fiber is _____.
a) total internal reflection b) refraction
c) reflection d) total internal refraction

4) The chirality of zigzag CNT is _____.
a) (a, a) b) (a, b)
c) $(0, b)$ d) $(a, 0)$

5) The band gap energy of Ge is approximately _____.
a) 0.3 eV b) 1.1 eV
c) 0.7 eV d) 2.5 eV

6) The mobility (μ) is given by _____.
a) $\mu = \rho . R_H$ b) $\mu = \rho / R_H$
c) $\mu = \sigma . R_H$ d) $\mu = \sigma / R_H$

7) The atomic radius of BCC lattice is _____.
a) $\frac{\sqrt{2}}{4} \cdot a$ b) $\frac{\sqrt{3}}{4} \cdot a$
c) $\frac{a}{2}$ d) $\frac{a}{4}$

8) The co-ordination number in case of BCC structure is _____.
a) 6 b) 12
c) 8 d) 10

9) The no. of atoms in a unit cell of FCC structure is _____.
a) 1 b) 3
c) 2 d) 4

10) Optimum reverberation time for music is ____.
a) 0.5 to 1 sec b) 0 to 1 sec
c) 1 to 2 sec d) above 5 sec

11) The sound waves with frequency greater than 20 kHz are called _____.
a) audible waves b) infrasonic waves
c) ultrasonic waves d) Above all

12) Light waves are transverse in nature, can be demonstrated by observing the phenomenon of _____.
a) polarization b) diffraction
c) dispersion d) interference

13) The wave front corresponding to 0- ray is ____.
a) Cylindrical b) Elliptical
c) Plane d) Spherical

14) Emission of a photon by an atom without an external impetus (agency) is called _____.
a) stimulated emission b) induced emission
c) amplified emission d) spontaneous emission

Seat No.		Set	R

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
Engineering Physics (BTCE0101) / (BTCSE0101) / (BTETE0101) / (BTEE0101) / (BTME0101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Six. **18**

a) Classify: insulator, semiconductor and conductor on the basis of energy band structure.

b) Represent with diagrams the position of Fermi level in,
i) P-type
ii) N-type semiconductors

c) Define atomic radius and obtain its values for SC and BCC.

d) Define void space and obtain the values for SC, BCC and FCC structure.

e) State: Properties of ultrasonic waves.

f) What are the basic acoustic requirements of a good auditorium?

g) A semiconducting crystal 12 mm long, 5 mm wide and 1 mm thick has a magnetic flux density of 0.5 wb/m^2 applied from front to back perpendicular to largest faces. When a current of 20 mA flows lengthwise through the specimen, the voltage measured across its width is found to be 37 μV. What is the Hall coefficient of this semiconductor?

h) Lead is FCC with an atomic radius of r = 1.746 A°.
Find the spacing of:
i) (200) planes
ii) (220) planes

Q.3 Attempt any two. **10**

a) State Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H).

b) Explain the term Miller indices. Derive the relation between lattice constant and interplanar spacing for cubic crystal.

$$d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

c) State and explain the factors affecting the architectural acoustics and their remedies.

d) i) Calculate the interplanar spacing (201) planes in a cubic crystal of lattice constant 4.3 x 10^{-8} cm.
ii) The average reverberation time of a hall is 1.5 sec and the area of the interior surface is 3340 m^2. If the volume of the hall is 12000 m^3, find the absorption coefficient.

Section – II

Q.4 Attempt any six. **18**

a) Explain: Positive and negative crystals.

b) Explain: Rayleigh's criterion of resolution.

c) Explain:

i) Population Inversion

ii) Stimulated Emission

d) State properties of LASER.

e) Explain three types of optical fiber with diagram.

f) Write applications of nanotechnology in various fields.

g) What is the highest order spectrum which may be seen with monochromatic light of wavelength 6000 AU by means of diffraction grating with 5000 liens per cm.

h) The numerical aperture of an optical fibre is 0.5 and the core refractive index is 1.5. Find refractive index of the cladding.

Q.5 Attempt any Two. **10**

a) What is diffraction grating? Derive an expression for the resolving power of a diffraction grating ($\lambda/d\lambda$=n.N)

b) Explain: He-Ne gas laser with neat energy and transition diagram.

c) Obtain the expression for acceptance angle, acceptance cone, numerical aperture and fractional refractive index change of an optical fiber.

d) i) A 20 cm long glass tube containing sugar solution rotates the plane of polarization by 11°. If the specific rotation of sugar is 66°, calculate the strength of the solution.

ii) In a step index optical fibre, core index n_1 =1.55 and cladding index n_2 = 1.40. Find

i) NA

ii) Δ

iii) Acceptance angle

Seat No.	

Set **S**

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
Engineering Physics (BTCE0101) / (BTCSE0101) / (BTETE0101) / (BTEE0101) / (BTME0101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Make suitable assumptions, if necessary.

Constants: 1) Avogadro's no., N = 6.02 x 10^{26} / k.mol.
2) Velocity of light, c = 3 x 10^{8} m/sec.
3) Charge of electron, e = 1.6 x 10^{-19} C.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Optimum reverberation time for music is ____.
a) 0.5 to 1 sec b) 0 to 1 sec
c) 1 to 2 sec d) above 5 sec

2) The sound waves with frequency greater than 20 kHz are called _____.
a) audible waves b) infrasonic waves
c) ultrasonic waves d) Above all

3) Light waves are transverse in nature, can be demonstrated by observing the phenomenon of _____.
a) polarization b) diffraction
c) dispersion d) interference

4) The wave front corresponding to 0- ray is ____.
a) Cylindrical b) Elliptical
c) Plane d) Spherical

5) Emission of a photon by an atom without an external impetus (agency) is called _____.
a) stimulated emission b) induced emission
c) amplified emission d) spontaneous emission

6) Stimulated absorption process is mathematically represented by equation _____.
a) $A + hv \rightarrow A^*$ b) $A^* + hv \rightarrow A + 2hv$
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12) The atomic radius of BCC lattice is _____.

a) $\frac{\sqrt{2}}{4} \cdot a$ b) $\frac{\sqrt{3}}{4} \cdot a$

c) $\frac{a}{2}$ d) $\frac{a}{4}$

13) The co-ordination number in case of BCC structure is _____.

a) 6 b) 12

c) 8 d) 10

14) The no. of atoms in a unit cell of FCC structure is _____.

a) 1 b) 3

c) 2 d) 4

Seat No.		Set	S

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov - 2023
Engineering Physics (BTCE0101) / (BTCSE0101) / (BTETE0101) / (BTEE0101) / (BTME0101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any Six. **18**

a) Classify: insulator, semiconductor and conductor on the basis of energy band structure.
b) Represent with diagrams the position of Fermi level in,
i) P-type
ii) N-type semiconductors
c) Define atomic radius and obtain its values for SC and BCC.
d) Define void space and obtain the values for SC, BCC and FCC structure.
e) State: Properties of ultrasonic waves.
f) What are the basic acoustic requirements of a good auditorium?
g) A semiconducting crystal 12 mm long, 5 mm wide and 1 mm thick has a magnetic flux density of 0.5 wb/m^2 applied from front to back perpendicular to largest faces. When a current of 20 mA flows lengthwise through the specimen, the voltage measured across its width is found to be 37 μV. What is the Hall coefficient of this semiconductor?
h) Lead is FCC with an atomic radius of r = 1.746 A°.
Find the spacing of:
i) (200) planes
ii) (220) planes

Q.3 Attempt any two. **10**

a) State Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H).
b) Explain the term Miller indices. Derive the relation between lattice constant and interplanar spacing for cubic crystal.

$$d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

c) State and explain the factors affecting the architectural acoustics and their remedies.
d) i) Calculate the interplanar spacing (201) planes in a cubic crystal of lattice constant 4.3 x 10^{-8} cm.
ii) The average reverberation time of a hall is 1.5 sec and the area of the interior surface is 3340 m^2. If the volume of the hall is 12000 m^3, find the absorption coefficient.

Section – II

Q.4 Attempt any six. **18**

a) Explain: Positive and negative crystals.

b) Explain: Rayleigh's criterion of resolution.

c) Explain:

i) Population Inversion

ii) Stimulated Emission

d) State properties of LASER.

e) Explain three types of optical fiber with diagram.

f) Write applications of nanotechnology in various fields.

g) What is the highest order spectrum which may be seen with monochromatic light of wavelength 6000 AU by means of diffraction grating with 5000 liens per cm.

h) The numerical aperture of an optical fibre is 0.5 and the core refractive index is 1.5. Find refractive index of the cladding.

Q.5 Attempt any Two. **10**

a) What is diffraction grating? Derive an expression for the resolving power of a diffraction grating ($\lambda/d\lambda$=n.N)

b) Explain: He-Ne gas laser with neat energy and transition diagram.

c) Obtain the expression for acceptance angle, acceptance cone, numerical aperture and fractional refractive index change of an optical fiber.

d) i) A 20 cm long glass tube containing sugar solution rotates the plane of polarization by 11°. If the specific rotation of sugar is 66°, calculate the strength of the solution.

ii) In a step index optical fibre, core index n_1 =1.55 and cladding index n_2 = 1.40. Find

i) NA

ii) Δ

iii) Acceptance angle

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Seat No.	

Set P

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTCE0102) / (BTCSE0102) / (BTETE0102) / (BTEE0102) / (BTME0102)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat and labelled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Hardness in water is caused by the presence of: _____.
a) sodium chloride b) sodium carbonate
c) calcium chloride d) potassium nitrate

2) Most popular and ideal disinfectant in water works is: _____.
a) soda b) ozone
c) chlorine d) lime

3) Water containing dissolved salts with a peculiar salty taste is called: _____.
a) soft water b) brackish water
c) hard water d) desalinated water

4) A lubricant is used primarily to prevent: _____.
a) corrosion of metals
b) oxidation of metals
c) reduction of metals
d) wearing out of rubbing metallic surfaces

5) Lubricant used in a machine working at low temperature should possess ____.
a) high pour point b) low flash point
c) high cloud point d) low pour point

6) Metal at the top of electrochemical series is: _____.
a) most stable b) least active
c) most noble d) most active

7) Galvanizing is the process of coating iron with: _____.
a) Sn b) Zn
c) Cu d) Ni

8) A good fuel should possess: _____.
a) low calorific value b) high ignition temperature
c) high calorific value d) high ash content

9) A fuel having high ignition temperature is _____.

a) Petrol b) Wood
c) Kerosene d) LPG

10) Structural units of high polymers, are called: _____.

a) fibres b) thermo units
c) monomers d) fabrics

11) A plastic which can be softened on heating and hardened on cooling is called: _____.

a) thermo-elastic b) thermoplastic
c) thermosetting d) thermite

12) Which of the following is an addition polymer?

a) Bakelite b) Nylon
c) Terylene d) Polyethylene

13) The technique by which a mixture is separated into its constituents by a moving gas phase passing over a stationary adsorbent, is called: _____.

a) column chromatography b) gas chromatography
c) spectroscopy d) ion-exchange chromatography

14) The commonly used carrier gas in GLC is _____.

a) F_2 b) Br_2
c) Cl_2 d) N_2

Seat No.	

Set **P**

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTCE0102) / (BTCSE0102) / (BTETE0102) / (BTEE0102) / (BTME0102)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and labelled diagrams wherever necessary.

Section – I

Q.2 Attempt any four: **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	20.15	162
$Mg(HCO_3)_2$	28.73	146
$MgSO_4$	24.10	120
$CaSO_4$	27.00	136
$MgCl_2$	26.5	95

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Explain Ion exchange process for softening of hard water.

c) Explain types of liquid lubricants.

d) Define following terms.
i) Viscosity
ii) Viscosity index
iii) Flash point
iv) Saponification value

e) Define alloy. Explain purpose of alloying.

f) Explain factors affecting on rate of corrosion.

Q.3 Attempt any four: **12**

a) Define disinfection. Explain disinfection of water by chlorine.

b) Define BOD. How it is determined. Explain its importance.

c) Define Lubricant. Explain its functions.

d) In acid value determination of a lubricating oil 7 gm of oil sample required 3.5 ml of N/10 KOH solution calculate its acid value.

e) Explain testing and measurement of corrosion by weight loss method.

f) Explain characteristics of good paints.

Section – II

Q.4 Attempt any four: **16**

a) A sample of coal containing 5% H, when tested in the laboratory for its calorific value in the bomb calorimeter, the following data were obtained:

Weight of coal burnt	= 0.92 g
Weight of water taken	= 2500 g
Water equivalent of bomb and calorimeter	= 550 g
Rise in temperature	= 2.38°C
Cooling correction	= 0.02°C
Fuse wire correction	= 10 cal
Acid correction	= 60 cal

Calculate the gross and net calorific value of the coal in cal/g. (Take latent heat of condensation of steam = 580 cal/g)

b) Explain construction and working of Boy's calorimeter.

c) Compare solid and gaseous fuels.

d) Define polymerization. Explain addition and condensation polymerization.

e) Explain molding of plastics in to articles by following methods.

i) Compression molding

ii) Injection molding

f) Define TGA. Explain instrumentation of TGA. What are its applications?

Q.5 Attempt any four: **12**

a) Explain characteristics of batteries.

b) Explain the characteristics of good fuels.

c) Summarize advantages and disadvantages of biodiesel.

d) Explain synthesis, properties and applications of PVC.

e) Calculate Degree of polymerization of PVC having molecular weight 21875.

f) Calculate weight of Na_2CO_3 required to prepare 0.3 N 600 ml solution. (Mol. Wt. of Na_2CO_3 = 106)

Seat No.	

Set **Q**

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTCE0102) / (BTCSE0102) / (BTETE0102) / (BTEE0102) / (BTME0102)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat and labelled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) A good fuel should possess: _____.
a) low calorific value b) high ignition temperature
c) high calorific value d) high ash content

2) A fuel having high ignition temperature is _____.
a) Petrol b) Wood
c) Kerosene d) LPG

3) Structural units of high polymers, are called: _____.
a) fibres b) thermo units
c) monomers d) fabrics

4) A plastic which can be softened on heating and hardened on cooling is called: _____.
a) thermo-elastic b) thermoplastic
c) thermosetting d) thermite

5) Which of the following is an addition polymer?
a) Bakelite b) Nylon
c) Terylene d) Polyethylene

6) The technique by which a mixture is separated into its constituents by a moving gas phase passing over a stationary adsorbent, is called: _____.
a) column chromatography b) gas chromatography
c) spectroscopy d) ion-exchange chromatography

7) The commonly used carrier gas in GLC is _____.
a) F_2 b) Br_2
c) Cl_2 d) N_2

8) Hardness in water is caused by the presence of: _____.
a) sodium chloride b) sodium carbonate
c) calcium chloride d) potassium nitrate

9) Most popular and ideal disinfectant in water works is: _____.
a) soda b) ozone
c) chlorine d) lime

10) Water containing dissolved salts with a peculiar salty taste is called: _____.
a) soft water b) brackish water
c) hard water d) desalinated water

11) A lubricant is used primarily to prevent: _____.
a) corrosion of metals
b) oxidation of metals
c) reduction of metals
d) wearing out of rubbing metallic surfaces

12) Lubricant used in a machine working at low temperature should possess ____.
a) high pour point b) low flash point
c) high cloud point d) low pour point

13) Metal at the top of electrochemical series is: _____.
a) most stable b) least active
c) most noble d) most active

14) Galvanizing is the process of coating iron with: _____.
a) Sn b) Zn
c) Cu d) Ni

Seat No.	

Set **Q**

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTCE0102) / (BTCSE0102) / (BTETE0102) / (BTEE0102) / (BTME0102)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and labelled diagrams wherever necessary.

Section – I

Q.2 Attempt any four: **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	20.15	162
$Mg(HCO_3)_2$	28.73	146
$MgSO_4$	24.10	120
$CaSO_4$	27.00	136
$MgCl_2$	26.5	95

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Explain Ion exchange process for softening of hard water.

c) Explain types of liquid lubricants.

d) Define following terms.
i) Viscosity
ii) Viscosity index
iii) Flash point
iv) Saponification value

e) Define alloy. Explain purpose of alloying.

f) Explain factors affecting on rate of corrosion.

Q.3 Attempt any four: **12**

a) Define disinfection. Explain disinfection of water by chlorine.

b) Define BOD. How it is determined. Explain its importance.

c) Define Lubricant. Explain its functions.

d) In acid value determination of a lubricating oil 7 gm of oil sample required 3.5 ml of N/10 KOH solution calculate its acid value.

e) Explain testing and measurement of corrosion by weight loss method.

f) Explain characteristics of good paints.

Section – II

Q.4 Attempt any four: **16**

a) A sample of coal containing 5% H, when tested in the laboratory for its calorific value in the bomb calorimeter, the following data were obtained:

Weight of coal burnt	= 0.92 g
Weight of water taken	= 2500 g
Water equivalent of bomb and calorimeter	= 550 g
Rise in temperature	= 2.38°C
Cooling correction	= 0.02°C
Fuse wire correction	= 10 cal
Acid correction	= 60 cal

Calculate the gross and net calorific value of the coal in cal/g. (Take latent heat of condensation of steam = 580 cal/g)

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c) Compare solid and gaseous fuels.

d) Define polymerization. Explain addition and condensation polymerization.

e) Explain molding of plastics in to articles by following methods.

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f) Define TGA. Explain instrumentation of TGA. What are its applications?

Q.5 Attempt any four: **12**

a) Explain characteristics of batteries.

b) Explain the characteristics of good fuels.

c) Summarize advantages and disadvantages of biodiesel.

d) Explain synthesis, properties and applications of PVC.

e) Calculate Degree of polymerization of PVC having molecular weight 21875.

f) Calculate weight of Na_2CO_3 required to prepare 0.3 N 600 ml solution. (Mol. Wt. of Na_2CO_3 = 106)

Seat No.	

Set **R**

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTCE0102) / (BTCSE0102) / (BTETE0102) / (BTEE0102) / (BTME0102)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat and labelled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) A plastic which can be softened on heating and hardened on cooling is called: _____.
a) thermo-elastic b) thermoplastic
c) thermosetting d) thermite

2) Which of the following is an addition polymer?
a) Bakelite b) Nylon
c) Terylene d) Polyethylene

3) The technique by which a mixture is separated into its constituents by a moving gas phase passing over a stationary adsorbent, is called: _____.
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9) Lubricant used in a machine working at low temperature should possess ____.
a) high pour point b) low flash point
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10) Metal at the top of electrochemical series is: _____.
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11) Galvanizing is the process of coating iron with: _____.
a) Sn b) Zn
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12) A good fuel should possess: _____.
a) low calorific value b) high ignition temperature
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13) A fuel having high ignition temperature is _____.
a) Petrol b) Wood
c) Kerosene d) LPG

14) Structural units of high polymers, are called: _____.
a) fibres b) thermo units
c) monomers d) fabrics

Seat No.	

Set **R**

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTCE0102) / (BTCSE0102) / (BTETE0102) / (BTEE0102) / (BTME0102)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicates full marks.
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Section – I

Q.2 Attempt any four: **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

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d) In acid value determination of a lubricating oil 7 gm of oil sample required 3.5 ml of N/10 KOH solution calculate its acid value.

e) Explain testing and measurement of corrosion by weight loss method.

f) Explain characteristics of good paints.

Section – II

Q.4 Attempt any four: **16**

a) A sample of coal containing 5% H, when tested in the laboratory for its calorific value in the bomb calorimeter, the following data were obtained:

Weight of coal burnt	= 0.92 g
Weight of water taken	= 2500 g
Water equivalent of bomb and calorimeter	= 550 g
Rise in temperature	= 2.38°C
Cooling correction	= 0.02°C
Fuse wire correction	= 10 cal
Acid correction	= 60 cal

Calculate the gross and net calorific value of the coal in cal/g. (Take latent heat of condensation of steam = 580 cal/g)

b) Explain construction and working of Boy's calorimeter.

c) Compare solid and gaseous fuels.

d) Define polymerization. Explain addition and condensation polymerization.

e) Explain molding of plastics in to articles by following methods.

i) Compression molding

ii) Injection molding

f) Define TGA. Explain instrumentation of TGA. What are its applications?

Q.5 Attempt any four: **12**

a) Explain characteristics of batteries.

b) Explain the characteristics of good fuels.

c) Summarize advantages and disadvantages of biodiesel.

d) Explain synthesis, properties and applications of PVC.

e) Calculate Degree of polymerization of PVC having molecular weight 21875.

f) Calculate weight of Na_2CO_3 required to prepare 0.3 N 600 ml solution. (Mol. Wt. of Na_2CO_3 = 106)

Seat No.	

Set **S**

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTCE0102) / (BTCSE0102) / (BTETE0102) / (BTEE0102) / (BTME0102)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat and labelled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Metal at the top of electrochemical series is: _____.
a) most stable b) least active
c) most noble d) most active

2) Galvanizing is the process of coating iron with: _____.
a) Sn b) Zn
c) Cu d) Ni

3) A good fuel should possess: _____.
a) low calorific value b) high ignition temperature
c) high calorific value d) high ash content

4) A fuel having high ignition temperature is _____.
a) Petrol b) Wood
c) Kerosene d) LPG

5) Structural units of high polymers, are called: _____.
a) fibres b) thermo units
c) monomers d) fabrics

6) A plastic which can be softened on heating and hardened on cooling is called: _____.
a) thermo-elastic b) thermoplastic
c) thermosetting d) thermite

7) Which of the following is an addition polymer?
a) Bakelite b) Nylon
c) Terylene d) Polyethylene

8) The technique by which a mixture is separated into its constituents by a moving gas phase passing over a stationary adsorbent, is called: _____.
a) column chromatography b) gas chromatography
c) spectroscopy d) ion-exchange chromatography

9) The commonly used carrier gas in GLC is _____.
a) F_2 b) Br_2
c) Cl_2 d) N_2

10) Hardness in water is caused by the presence of: _____.
a) sodium chloride b) sodium carbonate
c) calcium chloride d) potassium nitrate

11) Most popular and ideal disinfectant in water works is: _____.
a) soda b) ozone
c) chlorine d) lime

12) Water containing dissolved salts with a peculiar salty taste is called: _____.
a) soft water b) brackish water
c) hard water d) desalinated water

13) A lubricant is used primarily to prevent: _____.
a) corrosion of metals
b) oxidation of metals
c) reduction of metals
d) wearing out of rubbing metallic surfaces

14) Lubricant used in a machine working at low temperature should possess ____.
a) high pour point b) low flash point
c) high cloud point d) low pour point

Seat No.	

Set | S

F.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTCE0102) / (BTCSE0102) / (BTETE0102) / (BTEE0102) / (BTME0102)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and labelled diagrams wherever necessary.

Section – I

Q.2 Attempt any four: **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	20.15	162
$Mg(HCO_3)_2$	28.73	146
$MgSO_4$	24.10	120
$CaSO_4$	27.00	136
$MgCl_2$	26.5	95

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Explain Ion exchange process for softening of hard water.

c) Explain types of liquid lubricants.

d) Define following terms.
i) Viscosity
ii) Viscosity index
iii) Flash point
iv) Saponification value

e) Define alloy. Explain purpose of alloying.

f) Explain factors affecting on rate of corrosion.

Q.3 Attempt any four: **12**

a) Define disinfection. Explain disinfection of water by chlorine.

b) Define BOD. How it is determined. Explain its importance.

c) Define Lubricant. Explain its functions.

d) In acid value determination of a lubricating oil 7 gm of oil sample required 3.5 ml of N/10 KOH solution calculate its acid value.

e) Explain testing and measurement of corrosion by weight loss method.

f) Explain characteristics of good paints.

Section – II

Q.4 Attempt any four: **16**

a) A sample of coal containing 5% H, when tested in the laboratory for its calorific value in the bomb calorimeter, the following data were obtained:

Weight of coal burnt	= 0.92 g
Weight of water taken	= 2500 g
Water equivalent of bomb and calorimeter	= 550 g
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Calculate the gross and net calorific value of the coal in cal/g. (Take latent heat of condensation of steam = 580 cal/g)

b) Explain construction and working of Boy's calorimeter.

c) Compare solid and gaseous fuels.

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a) Explain characteristics of batteries.

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c) Summarize advantages and disadvantages of biodiesel.

d) Explain synthesis, properties and applications of PVC.

e) Calculate Degree of polymerization of PVC having molecular weight 21875.

f) Calculate weight of Na_2CO_3 required to prepare 0.3 N 600 ml solution. (Mol. Wt. of Na_2CO_3 = 106)

Seat No.	

Set **P**

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 70
Time: 03:00 PM To 6:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions, if necessary and mention them clearly.
5) Use of non-programmable single memory calculator is allowed.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following. **07**

1) Plane survey is conducted for the area up to _____.
a) 250 km^2 b) 100 km^2
c) 195.5 km^2 d) 160 km^2

2) The method adopted for removing, bushes, branches, debris etc. from water is known as ____.
a) sedimentation b) coagulation
c) screening d) filtration

3) The most common coagulant is _____.
a) magnesium sulphate b) alum
c) chorine d) bleaching powder

4) Green buildings are designed to _____.
a) Reduce carbon emission
b) Use non-conventional energy
c) Use locally available building material
d) All of the above

5) The study of something without making actual contact with the object of study is _____.
a) GPS b) Triangulation
c) leveling d) Remote sensing

6) _____ is a process design for treating the industrial waste water for its reuse or safe disposal to the environment.
a) Effluent treatment plant b) Water treatment plant
c) Screening d) Filtrations

7) The portion of a road surface, which is used by vehicular traffic, is known as ___.
a) carriage-way b) shoulder
c) express way d) all of the above

Section – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. **07**

1) To increase the pressure of air or gas, machine driven by prime mover is used. This is known as _____.

a) steam turbine b) gas turbine
c) compressor d) I.C. engine

2) Which of the following is a general-purpose machine tools?

a) Milling b) Lathe
c) Drilling d) Cutting

3) Most commonly used flame in gas welding is _____.

a) Neutral b) Oxidizing
c) carburizing d) none

4) Which type of belt arrangement is used to transmit power between two shafts having opposite motion?

a) Open belt b) Cross belt
c) Continuous belt d) None of above

5) Energy can neither be created nor be destroyed, but only converted from one form to another. This statement is _____.

a) Zeroth law of Thermodynamic
b) First law of thermodynamics.
c) Second law of thermodynamics
d) None of the above

6) During a cycle, the heat transfer are given by: 120kJ, -60kJ, -48kJ, and 12kJ then the network transfer the cycle is ____.

a) 60000 Nm b) 24000 Nm
c) 12000 Nm d) 4400 Nm

7) A system comprising of a single phase, is known as _____.

a) Open system b) Closed system
c) Heterogeneous system d) Homogeneous system

Seat No.		Set	P

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 56
Time: 03:00 PM To 6:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever needed and mention it clearly.
4) Use of non-programmable single memory calculator is allowed.
5) Q.No.2 and Q.No.4 are short answer type question.
6) Q.No.3 and Q.No.5 are long answer type question.

Section – I

Q.2 Attempt any Five. **15**

a) Differentiate or compare between substructure and superstructure.
b) Differentiate between framed structures and load bearing structures.
c) What are the sub branches of civil engineering? Explain any one in short.
d) Explain application of Civil Engineering to Mechanical and Electrical Engineering.
e) What is Remote-Sensing? Give its applications in various fields.
f) Explain Operation of Effluent treatment system.
g) Write note on rain water harvesting.

Q.3 Solve any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) The following consecutive readings were taken with a dumpy level. **05**
3.864, 3.346, 1.952, 0.854, 3.796, 2.639, 1.542, 1.934, 0.864, 0.665. The level was shifted after fifth and eighth readings. The first reading was taken on the bench mark of RL 150.250. Calculate the reduced levels of the change points and the difference of level between first and last points.
(Use collimation plane method.)

b) During levelling following staff readings are taken, **05**
1.235, 2.345(instrument shifted), 3.455, 1.985(staff inverted), 2.765, 3.435.
Enter the data in standard tabular form. Calculate R. L of the last station if the R. L of first station is 500.00 m. use rise and fall method. Apply usual arithmetic checks.

c) With neat sketch explain any two types of shallow foundation. **04**
d) Differentiate between Plane Surveying and Geodetic Surveying. **04**
e) Draw a neat sketch of road structure in embankment. **04**
f) Explain the IRC classification of roads. **04**

Section – II

Q.4 Answer any five of the following **15**

a) Distinguish between Centrifugal pump and Reciprocating pump.
b) Write a note on working of Pelton Turbine of with its diagram.
c) Explain Resistance welding with neat sketch.
d) Explain types of equilibrium in thermodynamic system.
e) Compare chain drive and belt drive.
f) Explain Kelvin Plank & Classuis statements.
g) Explain Vane Blower with neat sketch.

Q.5 Solve any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) A cross belt connects two pulleys of 500 mm diameter 2 m apart. The initial tension in the belt is 400 N. If the coefficient of friction in the belt and pulley is 0.25. Find the power transmitted at 700 rpm. Also calculated length of belt. **05**

b) Describe Lathe Machine with its block diagram. **05**

c) A cycle comprises three processes. The energy transfers in each are tabulated below. Complete the table. **04**

Process	Q (KJ)	W (KJ)	ΔU (KJ)
1-2	+80	+30	---
2-3	---	-50	+20
3-1	+50	---	---

d) Explain with neat sketch working Francis turbine. **04**

e) Derive an expression for length of belt for open belt drive. **04**

f) Sketch and describe in brief pillar drilling machine **04**

Seat No.		Set	Q

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 70
Time: 03:00 PM To 6:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions, if necessary and mention them clearly.
5) Use of non-programmable single memory calculator is allowed.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following. **07**

1) Plane survey is conducted for the area up to _____.
a) 250 km^2 b) 100 km^2
c) 195.5 km^2 d) 160 km^2

2) The method adopted for removing, bushes, branches, debris etc. from water is known as ____.
a) sedimentation b) coagulation
c) screening d) filtration

3) The most common coagulant is _____.
a) magnesium sulphate b) alum
c) chorine d) bleaching powder

4) Green buildings are designed to _____.
a) Reduce carbon emission
b) Use non-conventional energy
c) Use locally available building material
d) All of the above

5) The study of something without making actual contact with the object of study is _____.
a) GPS b) Triangulation
c) leveling d) Remote sensing

6) _____ is a process design for treating the industrial waste water for its reuse or safe disposal to the environment.
a) Effluent treatment plant b) Water treatment plant
c) Screening d) Filtrations

7) The portion of a road surface, which is used by vehicular traffic, is known as ___.
a) carriage-way b) shoulder
c) express way d) all of the above

Section – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. **07**

1) To increase the pressure of air or gas, machine driven by prime mover is used. This is known as _____.

a) steam turbine b) gas turbine
c) compressor d) I.C. engine

2) Which of the following is a general-purpose machine tools?

a) Milling b) Lathe
c) Drilling d) Cutting

3) Most commonly used flame in gas welding is _____.

a) Neutral b) Oxidizing
c) carburizing d) none

4) Which type of belt arrangement is used to transmit power between two shafts having opposite motion?

a) Open belt b) Cross belt
c) Continuous belt d) None of above

5) Energy can neither be created nor be destroyed, but only converted from one form to another. This statement is _____.

a) Zeroth law of Thermodynamic
b) First law of thermodynamics.
c) Second law of thermodynamics
d) None of the above

6) During a cycle, the heat transfer are given by: 120kJ, -60kJ, -48kJ, and 12kJ then the network transfer the cycle is ____.

a) 60000 Nm b) 24000 Nm
c) 12000 Nm d) 4400 Nm

7) A system comprising of a single phase, is known as _____.

a) Open system b) Closed system
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Seat No.		Set	Q

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 56
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Section – I

Q.2 Attempt any Five. **15**

a) Differentiate or compare between substructure and superstructure.
b) Differentiate between framed structures and load bearing structures.
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Q.3 Solve any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) The following consecutive readings were taken with a dumpy level. **05**
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c) With neat sketch explain any two types of shallow foundation. **04**
d) Differentiate between Plane Surveying and Geodetic Surveying. **04**
e) Draw a neat sketch of road structure in embankment. **04**
f) Explain the IRC classification of roads. **04**

Section – II

Q.4 Answer any five of the following **15**

a) Distinguish between Centrifugal pump and Reciprocating pump.
b) Write a note on working of Pelton Turbine of with its diagram.
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c) A cycle comprises three processes. The energy transfers in each are tabulated below. Complete the table. **04**

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2-3	---	-50	+20
3-1	+50	---	---

d) Explain with neat sketch working Francis turbine. **04**

e) Derive an expression for length of belt for open belt drive. **04**

f) Sketch and describe in brief pillar drilling machine **04**

Seat No.	

Set **R**

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 70
Time: 03:00 PM To 6:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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Section - I

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Duration: 30 Minutes Marks: 07

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Section – II

MCQ/Objective Type Questions

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Seat No.		Set	R

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 56
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Instructions: 1) All questions are compulsory.
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Section – I

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g) Write note on rain water harvesting.

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d) Differentiate between Plane Surveying and Geodetic Surveying. **04**
e) Draw a neat sketch of road structure in embankment. **04**
f) Explain the IRC classification of roads. **04**

Section – II

Q.4 Answer any five of the following **15**

a) Distinguish between Centrifugal pump and Reciprocating pump.
b) Write a note on working of Pelton Turbine of with its diagram.
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3-1	+50	---	---

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e) Derive an expression for length of belt for open belt drive. **04**

f) Sketch and describe in brief pillar drilling machine **04**

Seat No.		Set	S

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 70
Time: 03:00 PM To 6:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions, if necessary and mention them clearly.
5) Use of non-programmable single memory calculator is allowed.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following. **07**

1) Plane survey is conducted for the area up to _____.
a) 250 km^2 b) 100 km^2
c) 195.5 km^2 d) 160 km^2

2) The method adopted for removing, bushes, branches, debris etc. from water is known as ____.
a) sedimentation b) coagulation
c) screening d) filtration

3) The most common coagulant is _____.
a) magnesium sulphate b) alum
c) chorine d) bleaching powder

4) Green buildings are designed to _____.
a) Reduce carbon emission
b) Use non-conventional energy
c) Use locally available building material
d) All of the above

5) The study of something without making actual contact with the object of study is _____.
a) GPS b) Triangulation
c) leveling d) Remote sensing

6) _____ is a process design for treating the industrial waste water for its reuse or safe disposal to the environment.
a) Effluent treatment plant b) Water treatment plant
c) Screening d) Filtrations

7) The portion of a road surface, which is used by vehicular traffic, is known as ___.
a) carriage-way b) shoulder
c) express way d) all of the above

Section – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. **07**

1) To increase the pressure of air or gas, machine driven by prime mover is used. This is known as _____.

a) steam turbine b) gas turbine
c) compressor d) I.C. engine

2) Which of the following is a general-purpose machine tools?

a) Milling b) Lathe
c) Drilling d) Cutting

3) Most commonly used flame in gas welding is _____.

a) Neutral b) Oxidizing
c) carburizing d) none

4) Which type of belt arrangement is used to transmit power between two shafts having opposite motion?

a) Open belt b) Cross belt
c) Continuous belt d) None of above

5) Energy can neither be created nor be destroyed, but only converted from one form to another. This statement is _____.

a) Zeroth law of Thermodynamic
b) First law of thermodynamics.
c) Second law of thermodynamics
d) None of the above

6) During a cycle, the heat transfer are given by: 120kJ, -60kJ, -48kJ, and 12kJ then the network transfer the cycle is ____.

a) 60000 Nm b) 24000 Nm
c) 12000 Nm d) 4400 Nm

7) A system comprising of a single phase, is known as _____.

a) Open system b) Closed system
c) Heterogeneous system d) Homogeneous system

Seat No.		Set	S

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 56
Time: 03:00 PM To 6:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever needed and mention it clearly.
4) Use of non-programmable single memory calculator is allowed.
5) Q.No.2 and Q.No.4 are short answer type question.
6) Q.No.3 and Q.No.5 are long answer type question.

Section – I

Q.2 Attempt any Five. **15**

a) Differentiate or compare between substructure and superstructure.
b) Differentiate between framed structures and load bearing structures.
c) What are the sub branches of civil engineering? Explain any one in short.
d) Explain application of Civil Engineering to Mechanical and Electrical Engineering.
e) What is Remote-Sensing? Give its applications in various fields.
f) Explain Operation of Effluent treatment system.
g) Write note on rain water harvesting.

Q.3 Solve any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) The following consecutive readings were taken with a dumpy level. **05**
3.864, 3.346, 1.952, 0.854, 3.796, 2.639, 1.542, 1.934, 0.864, 0.665. The level was shifted after fifth and eighth readings. The first reading was taken on the bench mark of RL 150.250. Calculate the reduced levels of the change points and the difference of level between first and last points.
(Use collimation plane method.)

b) During levelling following staff readings are taken, **05**
1.235, 2.345(instrument shifted), 3.455, 1.985(staff inverted), 2.765, 3.435.
Enter the data in standard tabular form. Calculate R. L of the last station if the R. L of first station is 500.00 m. use rise and fall method. Apply usual arithmetic checks.

c) With neat sketch explain any two types of shallow foundation. **04**
d) Differentiate between Plane Surveying and Geodetic Surveying. **04**
e) Draw a neat sketch of road structure in embankment. **04**
f) Explain the IRC classification of roads. **04**

Section – II

Q.4 Answer any five of the following **15**

a) Distinguish between Centrifugal pump and Reciprocating pump.
b) Write a note on working of Pelton Turbine of with its diagram.
c) Explain Resistance welding with neat sketch.
d) Explain types of equilibrium in thermodynamic system.
e) Compare chain drive and belt drive.
f) Explain Kelvin Plank & Classuis statements.
g) Explain Vane Blower with neat sketch.

Q.5 Solve any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) A cross belt connects two pulleys of 500 mm diameter 2 m apart. The initial tension in the belt is 400 N. If the coefficient of friction in the belt and pulley is 0.25. Find the power transmitted at 700 rpm. Also calculated length of belt. **05**

b) Describe Lathe Machine with its block diagram. **05**

c) A cycle comprises three processes. The energy transfers in each are tabulated below. Complete the table. **04**

Process	Q (KJ)	W (KJ)	ΔU (KJ)
1-2	+80	+30	---
2-3	---	-50	+20
3-1	+50	---	---

d) Explain with neat sketch working Francis turbine. **04**

e) Derive an expression for length of belt for open belt drive. **04**

f) Sketch and describe in brief pillar drilling machine **04**

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Seat No.	

Set P

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Basic Electrical & Electronics Engineering # (BTCE0105) /(BTCSE0105)/ (BTETE0105)/ (BTEE0105)/ (BTME0105

Day & Date: Tuesday, 09-01-2024 Max. Marks: 70
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Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following. 07

1) Two electric bulbs rated for the same voltage have power of 200w & 100w. if their resistances are respectively R_1 & R_2 then _____.
a) $R_1 = 2R_2$ b) $R_2 = 2R_1$
c) $R_2 = 4R_2$ d) $R_2 = R_1$

2) The equivalent resistance of n resistances connected in parallel is equal to ____.
a) Higher than higher value b) equal to smallest value
c) less than smallest value d) Higher than smallest value

3) Three identical resistors are connected first in parallel and then in series. The resultant resistance of the second combination to the first will be _____.
a) 1/9 b) 9
c) 1/6 d) None of these

4) The reluctance of the magnetic circuit is _____.
a) Φ/NI b) NI/I
c) Φ/I d) NI/Φ

5) The direction of induced e.m.f. can be found with the help of _____.
a) Fleming's right-hand rule b) Kirchhoff's voltage law
c) Right hand gripping rule d) Lenz's law

6) The form factor of a sinusoidal wave is _____.
a) 1.414 b) 2
c) 1.11 d) 1.5

7) A series a.c. circuit has $R = 4\ \Omega$ and $X_L = 3\ \Omega$. It will be expressed in the rectangular form as _____.
a) $(-4\ -j3)$ b) $(-4 + j3)$
c) $(4 + j3)$ d) $(4 - j3)$

Section - II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. **07**

1) A pn junction acts as a _____.
a) controlled switch b) bidirectional switch
c) unidirectional switch d) none of the above

2) PIV of diode used in full wave center tap rectifier is _____.
a) Vm/π b) $2\mathrm{Vm}/\pi$
c) $2\mathrm{Vm}$ d) Vm

3) Ripple factor of full wave rectifier without filter is _____.
a) 0.2 b) 1.21
c) 0.48 d) 0.24

4) The element that has biggest size in a transistor is _____.
a) collector b) emitter
c) base d) none of these

5) The value of a of α transistor is _____.
a) more than 1 b) less than 1
c) 1 d) none of the above

6) The output of AND gate is HIGH when _____.
a) Any input is high b) all inputs are high
c) no inputs are high d) Both a and b

7) The hexadecimal no. $(19A.A1)_{16}$ is equivalent to octal no. _____
a) $(632.502)_8$ b) $(632.512)_8$
c) $(632.521)_8$ d) $(632.520)_8$

Seat No.	

Set **P**

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Basic Electrical & Electronics Engineering # (BTCE0105) /(BTCSE0105)/ (BTETE0105)/ (BTEE0105)/ (BTME0105)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable assumptions, if necessary.

Section – I

Q.2 Attempt any FOUR of the following. **16**

a) Three resistors are connected in series across 12 V batteries. The first resistor has a value of 1Ω, second has a voltage drop of 4 volt and third has power dissipation of 12 watts. Calculate the value of circuit current.

b) State and Explain Kirchhoff's voltage and current laws. Give suitable illustration.

c) Explain Faraday's Laws of electromagnetic induction and Lenz's law.

d) The maximum in the core of 250 /2800 volts, 50 (Hz) single phase transformer is 1.2 (wb/m^2). If the emf per is 9 (v). Determine
i) N_1 and N_2
ii) Area of the core

e) State and prove that the RMS value of sinusoidal alternating current is 0.707 times the peak value.

f) An a.c. voltage wave is express as e = 300 sin (314t)
Find the peak voltage, frequency, RMS voltage & instantaneous voltage at t = 1/600 sec.

Q.3 Attempt any TWO of the following. **12**

a) Describe the importance of delta-star transformation. If three resistances are connected in delta-connection, then find the equivalent values of these resistances for star-connections.

b) A core forms a closed magnetic loop path length 32 cm. Half of this path has a cross sectional area of 2 cm^2 and relative permeability 800. The other half has a cross sectional area 4cm^2 and relative permeability 400. Find the current needed to produce a flux of 0.4 Wb in the core if it is wound with 1000 turns of insulated wire. Ignore leakage and fringing effects.

c) A 230 V, 50 Hz a.c. supply is applied to a coil of 0.06 H inductance and 2.5 Ω resistance connected in series with a 6.8 μF capacitor.
Calculate: -
i) impedance
ii) current
iii) phase angle between current and voltage
iv) power factor
v) Active power
vi) reactive power

Section – II

Q.2 Attempt any FOUR of the following. **16**

a) Explain biasing of PN junction diode.
b) Explain the working of Half wave rectifier with neat circuit diagram.
c) Explain application of transistor as a switch with neat diagram.
d) Draw and explain symbol, equation and truth table of all basic logic gates.
e) Covert $(DBC)_H$ to decimal and octal.
f) Perform subtraction using 2's complement and convert in to octal $(1667)_8 - (341)_8$

Q.3 Attempt any TWO of the following. **12**

a) Explain CB transistor configuration with its input and output characteristics. Also draw the necessary diagram.
b) Why filters are required? Draw the circuit diagram of full wave rectifier using two diodes and capacitor filter. Also explain its working and draw necessary waveforms.
c) What is meant by universal gate? Derive basic gates using NOR gate.

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Seat No.		Set	Q

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Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

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c) 1/6 d) None of these

4) The reluctance of the magnetic circuit is _____.
a) Φ/NI b) NI/I
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5) The direction of induced e.m.f. can be found with the help of _____.
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Section - II

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SLR-GF-705

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ii) current
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Section – II

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SLR-GF-705

Seat No.	

Set R

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Duration: 30 Minutes Marks: 07

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Section - II

MCQ/Objective Type Questions

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Seat No.	

Set **R**

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Basic Electrical & Electronics Engineering # (BTCE0105) /(BTCSE0105)/ (BTETE0105)/ (BTEE0105)/ (BTME0105)

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Section – I

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Section – II

Q.2 Attempt any FOUR of the following. **16**

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SLR-GF-705

Seat No.		Set	S

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7) A series a.c. circuit has $R = 4\ \Omega$ and $X_L = 3\ \Omega$. It will be expressed in the rectangular form as _____.
a) $(-4\ -j3)$ b) $(-4 + j3)$
c) $(4 + j3)$ d) $(4 - j3)$

Section - II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. **07**

1) A pn junction acts as a _____.
a) controlled switch b) bidirectional switch
c) unidirectional switch d) none of the above

2) PIV of diode used in full wave center tap rectifier is _____.
a) Vm/π b) $2\mathrm{Vm}/\pi$
c) $2\mathrm{Vm}$ d) Vm

3) Ripple factor of full wave rectifier without filter is _____.
a) 0.2 b) 1.21
c) 0.48 d) 0.24

4) The element that has biggest size in a transistor is _____.
a) collector b) emitter
c) base d) none of these

5) The value of a of α transistor is _____.
a) more than 1 b) less than 1
c) 1 d) none of the above

6) The output of AND gate is HIGH when _____.
a) Any input is high b) all inputs are high
c) no inputs are high d) Both a and b

7) The hexadecimal no. $(19A.A1)_{16}$ is equivalent to octal no. _____
a) $(632.502)_8$ b) $(632.512)_8$
c) $(632.521)_8$ d) $(632.520)_8$

Seat No.		Set	S

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Basic Electrical & Electronics Engineering # (BTCE0105) /(BTCSE0105)/ (BTETE0105)/ (BTEE0105)/ (BTME0105)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable assumptions, if necessary.

Section – I

Q.2 Attempt any FOUR of the following. **16**

a) Three resistors are connected in series across 12 V batteries. The first resistor has a value of 1Ω, second has a voltage drop of 4 volt and third has power dissipation of 12 watts. Calculate the value of circuit current.

b) State and Explain Kirchhoff's voltage and current laws. Give suitable illustration.

c) Explain Faraday's Laws of electromagnetic induction and Lenz's law.

d) The maximum in the core of 250 /2800 volts, 50 (Hz) single phase transformer is 1.2 (wb/m^2). If the emf per is 9 (v). Determine
i) N_1 and N_2
ii) Area of the core

e) State and prove that the RMS value of sinusoidal alternating current is 0.707 times the peak value.

f) An a.c. voltage wave is express as e = 300 sin (314t)
Find the peak voltage, frequency, RMS voltage & instantaneous voltage at t = 1/600 sec.

Q.3 Attempt any TWO of the following. **12**

a) Describe the importance of delta-star transformation. If three resistances are connected in delta-connection, then find the equivalent values of these resistances for star-connections.

b) A core forms a closed magnetic loop path length 32 cm. Half of this path has a cross sectional area of 2 cm^2 and relative permeability 800. The other half has a cross sectional area 4cm^2 and relative permeability 400. Find the current needed to produce a flux of 0.4 Wb in the core if it is wound with 1000 turns of insulated wire. Ignore leakage and fringing effects.

c) A 230 V, 50 Hz a.c. supply is applied to a coil of 0.06 H inductance and 2.5 Ω resistance connected in series with a 6.8 μF capacitor.
Calculate: -
i) impedance
ii) current
iii) phase angle between current and voltage
iv) power factor
v) Active power
vi) reactive power

Section – II

Q.2 Attempt any FOUR of the following. **16**

a) Explain biasing of PN junction diode.
b) Explain the working of Half wave rectifier with neat circuit diagram.
c) Explain application of transistor as a switch with neat diagram.
d) Draw and explain symbol, equation and truth table of all basic logic gates.
e) Covert $(DBC)_H$ to decimal and octal.
f) Perform subtraction using 2's complement and convert in to octal $(1667)_8 - (341)_8$

Q.3 Attempt any TWO of the following. **12**

a) Explain CB transistor configuration with its input and output characteristics. Also draw the necessary diagram.
b) Why filters are required? Draw the circuit diagram of full wave rectifier using two diodes and capacitor filter. Also explain its working and draw necessary waveforms.
c) What is meant by universal gate? Derive basic gates using NOR gate.

SLR-GF-706

Seat No.	

Set P

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTCE0106) / (BTCSE0106) / (BTETE0106) / (BTEE0106) / (BTME0106)

Day & Date: Thursday, 11-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) When several forces of different magnitude and direction act at a point upon a body lying in a plane, they constitute ____.
a) coplanar force system
b) coplanar concurrent force system
c) coplanar non concurrent force system
d) concurrent force system

2) The process of finding the components is called ____.
a) Composition b) Resolution
c) Idealization d) Summation

3) For fixed support number of unknown are _____.
a) one b) two
c) three d) none of these

4) A truss of framed structure is perfect if the number of members are _____ (2j-3) where j is the number of joints.
a) less than b) equal to
c) greater than d) either (a) or (c)

5) A beam 10m long carries uniformly distributed load of 8kN/m and supported at its two ends. What is the reaction at each support?
a) 8 kN b) 80 kN
c) 40 kN d) 4 kN

6) The velocity of body reaching ground from height h is _____.
a) $2\sqrt{gh}$ b) $\sqrt{gh}$
c) $\sqrt{2gh}$ d) $2g\sqrt{h}$

7) A body is projected vertically upwards with velocity u from a surface. The velocity with which it strikes the surface back is _____.
a) u b) 2u
c) u^2/g d) u/g

8) The torque acting on a body of moment of inertia (I) and angular acceleration (α) is _____.

a) $I\,\alpha$ b) $I\,\alpha^2$

c) $.5I\,\alpha$ d) $0.5I\,\alpha^2$

9) D' Alembert principle basically depends upon _____.

a) Newton's 1st law b) Newton's 2nd law

c) Newton's 3rd law d) none of these

10) The time rate of doing work is known as _____.

a) potential energy b) kinetic energy

c) power d) none of these

11) Work done is said to be zero when _____.

a) some force acts on a body but displacement is zero

b) no force act on a body but some displacement takes place

c) either a or b

d) none of these

12) Impulse is the product of _____.

a) force × distance b) force × acceleration

c) force × time d) force × mass

13) The centre of gravity of an equilateral triangle with each side (a) is _____ from any of the three sides.

a) $\frac{a\sqrt{3}}{2}$ b) $\frac{a\sqrt{2}}{3}$

c) $\frac{a}{2\sqrt{3}}$ d) $\frac{a}{3\sqrt{2}}$

14) Radius of gyration of a lamina about y-y axis is given by _____.

a) $k\,y\,y = \sqrt{Iyy/A}$ b) $k\,y\,y = Iyy/\sqrt{A}$

c) $k\,y\,y = \sqrt{Iyy}\,/A$ d) $k\,y\,y = Iyy/A$

Seat No.	

Set **P**

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTCE0106) / (BTCSE0106) / (BTETE0106) / (BTEE0106) / (BTME0106)

Day & Date: Thursday, 11-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use non-programmable scientific calculators is allowed.

Section – I

Q.2 Attempt any four the following questions. **12**

a) State and prove Varignon's theorem.

b) A block weighing 100N can be just moved by applying a pull of 'P' N being applied horizontal. Find 'P' if the co-efficient of friction between block and surface is 0.5. Also find angle of friction.

c) Write the assumptions made on finding the forces in the members of pin jointed truss.

d) A small steel ball is shot vertically upwards from the top of a building 25m above the ground with an initial velocity of 18m/s. Find
i) In what time it will reach the maximum height?
ii) How high above the building will the ball rise?

e) Define Angular displacement, Angular Velocity, Angular acceleration

f) Define the terms.
i) Horizontal range
ii) Trajectory
iii) Time of flight

Q.3 Attempt any two the following questions. **16**

a) Determine the resultant of the three forces acting on the dam as shown in Fig (i) and its intersection with the base AB.

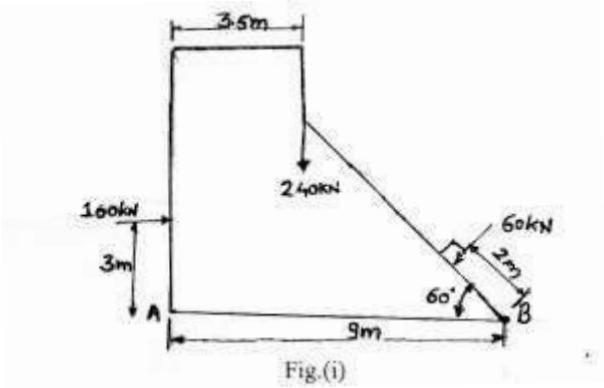

Fig.(i)

b) Find the forces in all the members of truss as shown in Fig. (ii).

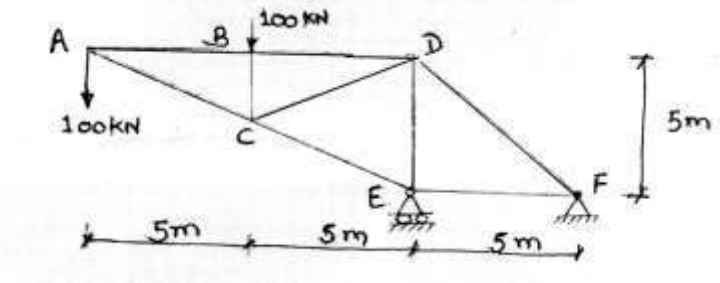

Fig. (ii)

c) A particle under a constant deceleration moving in a straight line and covers a distance of 20m in first 2 sec and 40m in the next 5sec. Calculate the distance it covers in the subsequent 3 sec and total distance covered before it comes to rest.

Section – II

Q.4 Attempt any four of the following question. **12**

a) State and explain D'Alembert's principle.
b) Define torque, mass moment of inertia and angular momentum.
c) State and derive work energy equation of linear motion.
d) What are various types of impact according to line of impact? Discuss any one of them.
e) State and prove parallel axes theorem.
f) Determine the location of centroid of the lamina shown in Fig. (iii)

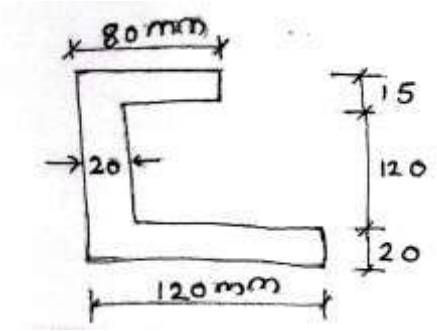

Fig. (iii)

Q.5 Attempt any two of the following question. **16**

a) Two rough planes inclined at 30° and 60° to horizontal are placed back-to-back as shown in Fig. (iv) below. The blocks of weight 50N and 100N are placed on the faces and are connected by a string running parallel to plane over a frictionless pulley. If the coefficient of friction between planes and blocks is 1/3, find the resulting acceleration and tension in the string.

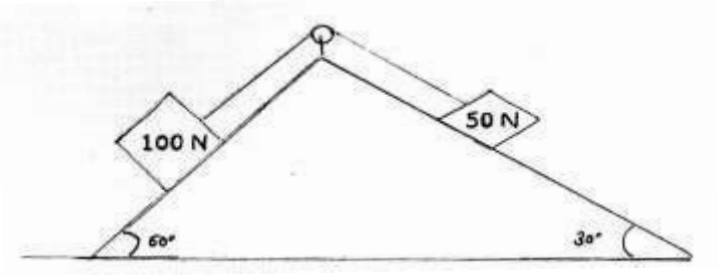

Fig. (iv)

b) Determine the constant force P that will give the system of bodies as shown Fig. (v), a velocity of 3 m/s after moving 4.5 m from the rest. Coefficient of friction between the blocks and plane is 0.3, pulleys are smooth.

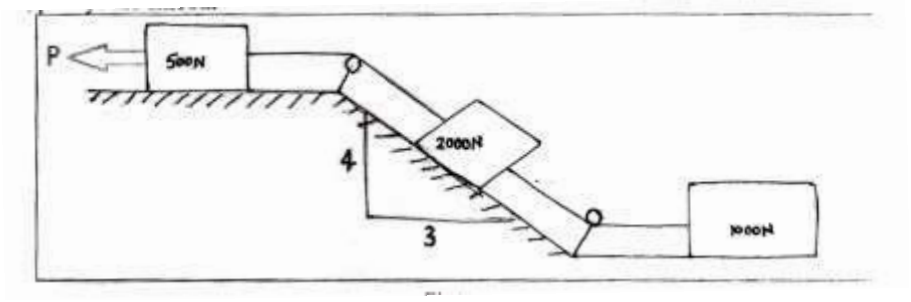

Fig. (v)

c) Determine the centroid of a plane shaded lamina shown in the Fig. (vi). Also find the moment of inertia of this lamina about the both centroidal axes.

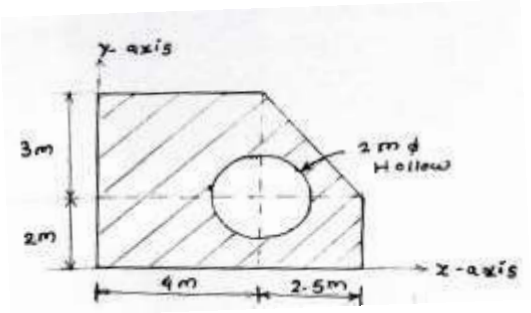

Fig. (vi)

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTCE0106) / (BTCSE0106) / (BTETE0106) / (BTEE0106) / (BTME0106)

Day & Date: Thursday, 11-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The torque acting on a body of moment of inertia (I) and angular acceleration (α) is _____.
a) $I\,\alpha$ b) $I\,\alpha^2$
c) $.5I\,\alpha$ d) $0.5I\,\alpha^2$

2) D' Alembert principle basically depends upon _____.
a) Newton's 1st law b) Newton's 2nd law
c) Newton's 3rd law d) none of these

3) The time rate of doing work is known as _____.
a) potential energy b) kinetic energy
c) power d) none of these

4) Work done is said to be zero when _____.
a) some force acts on a body but displacement is zero
b) no force act on a body but some displacement takes place
c) either a or b
d) none of these

5) Impulse is the product of _____.
a) force × distance b) force × acceleration
c) force × time d) force × mass

6) The centre of gravity of an equilateral triangle with each side (a) is _____ from any of the three sides.
a) $\frac{a\sqrt{3}}{2}$ b) $\frac{a\sqrt{2}}{3}$
c) $\frac{a}{2\sqrt{3}}$ d) $\frac{a}{3\sqrt{2}}$

7) Radius of gyration of a lamina about y-y axis is given by _____.
a) $k_{yy} = \sqrt{I_{yy}/A}$ b) $k_{yy} = I_{yy}/\sqrt{A}$
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8) When several forces of different magnitude and direction act at a point upon a body lying in a plane, they constitute ____.
a) coplanar force system
b) coplanar concurrent force system
c) coplanar non concurrent force system
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9) The process of finding the components is called ____.
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10) For fixed support number of unknown are _____.
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c) three d) none of these

11) A truss of framed structure is perfect if the number of members are _____ (2j-3) where j is the number of joints.
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c) greater than d) either (a) or (c)

12) A beam 10m long carries uniformly distributed load of 8kN/m and supported at its two ends. What is the reaction at each support?
a) 8 kN b) 80 kN
c) 40 kN d) 4 kN

13) The velocity of body reaching ground from height h is _____.
a) $2\sqrt{gh}$ b) $\sqrt{gh}$
c) $\sqrt{2gh}$ d) $2g\sqrt{h}$

14) A body is projected vertically upwards with velocity u from a surface. The velocity with which it strikes the surface back is _____.
a) u b) 2u
c) u^2/g d) u/g

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTCE0106) / (BTCSE0106) / (BTETE0106) / (BTEE0106) / (BTME0106)

Day & Date: Thursday, 11-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use non-programmable scientific calculators is allowed.

Section – I

Q.2 Attempt any four the following questions. **12**

a) State and prove Varignon's theorem.

b) A block weighing 100N can be just moved by applying a pull of 'P' N being applied horizontal. Find 'P' if the co-efficient of friction between block and surface is 0.5. Also find angle of friction.

c) Write the assumptions made on finding the forces in the members of pin jointed truss.

d) A small steel ball is shot vertically upwards from the top of a building 25m above the ground with an initial velocity of 18m/s. Find
i) In what time it will reach the maximum height?
ii) How high above the building will the ball rise?

e) Define Angular displacement, Angular Velocity, Angular acceleration

f) Define the terms.
i) Horizontal range
ii) Trajectory
iii) Time of flight

Q.3 Attempt any two the following questions. **16**

a) Determine the resultant of the three forces acting on the dam as shown in Fig (i) and its intersection with the base AB.

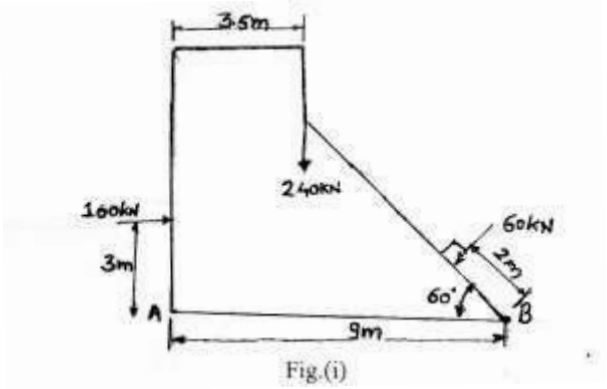

Fig.(i)

b) Find the forces in all the members of truss as shown in Fig. (ii).

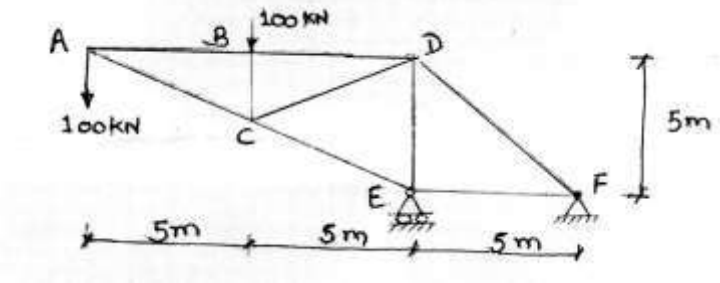

Fig. (ii)

c) A particle under a constant deceleration moving in a straight line and covers a distance of 20m in first 2 sec and 40m in the next 5sec. Calculate the distance it covers in the subsequent 3 sec and total distance covered before it comes to rest.

Section – II

Q.4 Attempt any four of the following question. **12**

a) State and explain D'Alembert's principle.
b) Define torque, mass moment of inertia and angular momentum.
c) State and derive work energy equation of linear motion.
d) What are various types of impact according to line of impact? Discuss any one of them.
e) State and prove parallel axes theorem.
f) Determine the location of centroid of the lamina shown in Fig. (iii)

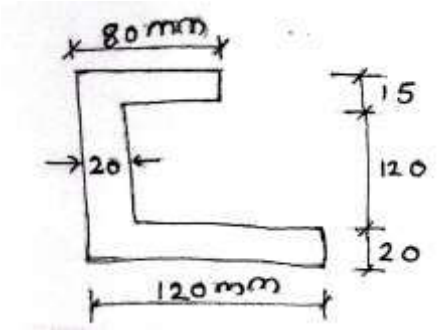

Fig. (iii)

Q.5 Attempt any two of the following question. **16**

a) Two rough planes inclined at 30° and 60° to horizontal are placed back-to-back as shown in Fig. (iv) below. The blocks of weight 50N and 100N are placed on the faces and are connected by a string running parallel to plane over a frictionless pulley. If the coefficient of friction between planes and blocks is 1/3, find the resulting acceleration and tension in the string.

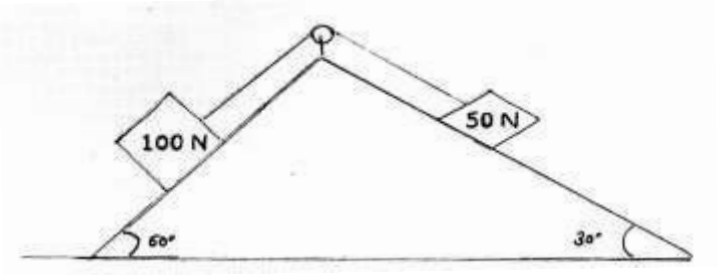

Fig. (iv)

b) Determine the constant force P that will give the system of bodies as shown Fig. (v), a velocity of 3 m/s after moving 4.5 m from the rest. Coefficient of friction between the blocks and plane is 0.3, pulleys are smooth.

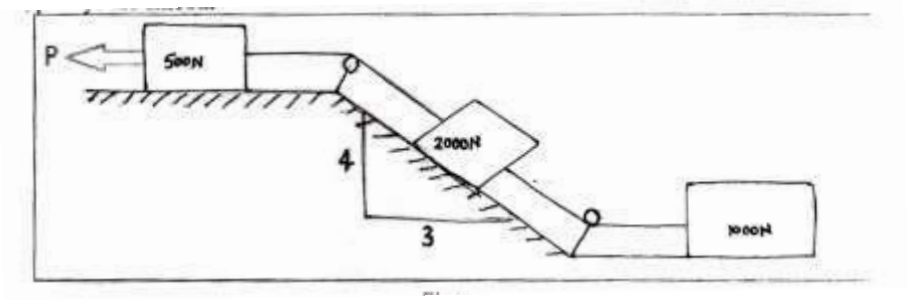

Fig. (v)

c) Determine the centroid of a plane shaded lamina shown in the Fig. (vi). Also find the moment of inertia of this lamina about the both centroidal axes.

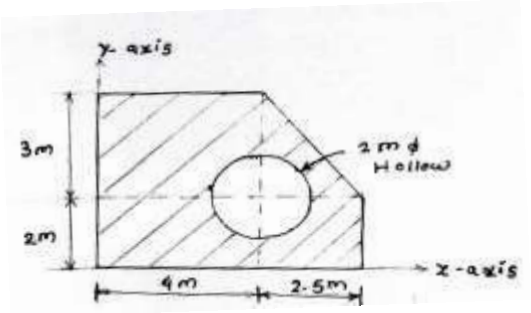

Fig. (vi)

Seat No.	

Set **R**

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTCE0106) / (BTCSE0106) / (BTETE0106) / (BTEE0106) / (BTME0106)

Day & Date: Thursday, 11-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Work done is said to be zero when _____.
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b) no force act on a body but some displacement takes place
c) either a or b
d) none of these

2) Impulse is the product of _____.
a) force × distance b) force × acceleration
c) force × time d) force × mass

3) The centre of gravity of an equilateral triangle with each side (a) is _____ from any of the three sides.
a) $\frac{a\sqrt{3}}{2}$ b) $\frac{a\sqrt{2}}{3}$
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4) Radius of gyration of a lamina about y-y axis is given by _____.
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5) When several forces of different magnitude and direction act at a point upon a body lying in a plane, they constitute ____.
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c) greater than d) either (a) or (c)

9) A beam 10m long carries uniformly distributed load of 8kN/m and supported at its two ends. What is the reaction at each support?

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10) The velocity of body reaching ground from height h is _____.

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13) D' Alembert principle basically depends upon _____.

a) Newton's 1st law b) Newton's 2nd law
c) Newton's 3rd law d) none of these

14) The time rate of doing work is known as _____.

a) potential energy b) kinetic energy
c) power d) none of these

Seat No.	

Set **R**

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTCE0106) / (BTCSE0106) / (BTETE0106) / (BTEE0106) / (BTME0106)

Day & Date: Thursday, 11-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use non-programmable scientific calculators is allowed.

Section – I

Q.2 Attempt any four the following questions. **12**

a) State and prove Varignon's theorem.

b) A block weighing 100N can be just moved by applying a pull of 'P' N being applied horizontal. Find 'P' if the co-efficient of friction between block and surface is 0.5. Also find angle of friction.

c) Write the assumptions made on finding the forces in the members of pin jointed truss.

d) A small steel ball is shot vertically upwards from the top of a building 25m above the ground with an initial velocity of 18m/s. Find
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ii) How high above the building will the ball rise?

e) Define Angular displacement, Angular Velocity, Angular acceleration

f) Define the terms.
i) Horizontal range
ii) Trajectory
iii) Time of flight

Q.3 Attempt any two the following questions. **16**

a) Determine the resultant of the three forces acting on the dam as shown in Fig (i) and its intersection with the base AB.

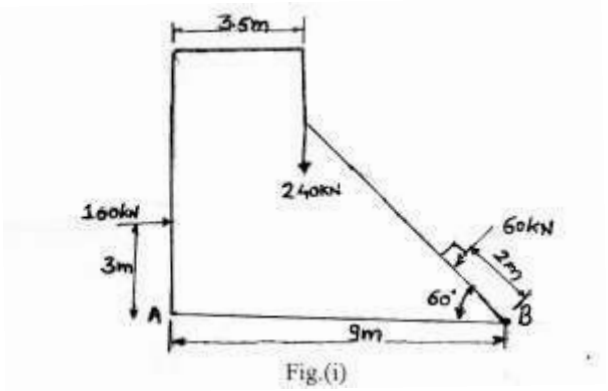

Fig.(i)

b) Find the forces in all the members of truss as shown in Fig. (ii).

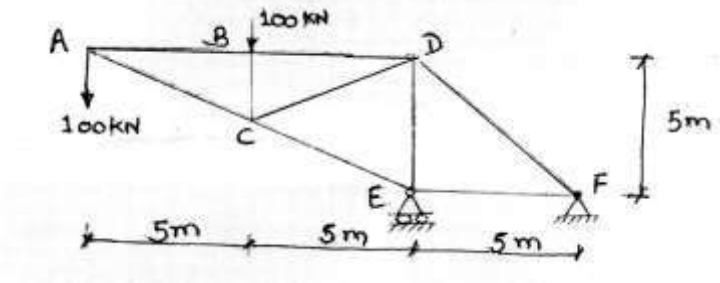

Fig. (ii)

c) A particle under a constant deceleration moving in a straight line and covers a distance of 20m in first 2 sec and 40m in the next 5sec. Calculate the distance it covers in the subsequent 3 sec and total distance covered before it comes to rest.

Section – II

Q.4 Attempt any four of the following question. **12**

a) State and explain D'Alembert's principle.
b) Define torque, mass moment of inertia and angular momentum.
c) State and derive work energy equation of linear motion.
d) What are various types of impact according to line of impact? Discuss any one of them.
e) State and prove parallel axes theorem.
f) Determine the location of centroid of the lamina shown in Fig. (iii)

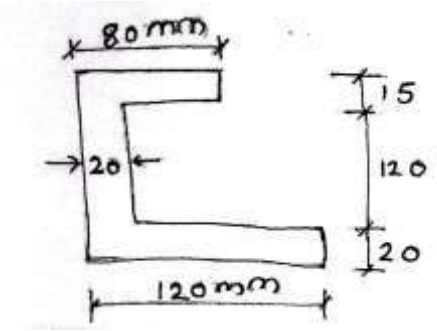

Fig. (iii)

Q.5 Attempt any two of the following question. **16**

a) Two rough planes inclined at 30° and 60° to horizontal are placed back-to-back as shown in Fig. (iv) below. The blocks of weight 50N and 100N are placed on the faces and are connected by a string running parallel to plane over a frictionless pulley. If the coefficient of friction between planes and blocks is 1/3, find the resulting acceleration and tension in the string.

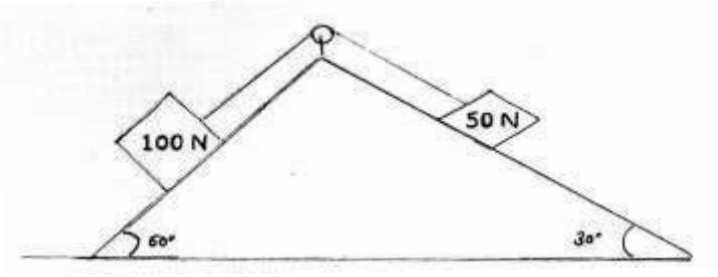

Fig. (iv)

b) Determine the constant force P that will give the system of bodies as shown Fig. (v), a velocity of 3 m/s after moving 4.5 m from the rest. Coefficient of friction between the blocks and plane is 0.3, pulleys are smooth.

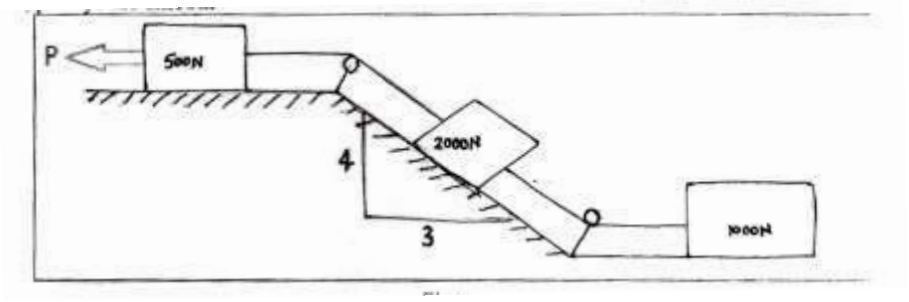

Fig. (v)

c) Determine the centroid of a plane shaded lamina shown in the Fig. (vi). Also find the moment of inertia of this lamina about the both centroidal axes.

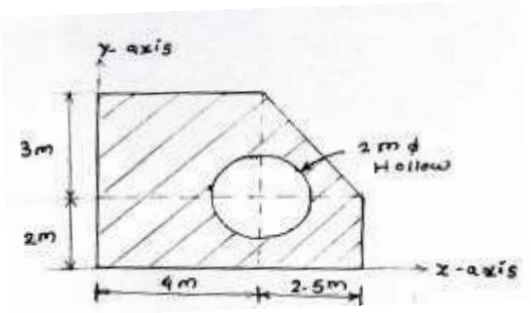

Fig. (vi)

Seat No.	

Set **S**

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTCE0106) / (BTCSE0106) / (BTETE0106) / (BTEE0106) / (BTME0106)

Day & Date: Thursday, 11-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The velocity of body reaching ground from height h is _____.
a) $2\sqrt{gh}$ b) $\sqrt{gh}$
c) $\sqrt{2gh}$ d) $2g\sqrt{h}$

2) A body is projected vertically upwards with velocity u from a surface. The velocity with which it strikes the surface back is _____.
a) u b) 2u
c) u^2/g d) u/g

3) The torque acting on a body of moment of inertia (I) and angular acceleration (α) is _____.
a) $I\,\alpha$ b) $I\,\alpha^2$
c) $.5I\,\alpha$ d) $0.5I\,\alpha^2$

4) D' Alembert principle basically depends upon _____.
a) Newton's 1st law b) Newton's 2nd law
c) Newton's 3rd law d) none of these

5) The time rate of doing work is known as _____.
a) potential energy b) kinetic energy
c) power d) none of these

6) Work done is said to be zero when _____.
a) some force acts on a body but displacement is zero
b) no force act on a body but some displacement takes place
c) either a or b
d) none of these

7) Impulse is the product of _____.
a) force × distance b) force × acceleration
c) force × time d) force × mass

8) The centre of gravity of an equilateral triangle with each side (a) is _____ from any of the three sides.

a) $\frac{a\sqrt{3}}{2}$ b) $\frac{a\sqrt{2}}{3}$

c) $\frac{a}{2\sqrt{3}}$ d) $\frac{a}{3\sqrt{2}}$

9) Radius of gyration of a lamina about y-y axis is given by _____.

a) $\mathrm{k\,y\,y} = \sqrt{\mathrm{Iyy/A}}$ b) $\mathrm{k\,y\,y} = \mathrm{Iyy}/\sqrt{\mathrm{A}}$

c) $\mathrm{k\,y\,y} = \sqrt{\mathrm{Iyy}}\ /\mathrm{A}$ d) $\mathrm{k\,y\,y} = \mathrm{Iyy/A}$

10) When several forces of different magnitude and direction act at a point upon a body lying in a plane, they constitute ____.

a) coplanar force system
b) coplanar concurrent force system
c) coplanar non concurrent force system
d) concurrent force system

11) The process of finding the components is called ____.

a) Composition b) Resolution
c) Idealization d) Summation

12) For fixed support number of unknown are _____.

a) one b) two
c) three d) none of these

13) A truss of framed structure is perfect if the number of members are _____ (2j-3) where j is the number of joints.

a) less than b) equal to
c) greater than d) either (a) or (c)

14) A beam 10m long carries uniformly distributed load of 8kN/m and supported at its two ends. What is the reaction at each support?

a) 8 kN b) 80 kN
c) 40 kN d) 4 kN

Seat No.	

Set **S**

F.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTCE0106) / (BTCSE0106) / (BTETE0106) / (BTEE0106) / (BTME0106)

Day & Date: Thursday, 11-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use non-programmable scientific calculators is allowed.

Section – I

Q.2 Attempt any four the following questions. **12**

a) State and prove Varignon's theorem.

b) A block weighing 100N can be just moved by applying a pull of 'P' N being applied horizontal. Find 'P' if the co-efficient of friction between block and surface is 0.5. Also find angle of friction.

c) Write the assumptions made on finding the forces in the members of pin jointed truss.

d) A small steel ball is shot vertically upwards from the top of a building 25m above the ground with an initial velocity of 18m/s. Find
i) In what time it will reach the maximum height?
ii) How high above the building will the ball rise?

e) Define Angular displacement, Angular Velocity, Angular acceleration

f) Define the terms.
i) Horizontal range
ii) Trajectory
iii) Time of flight

Q.3 Attempt any two the following questions. **16**

a) Determine the resultant of the three forces acting on the dam as shown in Fig (i) and its intersection with the base AB.

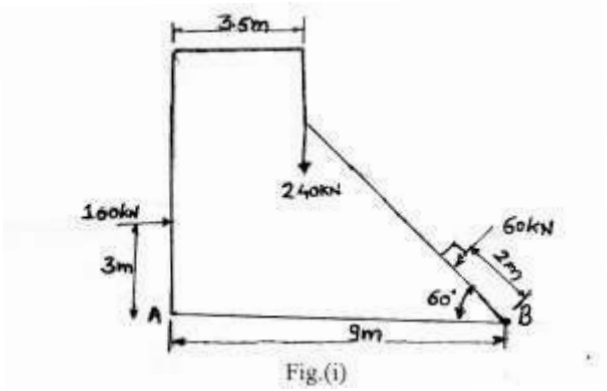

Fig.(i)

b) Find the forces in all the members of truss as shown in Fig. (ii).

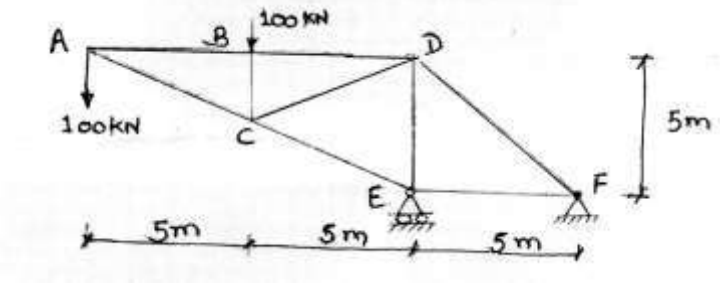

Fig. (ii)

c) A particle under a constant deceleration moving in a straight line and covers a distance of 20m in first 2 sec and 40m in the next 5sec. Calculate the distance it covers in the subsequent 3 sec and total distance covered before it comes to rest.

Section – II

Q.4 Attempt any four of the following question. **12**

a) State and explain D'Alembert's principle.
b) Define torque, mass moment of inertia and angular momentum.
c) State and derive work energy equation of linear motion.
d) What are various types of impact according to line of impact? Discuss any one of them.
e) State and prove parallel axes theorem.
f) Determine the location of centroid of the lamina shown in Fig. (iii)

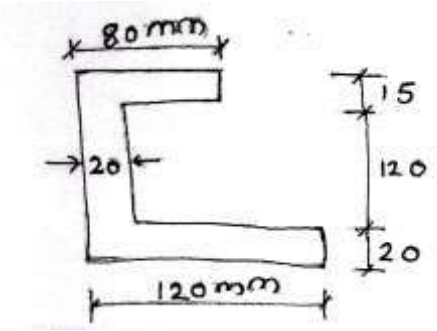

Fig. (iii)

Q.5 Attempt any two of the following question. **16**

a) Two rough planes inclined at 30° and 60° to horizontal are placed back-to-back as shown in Fig. (iv) below. The blocks of weight 50N and 100N are placed on the faces and are connected by a string running parallel to plane over a frictionless pulley. If the coefficient of friction between planes and blocks is 1/3, find the resulting acceleration and tension in the string.

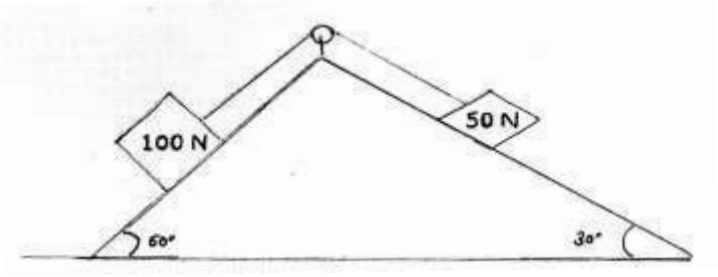

Fig. (iv)

b) Determine the constant force P that will give the system of bodies as shown Fig. (v), a velocity of 3 m/s after moving 4.5 m from the rest. Coefficient of friction between the blocks and plane is 0.3, pulleys are smooth.

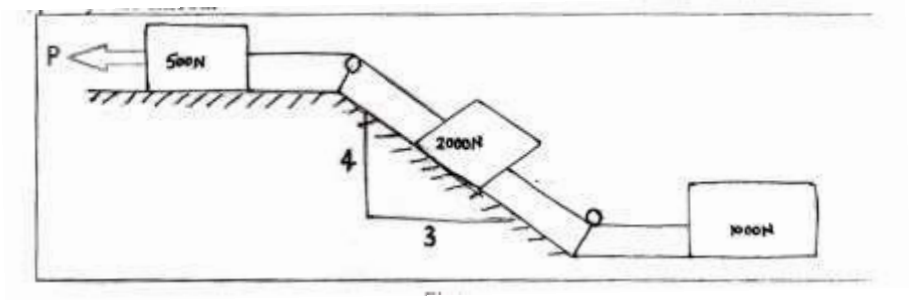

Fig. (v)

c) Determine the centroid of a plane shaded lamina shown in the Fig. (vi). Also find the moment of inertia of this lamina about the both centroidal axes.

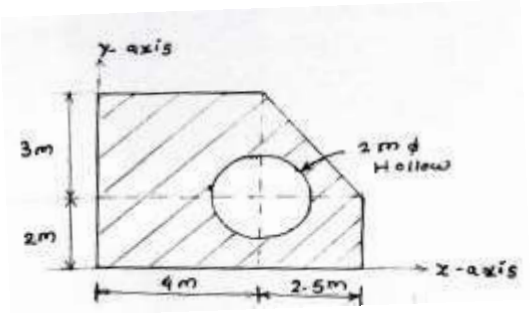

Fig. (vi)

SLR-GF-707

Seat No.	

Set P

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTN10103)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If A is a non-zero matrix of order 4×3, then the rank of the matrix A is _____.
a) equal to 4 b) greater than 4
c) less than 3 or equal to 3 d) None of these

2) The expansion of $\log(1-x) =$ _____.
a) $x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \ldots.$ b) $-x - \frac{x^2}{2} - \frac{x^3}{3} - \frac{x^4}{4} - \ldots.$
c) $x - \frac{x^2}{2!} + \frac{x^3}{3!} - \frac{x^4}{4!} + \ldots.$ d) $x - \frac{x^2}{2!} - \frac{x^3}{3!} - \frac{x^4}{4!} + \ldots.$

3) If $y = x \sin x$, then $y_n =$ _____.
a) $\sin\left(x + n\frac{\pi}{2}\right)$
b) $x \sin\left(x + n\frac{n\pi}{2}\right)$
c) $x \cos\left(x + n\frac{\pi}{2}\right) + n \cos\left(x + (n-1)\frac{\pi}{2}\right)$
d) $x \sin\left(x + n\frac{\pi}{2}\right) + n \sin\left(x + (n-1)\frac{\pi}{2}\right)$

4) The eigen values of matrix $\begin{bmatrix} 1 & 3 & -1 \\ 0 & 2 & 4 \\ 0 & 0 & 5 \end{bmatrix}$ are _____.
a) $0, 2, 5$ b) $1, 2, 5$
c) $1, -2, -5$ d) $-1, -2, -5$

5) The system of equations $AX = B$ is inconsistent if _____.
a) rank of $A \neq$ rank of $(A:B)$ b) rank of $A =$ rank of $(A:B)$
c) rank of rank $A =$ rank of B d) None of these

6) If $y = \log(3x+2)$, then y_n= _____.
a) $\frac{(-1)^n n!\, 3^n}{(3x+2)^n}$ b) $\frac{(-1)^{n-1}(n-1)!\, 3^n}{(3x+2)^n}$
c) $\frac{(-1)^{n-1}(n-1)!\, 3^n}{(3x+2)^{n+1}}$ d) None of these

7) In Taylor's series expansion of $e^x + \sin x$ about the point $x = \pi$, the coefficient of $(x-\pi)^2$ is _____.

a) e^{π} b) $e^{\pi}+1$

c) $e^{\pi}-1$ d) $\frac{e^{\pi}}{2}$

8) If $u = \frac{x^{1/4}+y^{1/4}}{x^{1/4}+y^{1/4}}$ then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$ _____.

a) $4u$ b) $5u$

c) $20u$ d) $\frac{1}{20}u$

9) A vector function $\bar{F}$ is called solenoidal if _____.

a) $Curl\ \bar{F} = \bar{0}$ b) $div\ \bar{F} = 0$

c) $grad\ \bar{F} = 0$ d) $div\ \bar{F} \neq 0$

10) If $u = x - y$ and $v = xy$ then $\frac{\partial(u,v)}{\partial(x,y)} = ?$

a) $x-y$ b) 0

c) $y-x$ d) $y+x$

11) If $\bar{a}$ is a constant vector and $\vec{r} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ then grad $(\bar{a}, \bar{r}) =$ _____.

a) $2\bar{a}$ b) $\bar{a}$

c) $\bar{r}$ d) $2\bar{r}$

12) With usual notation $f(x,y)$ has a saddle point if _____.

a) $rt - s^2 < 0$ b) $rt - s^2 > 0$

c) $rt - s^2 \neq 0$ d) $rt - s^2 = 0$

13) The directional derivatives of $\emptyset = x^2 + y^2 + z^2$ at the point (1,1,1) along the x-axis is _____.

a) 0 b) 1

c) 2 d) 3

14) If δx is error in x, then $\frac{\delta x}{x} \times 100$ is called _____.

a) Absolute error in x b) Percentage error in x

c) Approximate error in x d) Relative error in x

Seat No.	

Set **P**

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTN10103)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt any three of the following. **09**

a) Verify Cayley Hamilton theorem for A where

$$A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$$

b) Examine whether the following vectors are linearly independent or dependent. If dependent, then find the relation between them.
$[2, -1, 3, 2], [1, 3, 4, 2], [3, -5, 2, 2]$

c) Evaluate $\lim_{x \to 0} \frac{x^2 + 2\cos x - 2}{x \sin^3 x}$

d) Verify the Lagrange's mean value theorem for the function $f(x) = x(x-1)(x-2)$ in $(0, ½)$

e) Expand $x^5 - x^4 + x^3 - x^2 + x - 1$ in power's of $(x-1)$

Q.3 Attempt any three of the following. **09**

a) Solve the system of equations $x + 3y + 2z = 0;\ 2x - y + 3z = 0;$
$3x - 5y + 4z = 0;\ x + 17y + 4z = 0$

b) Find the n^{th} derivative of $\frac{1}{6x^2 - 5x + 1}$

c) Evaluate: $\lim_{x \to 0} \left(\frac{a^x + b^x + c^x}{3}\right)^{\frac{1}{x}}$

d) Find the rank of the matrix by reducing to normal form.

$$\begin{bmatrix} 6 & 4 & 7 & 3 \\ 4 & 3 & 4 & 2 \\ 2 & 1 & 5 & 6 \end{bmatrix}$$

e) Prove that $\sin^{-1}(3x - 4x^3) = 3\left[x + \frac{x^3}{6} + \frac{3}{40}x^5 + \cdots\right]$

Q.4 Attempt any two of the following. **10**

a) Find the eigen values and corresponding eigen vector of the matrix A.
where $A = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$

b) Expand $e^x \sin x$ in ascending powers of x upto x^4.

c) If $y = e^{a \cos^{-1} x}$, prove that $(1 - x^2)y_{n+2} - (2n+1)xy_{n+1} - (n^2 + a^2)y_n = 0$

Section – II

Q.5 Solve any three of the following questions **09**

a) If $u = 2(ax + by)^2 - (x^2+y^2)$ where $a^2 + b^2 = 4$, then show that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 12$

b) If $z = \sin^{-1}(x - y)$ and $x = 3t, y = 4t^3$ then show that $\frac{dz}{dt} = \frac{3}{\sqrt{1-t^2}}$

c) Show that $JJ' = 1$ if $x = u(1 - v), y = uv$

d) Divide 120 into three numbers such that the sum of their product taken two at a time is maximum.

e) A particle moves along the curve $x = t^2 + 2t,\ y = -3e^{-2t},\ z = 2\sin 5t$, then calculate the velocity and acceleration vectors and the magnitude of velocity and acceleration at $t = 0$

Q.6 Solve any three of the following questions **09**

a) If $u = ax + by, v = bx - ay$, then prove that

$$\left(\frac{\partial u}{\partial x}\right)_y \cdot \left(\frac{\partial x}{\partial u}\right)_v \cdot \left(\frac{\partial y}{\partial v}\right)_x \cdot \left(\frac{\partial v}{\partial y}\right)_u = 1$$

b) If $u = f(x, y)$ and $x = e^r \cos\theta\,, y = e^r \sin\theta$, then show that

$$\left(\frac{\partial u}{\partial x}\right)^2 + \left(\frac{\partial u}{\partial y}\right)^2 = e^{-2r}\left[\left(\frac{\partial u}{\partial r}\right)^2 + \left(\frac{\partial u}{\partial \theta}\right)^2\right]$$

c) Calculate the percentage error in s where $s = kp^{1/2}v^2$, if percentage errors in p & v are respectively 2 & 1.5

d) Determine the directional derivative of $\Phi = xy + yz + zx$ at the point $(1,2,3)$ in the direction of vector $\bar{a} = 3i + 4j + 5k$

e) Show that the magnitudes of acceleration along tangent and normal at time $t = 2$ are 16 and $2\sqrt{73}$, if a particle moves along the curve

$$\bar{r} = (t^3 - 4t)i + (t^2 + 4t)j + (8t^2 - 5t^3)k$$

Q.7 Attempt any two of the following. **10**

a) If $u = \sin^{-1}\left[\frac{x^{1/4}+y^{1/4}}{x^{1/5}+y^{1/5}}\right]$ then prove that

$$x^2\frac{\partial^2 u}{\partial x^2} + 2xy\frac{\partial^2 u}{\partial x \partial y} + y^2\frac{\partial^2 u}{\partial y^2} = \frac{1}{400}(\tan^2 u - 19)$$

b) Find the maximum and minimum values of $f(x, y) = \sin x + \sin y + \sin(x + y)$

c) Show that a vector field $\bar{f}$ is given by $\bar{f} = (y\sin z - \sin x)i + (x\sin z + 2yz)j + (xy\cos z + y^2)k$, is irrotational and hence find its scalar potential such that $\bar{f} = \nabla\phi$

Seat No.	

Set **Q**

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTN10103)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If $u = \frac{x^{1/4}+y^{1/4}}{x^{1/4}+y^{1/4}}$ then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$ _____.

a) $4u$ b) $5u$
c) $20u$ d) $\frac{1}{20}u$

2) A vector function $\bar{F}$ is called solenoidal if _____.

a) $Curl\ \bar{F} = \bar{0}$ b) $div\ \bar{F} = 0$
c) $grad\ \bar{F} = 0$ d) $div\ \bar{F} \neq 0$

3) If $u = x - y$ and $v = xy$ then $\frac{\partial(u,v)}{\partial(x,y)} = ?$

a) $x - y$ b) 0
c) $y - x$ d) $y + x$

4) If $\bar{a}$ is a constant vector and $\vec{r} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ then grad $(\bar{a}, \bar{r})$ = _____.

a) $2\bar{a}$ b) $\bar{a}$
c) $\bar{r}$ d) $2\bar{r}$

5) With usual notation $f(x,y)$ has a saddle point if _____.

a) $rt - s^2 < 0$ b) $rt - s^2 > 0$
c) $rt - s^2 \neq 0$ d) $rt - s^2 = 0$

6) The directional derivatives of $\emptyset = x^2 + y^2 + z^2$ at the point (1,1,1) along the x-axis is _____.

a) 0 b) 1
c) 2 d) 3

7) If δx is error in x, then $\frac{\delta x}{x} \times 100$ is called _____.

a) Absolute error in x b) Percentage error in x
c) Approximate error in x d) Relative error in x

8) If A is a non-zero matrix of order 4×3, then the rank of the matrix A is _____.

a) equal to 4 b) greater than 4
c) less than 3 or equal to 3 d) None of these

9) The expansion of $\log(1-x) =$ _____.

a) $x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \ldots.$ b) $-x - \frac{x^2}{2} - \frac{x^3}{3} - \frac{x^4}{4} - \ldots.$

c) $x - \frac{x^2}{2!} + \frac{x^3}{3!} - \frac{x^4}{4!} + \ldots.$ d) $x - \frac{x^2}{2!} - \frac{x^3}{3!} - \frac{x^4}{4!} + \ldots.$

10) If $y = x\ \sin x$, then $y_n =$ _____.

a) $\sin\left(x + n\frac{\pi}{2}\right)$

b) $x \sin\left(x + n\frac{n\pi}{2}\right)$

c) $x \cos\left(x + n\frac{\pi}{2}\right) + n \cos\left(x + (n-1)\frac{\pi}{2}\right)$

d) $x \sin\left(x + n\frac{\pi}{2}\right) + n \sin\left(x + (n-1)\frac{\pi}{2}\right)$

11) The eigen values of matrix $\begin{bmatrix} 1 & 3 & -1 \\ 0 & 2 & 4 \\ 0 & 0 & 5 \end{bmatrix}$ are _____.

a) $0, 2, 5$ b) $1, 2, 5$

c) $1, -2, -5$ d) $-1, -2, -5$

12) The system of equations $AX = B$ is inconsistent if _____.

a) rank of $A \neq$ rank of $(A{:}\,B)$ b) rank of $A =$ rank of $(A{:}\,B)$

c) rank of rank $A =$ rank of B d) None of these

13) If $y = \log(3x+2)$, then y_n= _____.

a) $\frac{(-1)^n n!\, 3^n}{(3x+2)^n}$ b) $\frac{(-1)^{n-1}(n-1)!\, 3^n}{(3x+2)^n}$

c) $\frac{(-1)^{n-1}(n-1)!\, 3^n}{(3x+2)^{n+1}}$ d) None of these

14) In Taylor's series expansion of $e^x + \sin x$ about the point $x = \pi$, the coefficient of $(x-\pi)^2$ is _____.

a) e^π b) $e^\pi + 1$

c) $e^\pi - 1$ d) $\frac{e^\pi}{2}$

Seat No.	

Set **Q**

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTN10103)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt any three of the following. **09**

a) Verify Cayley Hamilton theorem for A where

$$A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$$

b) Examine whether the following vectors are linearly independent or dependent. If dependent, then find the relation between them.
$[2, -1, 3, 2], [1, 3, 4, 2], [3, -5, 2, 2]$

c) Evaluate $\lim_{x \to 0} \frac{x^2 + 2\cos x - 2}{x \sin^3 x}$

d) Verify the Lagrange's mean value theorem for the function $f(x) = x(x-1)(x-2)$ in $(0, ½)$

e) Expand $x^5 - x^4 + x^3 - x^2 + x - 1$ in power's of $(x-1)$

Q.3 Attempt any three of the following. **09**

a) Solve the system of equations $x + 3y + 2z = 0;\ 2x - y + 3z = 0;$
$3x - 5y + 4z = 0;\ x + 17y + 4z = 0$

b) Find the n^{th} derivative of $\frac{1}{6x^2 - 5x + 1}$

c) Evaluate: $\lim_{x \to 0} \left(\frac{a^x + b^x + c^x}{3}\right)^{\frac{1}{x}}$

d) Find the rank of the matrix by reducing to normal form.

$$\begin{bmatrix} 6 & 4 & 7 & 3 \\ 4 & 3 & 4 & 2 \\ 2 & 1 & 5 & 6 \end{bmatrix}$$

e) Prove that $\sin^{-1}(3x - 4x^3) = 3\left[x + \frac{x^3}{6} + \frac{3}{40}x^5 + \cdots\right]$

Q.4 Attempt any two of the following. **10**

a) Find the eigen values and corresponding eigen vector of the matrix A.
where $A = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$

b) Expand $e^x \sin x$ in ascending powers of x upto x^4.

c) If $y = e^{a \cos^{-1} x}$, prove that $(1 - x^2)y_{n+2} - (2n+1)xy_{n+1} - (n^2 + a^2)y_n = 0$

Section – II

Q.5 Solve any three of the following questions **09**

a) If $u = 2(ax + by)^2 - (x^2+y^2)$ where $a^2 + b^2 = 4$, then show that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 12$

b) If $z = \sin^{-1}(x - y)$ and $x = 3t, y = 4t^3$ then show that $\frac{dz}{dt} = \frac{3}{\sqrt{1-t^2}}$

c) Show that $JJ' = 1$ if $x = u(1 - v), y = uv$

d) Divide 120 into three numbers such that the sum of their product taken two at a time is maximum.

e) A particle moves along the curve $x = t^2 + 2t,\ y = -3e^{-2t},\ z = 2\sin 5t$, then calculate the velocity and acceleration vectors and the magnitude of velocity and acceleration at $t = 0$

Q.6 Solve any three of the following questions **09**

a) If $u = ax + by, v = bx - ay$, then prove that

$$\left(\frac{\partial u}{\partial x}\right)_y \cdot \left(\frac{\partial x}{\partial u}\right)_v \cdot \left(\frac{\partial y}{\partial v}\right)_x \cdot \left(\frac{\partial v}{\partial y}\right)_u = 1$$

b) If $u = f(x, y)$ and $x = e^r \cos\theta\,, y = e^r \sin\theta$, then show that

$$\left(\frac{\partial u}{\partial x}\right)^2 + \left(\frac{\partial u}{\partial y}\right)^2 = e^{-2r}\left[\left(\frac{\partial u}{\partial r}\right)^2 + \left(\frac{\partial u}{\partial \theta}\right)^2\right]$$

c) Calculate the percentage error in s where $s = kp^{1/2}v^2$, if percentage errors in p & v are respectively 2 & 1.5

d) Determine the directional derivative of $\Phi = xy + yz + zx$ at the point $(1,2,3)$ in the direction of vector $\bar{a} = 3i + 4j + 5k$

e) Show that the magnitudes of acceleration along tangent and normal at time $t = 2$ are 16 and $2\sqrt{73}$, if a particle moves along the curve

$$\bar{r} = (t^3 - 4t)i + (t^2 + 4t)j + (8t^2 - 5t^3)k$$

Q.7 Attempt any two of the following. **10**

a) If $u = \sin^{-1}\left[\frac{x^{1/4}+y^{1/4}}{x^{1/5}+y^{1/5}}\right]$ then prove that

$$x^2\frac{\partial^2 u}{\partial x^2} + 2xy\frac{\partial^2 u}{\partial x \partial y} + y^2\frac{\partial^2 u}{\partial y^2} = \frac{1}{400}(\tan^2 u - 19)$$

b) Find the maximum and minimum values of $f(x, y) = \sin x + \sin y + \sin(x + y)$

c) Show that a vector field $\bar{f}$ is given by $\bar{f} = (y\sin z - \sin x)i + (x\sin z + 2yz)j + (xy\cos z + y^2)k$, is irrotational and hence find its scalar potential such that $\bar{f} = \nabla\phi$

Seat No.	

Set **R**

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTN10103)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If $\bar{a}$ is a constant vector and $\vec{r} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ then grad $(\bar{a}, \bar{r})$ = _____.

a) $2\bar{a}$ b) $\bar{a}$

c) $\bar{r}$ d) $2\bar{r}$

2) With usual notation $f(x, y)$ has a saddle point if _____.

a) $rt - s^2 < 0$ b) $rt - s^2 > 0$

c) $rt - s^2 \neq 0$ d) $rt - s^2 = 0$

3) The directional derivatives of $\emptyset = x^2 + y^2 + z^2$ at the point (1,1,1) along the x-axis is _____.

a) 0 b) 1

c) 2 d) 3

4) If δx is error in x, then $\frac{\delta x}{x} \times 100$ is called _____.

a) Absolute error in x b) Percentage error in x

c) Approximate error in x d) Relative error in x

5) If A is a non-zero matrix of order 4×3, then the rank of the matrix A is _____.

a) equal to 4 b) greater than 4

c) less than 3 or equal to 3 d) None of these

6) The expansion of $\log(1 - x)$ = _____.

a) $x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \ldots.$ b) $-x - \frac{x^2}{2} - \frac{x^3}{3} - \frac{x^4}{4} - \ldots.$

c) $x - \frac{x^2}{2!} + \frac{x^3}{3!} - \frac{x^4}{4!} + \ldots.$ d) $x - \frac{x^2}{2!} - \frac{x^3}{3!} - \frac{x^4}{4!} + \ldots.$

7) If $y = x \sin x$, then y_n = _____.

a) $\sin\left(x + n\frac{\pi}{2}\right)$

b) $x \sin\left(x + n\frac{n\pi}{2}\right)$

c) $x \cos\left(x + n\frac{\pi}{2}\right) + n \cos\left(x + (n-1)\frac{\pi}{2}\right)$

d) $x \sin\left(x + n\frac{\pi}{2}\right) + n \sin\left(x + (n-1)\frac{\pi}{2}\right)$

8) The eigen values of matrix $\begin{bmatrix} 1 & 3 & -1 \\ 0 & 2 & 4 \\ 0 & 0 & 5 \end{bmatrix}$ are _____.

a) $0, 2, 5$ b) $1, 2, 5$

c) $1, -2, -5$ d) $-1, -2, -5$

9) The system of equations $AX = B$ is inconsistent if _____.

a) rank of $A \neq$ rank of $(A: B)$ b) rank of $A =$ rank of $(A: B)$

c) rank of rank $A =$ rank of B d) None of these

10) If $y = \log(3x + 2)$, then y_n= _____.

a) $\dfrac{(-1)^n n!\, 3^n}{(3x+2)^n}$ b) $\dfrac{(-1)^{n-1}(n-1)!\, 3^n}{(3x+2)^n}$

c) $\dfrac{(-1)^{n-1}(n-1)!\, 3^n}{(3x+2)^{n+1}}$ d) None of these

11) In Taylor's series expansion of $e^x + \sin x$ about the point $x = \pi$, the coefficient of $(x - \pi)^2$ is _____.

a) e^π b) $e^\pi + 1$

c) $e^\pi - 1$ d) $\dfrac{e^\pi}{2}$

12) If $u = \dfrac{x^{1/4} + y^{1/4}}{x^{1/4} + y^{1/4}}$ then $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} =$ _____.

a) $4u$ b) $5u$

c) $20u$ d) $\dfrac{1}{20}u$

13) A vector function $\bar{F}$ is called solenoidal if _____.

a) $Curl\ \bar{F} = \bar{0}$ b) $div\ \bar{F} = 0$

c) $grad\ \bar{F} = 0$ d) $div\ \bar{F} \neq 0$

14) If $u = x - y$ and $v = xy$ then $\dfrac{\partial(u,v)}{\partial(x,y)} =$?

a) $x - y$ b) 0

c) $y - x$ d) $y + x$

Seat No.	

Set **R**

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTN10103)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt any three of the following. **09**

a) Verify Cayley Hamilton theorem for A where

$$A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$$

b) Examine whether the following vectors are linearly independent or dependent. If dependent, then find the relation between them.
$[2, -1, 3, 2], [1, 3, 4, 2], [3, -5, 2, 2]$

c) Evaluate $\lim_{x \to 0} \frac{x^2 + 2\cos x - 2}{x \sin^3 x}$

d) Verify the Lagrange's mean value theorem for the function $f(x) = x(x-1)(x-2)$ in $(0, ½)$

e) Expand $x^5 - x^4 + x^3 - x^2 + x - 1$ in power's of $(x-1)$

Q.3 Attempt any three of the following. **09**

a) Solve the system of equations $x + 3y + 2z = 0;\ 2x - y + 3z = 0;$ $3x - 5y + 4z = 0;\ x + 17y + 4z = 0$

b) Find the n^{th} derivative of $\frac{1}{6x^2 - 5x + 1}$

c) Evaluate: $\lim_{x \to 0} \left(\frac{a^x + b^x + c^x}{3}\right)^{\frac{1}{x}}$

d) Find the rank of the matrix by reducing to normal form.

$$\begin{bmatrix} 6 & 4 & 7 & 3 \\ 4 & 3 & 4 & 2 \\ 2 & 1 & 5 & 6 \end{bmatrix}$$

e) Prove that $\sin^{-1}(3x - 4x^3) = 3\left[x + \frac{x^3}{6} + \frac{3}{40}x^5 + \cdots\right]$

Q.4 Attempt any two of the following. **10**

a) Find the eigen values and corresponding eigen vector of the matrix A.
where $A = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$

b) Expand $e^x \sin x$ in ascending powers of x upto x^4.

c) If $y = e^{a \cos^{-1} x}$, prove that $(1 - x^2)y_{n+2} - (2n+1)xy_{n+1} - (n^2 + a^2)y_n = 0$

Section – II

Q.5 Solve any three of the following questions **09**

a) If $u = 2(ax + by)^2 - (x^2+y^2)$ where $a^2 + b^2 = 4$, then show that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 12$

b) If $z = \sin^{-1}(x - y)$ and $x = 3t, y = 4t^3$ then show that $\frac{dz}{dt} = \frac{3}{\sqrt{1-t^2}}$

c) Show that $JJ' = 1$ if $x = u(1 - v), y = uv$

d) Divide 120 into three numbers such that the sum of their product taken two at a time is maximum.

e) A particle moves along the curve $x = t^2 + 2t,\ y = -3e^{-2t},\ z = 2\sin 5t$, then calculate the velocity and acceleration vectors and the magnitude of velocity and acceleration at $t = 0$

Q.6 Solve any three of the following questions **09**

a) If $u = ax + by, v = bx - ay$, then prove that

$$\left(\frac{\partial u}{\partial x}\right)_y \cdot \left(\frac{\partial x}{\partial u}\right)_v \cdot \left(\frac{\partial y}{\partial v}\right)_x \cdot \left(\frac{\partial v}{\partial y}\right)_u = 1$$

b) If $u = f(x, y)$ and $x = e^r \cos\theta\ , y = e^r \sin\theta$, then show that

$$\left(\frac{\partial u}{\partial x}\right)^2 + \left(\frac{\partial u}{\partial y}\right)^2 = e^{-2r}\left[\left(\frac{\partial u}{\partial r}\right)^2 + \left(\frac{\partial u}{\partial \theta}\right)^2\right]$$

c) Calculate the percentage error in s where $s = kp^{1/2}v^2$, if percentage errors in p & v are respectively 2 & 1.5

d) Determine the directional derivative of $\Phi = xy + yz + zx$ at the point $(1,2,3)$ in the direction of vector $\bar{a} = 3i + 4j + 5k$

e) Show that the magnitudes of acceleration along tangent and normal at time $t = 2$ are 16 and $2\sqrt{73}$, if a particle moves along the curve

$$\bar{r} = (t^3 - 4t)i + (t^2 + 4t)j + (8t^2 - 5t^3)k$$

Q.7 Attempt any two of the following. **10**

a) If $u = \sin^{-1}\left[\frac{x^{1/4}+y^{1/4}}{x^{1/5}+y^{1/5}}\right]$ then prove that

$$x^2\frac{\partial^2 u}{\partial x^2} + 2xy\frac{\partial^2 u}{\partial x \partial y} + y^2\frac{\partial^2 u}{\partial y^2} = \frac{1}{400}(\tan^2 u - 19)$$

b) Find the maximum and minimum values of $f(x, y) = \sin x + \sin y + \sin(x + y)$

c) Show that a vector field $\bar{f}$ is given by $\bar{f} = (y\sin z - \sin x)i + (x\sin z + 2yz)j + (xy\cos z + y^2)k$, is irrotational and hence find its scalar potential such that $\bar{f} = \nabla\phi$

Seat No.	

Set **S**

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTN10103)

Day & Date: Friday, 05-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If $y = \log(3x+2)$, then y_n= _____.

a) $\frac{(-1)^n n!\, 3^n}{(3x+2)^n}$ b) $\frac{(-1)^{n-1}(n-1)!\, 3^n}{(3x+2)^n}$

c) $\frac{(-1)^{n-1}(n-1)!\, 3^n}{(3x+2)^{n+1}}$ d) None of these

2) In Taylor's series expansion of $e^x + \sin x$ about the point $x = \pi$, the coefficient of $(x-\pi)^2$ is _____.

a) e^{π} b) $e^{\pi}+1$

c) $e^{\pi}-1$ d) $\frac{e^{\pi}}{2}$

3) If $u = \frac{x^{1/4}+y^{1/4}}{x^{1/4}+y^{1/4}}$ then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$ _____.

a) $4u$ b) $5u$

c) $20u$ d) $\frac{1}{20}u$

4) A vector function $\bar{F}$ is called solenoidal if _____.

a) $Curl\ \bar{F} = \bar{0}$ b) $div\ \bar{F} = 0$

c) $grad\ \bar{F} = 0$ d) $div\ \bar{F} \neq 0$

5) If $u = x - y$ and $v = xy$ then $\frac{\partial(u,v)}{\partial(x,y)} = ?$

a) $x-y$ b) 0

c) $y-x$ d) $y+x$

6) If $\bar{a}$ is a constant vector and $\vec{r} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ then grad $(\bar{a}, \bar{r})$ = _____.

a) $2\bar{a}$ b) $\bar{a}$

c) $\bar{r}$ d) $2\bar{r}$

7) With usual notation $f(x,y)$ has a saddle point if _____.

a) $rt - s^2 < 0$ b) $rt - s^2 > 0$

c) $rt - s^2 \neq 0$ d) $rt - s^2 = 0$

8) The directional derivatives of $\emptyset = x^2 + y^2 + z^2$ at the point (1,1,1) along the x-axis is _____.

a) 0 b) 1
c) 2 d) 3

9) If δx is error in x, then $\frac{\delta x}{x} \times 100$ is called _____.

a) Absolute error in x b) Percentage error in x
c) Approximate error in x d) Relative error in x

10) If A is a non-zero matrix of order 4×3, then the rank of the matrix A is _____.

a) equal to 4 b) greater than 4
c) less than 3 or equal to 3 d) None of these

11) The expansion of $\log(1 - x) =$ _____.

a) $x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \ldots.$ b) $-x - \frac{x^2}{2} - \frac{x^3}{3} - \frac{x^4}{4} - \ldots.$
c) $x - \frac{x^2}{2!} + \frac{x^3}{3!} - \frac{x^4}{4!} + \ldots.$ d) $x - \frac{x^2}{2!} - \frac{x^3}{3!} - \frac{x^4}{4!} + \ldots.$

12) If $y = x \sin x$, then $y_n =$ _____.

a) $\sin\left(x + n\frac{\pi}{2}\right)$

b) $x \sin\left(x + n\frac{n\pi}{2}\right)$

c) $x \cos\left(x + n\frac{\pi}{2}\right) + n \cos\left(x + (n-1)\frac{\pi}{2}\right)$

d) $x \sin\left(x + n\frac{\pi}{2}\right) + n \sin\left(x + (n-1)\frac{\pi}{2}\right)$

13) The eigen values of matrix $\begin{bmatrix} 1 & 3 & -1 \\ 0 & 2 & 4 \\ 0 & 0 & 5 \end{bmatrix}$ are _____.

a) $0, 2, 5$ b) $1, 2, 5$
c) $1, -2, -5$ d) $-1, -2, -5$

14) The system of equations $AX = B$ is inconsistent if _____.

a) rank of $A \neq$ rank of $(A{:}\,B)$ b) rank of $A =$ rank of $(A{:}\,B)$
c) rank of rank $A =$ rank of B d) None of these

Seat No.		Set	S

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics - I (BTN10103)

Day & Date: Friday, 05-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt any three of the following. **09**

a) Verify Cayley Hamilton theorem for A where

$$A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$$

b) Examine whether the following vectors are linearly independent or dependent. If dependent, then find the relation between them.
$[2, -1, 3, 2], [1, 3, 4, 2], [3, -5, 2, 2]$

c) Evaluate $\lim_{x \to 0} \frac{x^2 + 2\cos x - 2}{x \sin^3 x}$

d) Verify the Lagrange's mean value theorem for the function $f(x) = x(x-1)(x-2)$ in $(0, ½)$

e) Expand $x^5 - x^4 + x^3 - x^2 + x - 1$ in power's of $(x-1)$

Q.3 Attempt any three of the following. **09**

a) Solve the system of equations $x + 3y + 2z = 0;\ 2x - y + 3z = 0;$
$3x - 5y + 4z = 0;\ x + 17y + 4z = 0$

b) Find the n^{th} derivative of $\frac{1}{6x^2 - 5x + 1}$

c) Evaluate: $\lim_{x \to 0} \left(\frac{a^x + b^x + c^x}{3}\right)^{\frac{1}{x}}$

d) Find the rank of the matrix by reducing to normal form.

$$\begin{bmatrix} 6 & 4 & 7 & 3 \\ 4 & 3 & 4 & 2 \\ 2 & 1 & 5 & 6 \end{bmatrix}$$

e) Prove that $\sin^{-1}(3x - 4x^3) = 3\left[x + \frac{x^3}{6} + \frac{3}{40}x^5 + \cdots\right]$

Q.4 Attempt any two of the following. **10**

a) Find the eigen values and corresponding eigen vector of the matrix A.
where $A = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$

b) Expand $e^x \sin x$ in ascending powers of x upto x^4.

c) If $y = e^{a \cos^{-1} x}$, prove that $(1 - x^2)y_{n+2} - (2n+1)xy_{n+1} - (n^2 + a^2)y_n = 0$

Section – II

Q.5 Solve any three of the following questions **09**

a) If $u = 2(ax + by)^2 - (x^2+y^2)$ where $a^2 + b^2 = 4$, then show that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 12$

b) If $z = \sin^{-1}(x - y)$ and $x = 3t, y = 4t^3$ then show that $\frac{dz}{dt} = \frac{3}{\sqrt{1-t^2}}$

c) Show that $JJ' = 1$ if $x = u(1 - v), y = uv$

d) Divide 120 into three numbers such that the sum of their product taken two at a time is maximum.

e) A particle moves along the curve $x = t^2 + 2t,\ y = -3e^{-2t},\ z = 2\sin 5t$, then calculate the velocity and acceleration vectors and the magnitude of velocity and acceleration at $t = 0$

Q.6 Solve any three of the following questions **09**

a) If $u = ax + by, v = bx - ay$, then prove that

$$\left(\frac{\partial u}{\partial x}\right)_y \cdot \left(\frac{\partial x}{\partial u}\right)_v \cdot \left(\frac{\partial y}{\partial v}\right)_x \cdot \left(\frac{\partial v}{\partial y}\right)_u = 1$$

b) If $u = f(x, y)$ and $x = e^r \cos\theta\,, y = e^r \sin\theta$, then show that

$$\left(\frac{\partial u}{\partial x}\right)^2 + \left(\frac{\partial u}{\partial y}\right)^2 = e^{-2r}\left[\left(\frac{\partial u}{\partial r}\right)^2 + \left(\frac{\partial u}{\partial \theta}\right)^2\right]$$

c) Calculate the percentage error in s where $s = kp^{1/2}v^2$, if percentage errors in p & v are respectively 2 & 1.5

d) Determine the directional derivative of $\Phi = xy + yz + zx$ at the point $(1,2,3)$ in the direction of vector $\bar{a} = 3i + 4j + 5k$

e) Show that the magnitudes of acceleration along tangent and normal at time $t = 2$ are 16 and $2\sqrt{73}$, if a particle moves along the curve

$$\bar{r} = (t^3 - 4t)i + (t^2 + 4t)j + (8t^2 - 5t^3)k$$

Q.7 Attempt any two of the following. **10**

a) If $u = \sin^{-1}\left[\frac{x^{1/4}+y^{1/4}}{x^{1/5}+y^{1/5}}\right]$ then prove that

$$x^2\frac{\partial^2 u}{\partial x^2} + 2xy\frac{\partial^2 u}{\partial x \partial y} + y^2\frac{\partial^2 u}{\partial y^2} = \frac{1}{400}(\tan^2 u - 19)$$

b) Find the maximum and minimum values of $f(x, y) = \sin x + \sin y + \sin(x + y)$

c) Show that a vector field $\bar{f}$ is given by $\bar{f} = (y\sin z - \sin x)i + (x\sin z + 2yz)j + (xy\cos z + y^2)k$, is irrotational and hence find its scalar potential such that $\bar{f} = \nabla\phi$

SLR-GF-708

Seat No.		Set	P

F.Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ENGINEERING PHYSICS (BTN10101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary.

Constants: 1) Avogadro's no., N = 6.02×10^{26} / k.mol
2) Velocity of light, c = 3×10^{8} m/sec
3) Charge of electron, e = 1.6×10^{-19} C

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The Hall coefficient (R_H) is _____ for P-type semiconductor.
a) Positive b) Negative
c) No sign d) None

2) In N-type semiconductor materials, the majority carriers are _____.
a) electrons b) protons
c) positive holes d) neutrons

3) Atomic packing factor of BCC structure is _____.
a) 0.52 b) 0.68
c) 0.48 d) 0.74

4) The condition for Bragg's diffraction is _____.
a) $2n \sin\theta = d\lambda$ b) $2\lambda \sin\theta = nd$
c) $2d \sin\theta = n\lambda$ d) $3d \sin\theta = n\lambda$

5) Optimum reverberation time for music is _____.
a) 0.5 to 1 sec b) 0 to 1 sec
c) 0.5 to 1.5 sec d) 1 to 2 sec

6) The waves used in Sonography are _____.
a) micro waves b) infrared waves
c) ultrasonic waves d) ultraviolet waves

7) Relativistic transformations were suggested by _____.
a) Newton b) Huygens
c) Einstein d) Lorentz

8) The grating constant is given by the equation _____.

a) No. of lines per cm

b) $\frac{1}{\text{No. of lines/cm}}$

c) No. of lines per inch

d) $\frac{2.54}{\text{No. of lines/cm}}$

9) Intensity of transmitted light through analyzer is given by equation _____.

a) $I = I_0 \,.\cos^2\theta$

b) $I = I_0$

c) $I = I_0.\sin^2\theta$

d) $I_0 = I.\cos\theta$

10) The hologram records _____ of the object.

a) only intensity distribution
b) only phase distribution
c) only amplitude distribution
d) both intensity variation and phase distribution

11) Stimulated absorption process is mathematically represented by equation _____.

a) $A + h\gamma \rightarrow A^*$

b) $A^* \rightarrow A + h\gamma$

c) $A^* + h\gamma \rightarrow A + 2h\gamma$

d) $A^* + h\gamma \rightarrow A + h\gamma$

12) If core has non uniform refractive index, the fibre is called as _____ fibre.

a) Single mode
b) Graded index MMF
c) Step index MMF
d) Step index SMF

13) The nano tubes, formed with many concentric cylinders are termed as _____.

a) Multi wall carbon nano tubes
b) Single wall carbon nano tubes
c) Folded nano tubes
d) unfolded nano tubes

14) Which of the following proved the De Broglie equation was correct?

a) Planks equation
b) Einstein's theory of relativity
c) Quantum mechanics
d) Davisson Germer experiment

Seat No.	

Set **P**

F.Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ENGINEERING PHYSICS (BTN10101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary.

Section – I

Q.2 Attempt any SIX of the following **18**

a) Classify the solids into insulator, semiconductor, and conductor on the basis of band theory of solids.

b) Prove that in intrinsic semiconductors, Fermi level is at the center of forbidden energy gap ($Eg/2 = E_F$).

c) What is atomic packing factor. Calculate the packing factor for SC and BCC.

d) Explain: Detection methods of ultrasonic waves.

e) Explain: Properties of Ultrasonics.

f) Explain: Length contraction.

g) A Cu strip of 20 mm wide and 1 mm thick is placed in a magnetic field, B = 1.5 Wb/m^2. If a current of 200A is set up in the strip, calculate the p.d. which appears across the strip if the number of charge carriers is 8.4×10^{28} m^{-3}.

h) A KCl belongs to FCC lattice and has density of 1.98×10^3 kg/m^3. Its molecular weight is 74.55. Find the lattice constant.

Q.3 Attempt any TWO of the following: **10**

a) What is Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H) with neat diagram.

b) Explain the term: Miller indices. Derive the relation between lattice constant (a) and interplanar spacing (d) for cubic crystal.

$$d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

c) State and explain the factors affecting the architectural acoustics and their remedies.

d) i) A rod has length 1m. When the rod is in a satellite moving with a velocity that is one half of the velocity of light relative to laboratory. What is the length of the rod as determined by an observer
a) in the satellite and
b) in the laboratory

ii) Derive an Einstein's expression for mass-energy ($E = m.c^2$) equivalence.

Section – II

Q.4 Attempt any SIX of the following: **18**

a) What is resolving power? Explain Rayleigh's criterion of resolution.

b) Explain in brief:

i) Stimulated Emission and

ii) Population Inversion

c) Explain: Properties of LASER.

d) Explain: Classification of optical fibers with diagram.

e) Explain: Types of carbon nanotubes (CNTs).

f) Write applications of Nanotechnology.

g) Explain: Positive and Negative crystal.

h) A glass clad fiber is made with the core glass of refractive index 1.5 and the cladding is doped to give a fractional index difference of 0.0005. Calculate the cladding index and critical angle.

Q.5 Attempt any TWO of the following: **10**

a) Describe Laurent's half shade polarimeter for the determination of specific rotation of the substance.

b) Describe construction and working with energy diagrams of He-Ne laser.

c) Obtain the expression for acceptance angle, acceptance cone, numerical aperture and fractional refractive index change of an optical fiber.

d) i) Calculate specific rotation, if the plane of polarization is rotated through 25.3° traversing 20 cm length of 20% sugar solution.

ii) Calculate the De-Broglie wavelength of electron accelerating through the potential of 169 volts.

SLR-GF-708

Seat No.	

Set Q

F.Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ENGINEERING PHYSICS (BTN10101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary.

Constants: 1) Avogadro's no., N = 6.02×10^{26} / k.mol
2) Velocity of light, c = 3×10^{8} m/sec
3) Charge of electron, e = 1.6×10^{-19} C

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The grating constant is given by the equation _____.
a) No. of lines per cm
b) $\frac{1}{\text{No. of lines/cm}}$
c) No. of lines per inch
d) $\frac{2.54}{\text{No. of lines/cm}}$

2) Intensity of transmitted light through analyzer is given by equation _____.
a) $I = I_0 . \cos^2 \theta$
b) $I = I_0$
c) $I = I_0 . \sin^2 \theta$
d) $I_0 = I . \cos \theta$

3) The hologram records _____ of the object.
a) only intensity distribution
b) only phase distribution
c) only amplitude distribution
d) both intensity variation and phase distribution

4) Stimulated absorption process is mathematically represented by equation _____.
a) $A + h\gamma \rightarrow A^*$
b) $A^* \rightarrow A + h\gamma$
c) $A^* + h\gamma \rightarrow A + 2h\gamma$
d) $A^* + h\gamma \rightarrow A + h\gamma$

5) If core has non uniform refractive index, the fibre is called as _____ fibre.
a) Single mode
b) Graded index MMF
c) Step index MMF
d) Step index SMF

6) The nano tubes, formed with many concentric cylinders are termed as _____.
a) Multi wall carbon nano tubes
b) Single wall carbon nano tubes
c) Folded nano tubes
d) unfolded nano tubes

7) Which of the following proved the De Broglie equation was correct?
a) Planks equation
b) Einstein's theory of relativity
c) Quantum mechanics
d) Davisson Germer experiment

8) The Hall coefficient (R_H) is _____ for P-type semiconductor.
a) Positive b) Negative
c) No sign d) None

9) In N-type semiconductor materials, the majority carriers are _____.
a) electrons b) protons
c) positive holes d) neutrons

10) Atomic packing factor of BCC structure is _____.
a) 0.52 b) 0.68
c) 0.48 d) 0.74

11) The condition for Bragg's diffraction is _____.
a) $2n \sin\theta = d\lambda$ b) $2\lambda \sin\theta = nd$
c) $2d \sin\theta = n\lambda$ d) $3d \sin\theta = n\lambda$

12) Optimum reverberation time for music is _____.
a) 0.5 to 1 sec b) 0 to 1 sec
c) 0.5 to 1.5 sec d) 1 to 2 sec

13) The waves used in Sonography are _____.
a) micro waves b) infrared waves
c) ultrasonic waves d) ultraviolet waves

14) Relativistic transformations were suggested by _____.
a) Newton b) Huygens
c) Einstein d) Lorentz

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ENGINEERING PHYSICS (BTN10101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary.

Section – I

Q.2 Attempt any SIX of the following **18**

a) Classify the solids into insulator, semiconductor, and conductor on the basis of band theory of solids.

b) Prove that in intrinsic semiconductors, Fermi level is at the center of forbidden energy gap ($Eg/2 = E_F$).

c) What is atomic packing factor. Calculate the packing factor for SC and BCC.

d) Explain: Detection methods of ultrasonic waves.

e) Explain: Properties of Ultrasonics.

f) Explain: Length contraction.

g) A Cu strip of 20 mm wide and 1 mm thick is placed in a magnetic field, B = 1.5 Wb/m^2. If a current of 200A is set up in the strip, calculate the p.d. which appears across the strip if the number of charge carriers is 8.4×10^{28} m^{-3}.

h) A KCl belongs to FCC lattice and has density of 1.98×10^3 kg/m^3. Its molecular weight is 74.55. Find the lattice constant.

Q.3 Attempt any TWO of the following: **10**

a) What is Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H) with neat diagram.

b) Explain the term: Miller indices. Derive the relation between lattice constant (a) and interplanar spacing (d) for cubic crystal.

$$d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

c) State and explain the factors affecting the architectural acoustics and their remedies.

d) i) A rod has length 1m. When the rod is in a satellite moving with a velocity that is one half of the velocity of light relative to laboratory. What is the length of the rod as determined by an observer
a) in the satellite and
b) in the laboratory

ii) Derive an Einstein's expression for mass-energy ($E = m.c^2$) equivalence.

Section – II

Q.4 Attempt any SIX of the following: **18**

a) What is resolving power? Explain Rayleigh's criterion of resolution.
b) Explain in brief:
  i) Stimulated Emission and
  ii) Population Inversion
c) Explain: Properties of LASER.
d) Explain: Classification of optical fibers with diagram.
e) Explain: Types of carbon nanotubes (CNTs).
f) Write applications of Nanotechnology.
g) Explain: Positive and Negative crystal.
h) A glass clad fiber is made with the core glass of refractive index 1.5 and the cladding is doped to give a fractional index difference of 0.0005. Calculate the cladding index and critical angle.

Q.5 Attempt any TWO of the following: **10**

a) Describe Laurent's half shade polarimeter for the determination of specific rotation of the substance.
b) Describe construction and working with energy diagrams of He-Ne laser.
c) Obtain the expression for acceptance angle, acceptance cone, numerical aperture and fractional refractive index change of an optical fiber.
d) i) Calculate specific rotation, if the plane of polarization is rotated through 25.3° traversing 20 cm length of 20% sugar solution.
  ii) Calculate the De-Broglie wavelength of electron accelerating through the potential of 169 volts.

SLR-GF-708

Seat No.	

Set R

F.Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ENGINEERING PHYSICS (BTN10101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary.

Constants: 1) Avogadro's no., N = 6.02×10^{26} / k.mol
2) Velocity of light, c = 3×10^{8} m/sec
3) Charge of electron, e = 1.6×10^{-19} C

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Stimulated absorption process is mathematically represented by equation _____.
a) $A + h\gamma \rightarrow A^*$ b) $A^* \rightarrow A + h\gamma$
c) $A^* + h\gamma \rightarrow A + 2h\gamma$ d) $A^* + h\gamma \rightarrow A + h\gamma$

2) If core has non uniform refractive index, the fibre is called as _____ fibre.
a) Single mode b) Graded index MMF
c) Step index MMF d) Step index SMF

3) The nano tubes, formed with many concentric cylinders are termed as _____.
a) Multi wall carbon nano tubes b) Single wall carbon nano tubes
c) Folded nano tubes d) unfolded nano tubes

4) Which of the following proved the De Broglie equation was correct?
a) Planks equation b) Einstein's theory of relativity
c) Quantum mechanics d) Davisson Germer experiment

5) The Hall coefficient (R_H) is _____ for P-type semiconductor.
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c) No sign d) None

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7) Atomic packing factor of BCC structure is _____.
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8) The condition for Bragg's diffraction is _____.
a) $2n \sin\theta = d\lambda$ b) $2\lambda \sin\theta = nd$
c) $2d \sin\theta = n\lambda$ d) $3d \sin\theta = n\lambda$

9) Optimum reverberation time for music is _____.

a) 0.5 to 1 sec b) 0 to 1 sec

c) 0.5 to 1.5 sec d) 1 to 2 sec

10) The waves used in Sonography are _____.

a) micro waves b) infrared waves

c) ultrasonic waves d) ultraviolet waves

11) Relativistic transformations were suggested by _____.

a) Newton b) Huygens

c) Einstein d) Lorentz

12) The grating constant is given by the equation _____.

a) No. of lines per cm b) $\frac{1}{\text{No. of lines/cm}}$

c) No. of lines per inch d) $\frac{2.54}{\text{No. of lines/cm}}$

13) Intensity of transmitted light through analyzer is given by equation _____.

a) $I = I_0 . \cos^2 \theta$ b) $I = I_0$

c) $I = I_0 . \sin^2 \theta$ d) $I_0 = I . \cos \theta$

14) The hologram records _____ of the object.

a) only intensity distribution

b) only phase distribution

c) only amplitude distribution

d) both intensity variation and phase distribution

Seat No.	

Set **R**

F.Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ENGINEERING PHYSICS (BTN10101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary.

Section – I

Q.2 Attempt any SIX of the following **18**

a) Classify the solids into insulator, semiconductor, and conductor on the basis of band theory of solids.

b) Prove that in intrinsic semiconductors, Fermi level is at the center of forbidden energy gap ($Eg/2 = E_F$).

c) What is atomic packing factor. Calculate the packing factor for SC and BCC.

d) Explain: Detection methods of ultrasonic waves.

e) Explain: Properties of Ultrasonics.

f) Explain: Length contraction.

g) A Cu strip of 20 mm wide and 1 mm thick is placed in a magnetic field, B = 1.5 Wb/m^2. If a current of 200A is set up in the strip, calculate the p.d. which appears across the strip if the number of charge carriers is 8.4×10^{28} m^{-3}.

h) A KCl belongs to FCC lattice and has density of 1.98×10^3 kg/m^3. Its molecular weight is 74.55. Find the lattice constant.

Q.3 Attempt any TWO of the following: **10**

a) What is Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H) with neat diagram.

b) Explain the term: Miller indices. Derive the relation between lattice constant (a) and interplanar spacing (d) for cubic crystal.

$$d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

c) State and explain the factors affecting the architectural acoustics and their remedies.

d) i) A rod has length 1m. When the rod is in a satellite moving with a velocity that is one half of the velocity of light relative to laboratory. What is the length of the rod as determined by an observer
a) in the satellite and
b) in the laboratory

ii) Derive an Einstein's expression for mass-energy ($E = m.c^2$) equivalence.

Section – II

Q.4 Attempt any SIX of the following: **18**

a) What is resolving power? Explain Rayleigh's criterion of resolution.

b) Explain in brief:
- i) Stimulated Emission and
- ii) Population Inversion

c) Explain: Properties of LASER.

d) Explain: Classification of optical fibers with diagram.

e) Explain: Types of carbon nanotubes (CNTs).

f) Write applications of Nanotechnology.

g) Explain: Positive and Negative crystal.

h) A glass clad fiber is made with the core glass of refractive index 1.5 and the cladding is doped to give a fractional index difference of 0.0005. Calculate the cladding index and critical angle.

Q.5 Attempt any TWO of the following: **10**

a) Describe Laurent's half shade polarimeter for the determination of specific rotation of the substance.

b) Describe construction and working with energy diagrams of He-Ne laser.

c) Obtain the expression for acceptance angle, acceptance cone, numerical aperture and fractional refractive index change of an optical fiber.

d)
- i) Calculate specific rotation, if the plane of polarization is rotated through 25.3° traversing 20 cm length of 20% sugar solution.
- ii) Calculate the De-Broglie wavelength of electron accelerating through the potential of 169 volts.

Seat No.		Set	S

F.Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ENGINEERING PHYSICS (BTN10101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary.

Constants: 1) Avogadro's no., N = 6.02×10^{26} / k.mol
2) Velocity of light, c = 3×10^{8} m/sec
3) Charge of electron, e = 1.6×10^{-19} C

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) The waves used in Sonography are _____.
a) micro waves b) infrared waves
c) ultrasonic waves d) ultraviolet waves

2) Relativistic transformations were suggested by _____.
a) Newton b) Huygens
c) Einstein d) Lorentz

3) The grating constant is given by the equation _____.
a) No. of lines per cm b) $\frac{1}{\text{No. of lines/cm}}$
c) No. of lines per inch d) $\frac{2.54}{\text{No. of lines/cm}}$

4) Intensity of transmitted light through analyzer is given by equation _____.
a) $I = I_0 . \cos^2 \theta$ b) $I = I_0$
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a) $A + h\gamma \rightarrow A^*$ b) $A^* \rightarrow A + h\gamma$
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7) If core has non uniform refractive index, the fibre is called as _____ fibre.
a) Single mode b) Graded index MMF
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8) The nano tubes, formed with many concentric cylinders are termed as _____.
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9) Which of the following proved the De Broglie equation was correct?
a) Planks equation b) Einstein's theory of relativity
c) Quantum mechanics d) Davisson Germer experiment

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11) In N-type semiconductor materials, the majority carriers are _____.
a) electrons b) protons
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12) Atomic packing factor of BCC structure is _____.
a) 0.52 b) 0.68
c) 0.48 d) 0.74

13) The condition for Bragg's diffraction is _____.
a) $2n \sin\theta = d\lambda$ b) $2\lambda \sin\theta = nd$
c) $2d \sin\theta = n\lambda$ d) $3d \sin\theta = n\lambda$

14) Optimum reverberation time for music is _____.
a) 0.5 to 1 sec b) 0 to 1 sec
c) 0.5 to 1.5 sec d) 1 to 2 sec

Seat No.		Set	S

F.Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
ENGINEERING PHYSICS (BTN10101)

Day & Date: Sunday, 07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary.

Section – I

Q.2 Attempt any SIX of the following **18**

a) Classify the solids into insulator, semiconductor, and conductor on the basis of band theory of solids.
b) Prove that in intrinsic semiconductors, Fermi level is at the center of forbidden energy gap ($Eg/2 = E_F$).
c) What is atomic packing factor. Calculate the packing factor for SC and BCC.
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e) Explain: Properties of Ultrasonics.
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h) A KCl belongs to FCC lattice and has density of 1.98×10^3 kg/m^3. Its molecular weight is 74.55. Find the lattice constant.

Q.3 Attempt any TWO of the following: **10**

a) What is Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H) with neat diagram.
b) Explain the term: Miller indices. Derive the relation between lattice constant (a) and interplanar spacing (d) for cubic crystal.

$$d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

c) State and explain the factors affecting the architectural acoustics and their remedies.
d) i) A rod has length 1m. When the rod is in a satellite moving with a velocity that is one half of the velocity of light relative to laboratory. What is the length of the rod as determined by an observer
a) in the satellite and
b) in the laboratory
ii) Derive an Einstein's expression for mass-energy ($E = m.c^2$) equivalence.

Section – II

Q.4 Attempt any SIX of the following: **18**

a) What is resolving power? Explain Rayleigh's criterion of resolution.

b) Explain in brief:

i) Stimulated Emission and

ii) Population Inversion

c) Explain: Properties of LASER.

d) Explain: Classification of optical fibers with diagram.

e) Explain: Types of carbon nanotubes (CNTs).

f) Write applications of Nanotechnology.

g) Explain: Positive and Negative crystal.

h) A glass clad fiber is made with the core glass of refractive index 1.5 and the cladding is doped to give a fractional index difference of 0.0005. Calculate the cladding index and critical angle.

Q.5 Attempt any TWO of the following: **10**

a) Describe Laurent's half shade polarimeter for the determination of specific rotation of the substance.

b) Describe construction and working with energy diagrams of He-Ne laser.

c) Obtain the expression for acceptance angle, acceptance cone, numerical aperture and fractional refractive index change of an optical fiber.

d) i) Calculate specific rotation, if the plane of polarization is rotated through 25.3° traversing 20 cm length of 20% sugar solution.

ii) Calculate the De-Broglie wavelength of electron accelerating through the potential of 169 volts.

SLR-GF-709

Seat No.	

Set P

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Chemistry (BTN10102)

Day & Date: Sunday,07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat and labeled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Hard water is unfit for use in boilers for "steam raising" because: _____.
a) its boiling point is higher
b) steam is generated at a high pressure
c) it leads to scale formation inside boiler
d) water undergoes decomposition into oxygen and hydrogen

2) The flow of water through a membrane from saline water into fresh water takes place when the applied pressure on saline water is _____.
a) higher than osmotic pressure b) lower than osmotic pressure
c) equal to osmotic pressure d) zero

3) A suitable lubricant for watches is: _____.
a) greases b) graphite
c) vegetable oil d) mineral oil

4) When graphite is dispersed in oil, it is called: _____.
a) greases b) aquadag
c) oildag d) blended oil

5) During galvanic corrosion, the more noble metals act as: _____.
a) anode b) cathode
c) anode as well as cathode d) corroding metal

6) Electrode potential of standard hydrogen electrode is _____.
a) 2.00 volt b) -1.00 volt
c) 0.00 volt d) Highest

7) Purest form of iron is: _____.
a) steel b) wrought iron
c) pig iron d) cast iron

8) The main constituent of safety glass is: _____.
a) $CaCO_3$ b) PbO
c) vinyl plastic d) boron

9) A good fuel should possess: _____.
a) low calorific value b) high ignition temperature
c) high calorific value d) high ash content

10) The lowest boiling fraction of crude oil is _____.
a) Heavy oil b) Kerosene oil
c) Diesel oil d) Gasoline or petrol

11) A plastic which can be softened on heating and hardened on cooling is called _____.
a) thermo-elastic b) thermoplastic
c) thermosetting d) thermite

12) Raw rubber on vulcanization becomes: _____.
a) plastic b) tacky
c) soft d) less elastic

13) Number of moles of solute present in a liter of solution is called _____.
a) Normality b) Molarity
c) Molality d) Mole fraction

14) A fuel cell is used to convert chemical energy into _____.
a) Mechanical energy b) Solar energy
c) Electrical energy d) Potential energy

Seat No.	

Set **P**

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Chemistry (BTN10102)

Day & Date: Sunday,07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and labelled diagrams wherever necessary.

Section – I

Q.2 Attempt any Four: **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	30.15	162
$Mg(HCO_3)_2$	28.73	146
$CaSO_4$	17.00	136
$MgCl_2$	46.5	95

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Explain Ion exchange process for softening of hard water.
c) Explain principle of Li-ion batteries.
d) Explain types of liquid lubricants.
e) Define Lubricant. Explain its functions.
f) Define corrosion. List the types of corrosion? Explain mechanism of oxidation corrosion.

Q.3 Attempt any Four: **12**

a) Define disinfection. Explain disinfection of water by chlorine.
b) Define BOD. How it is determined. Explain its importance.
c) Select proper lubricants for
i) Delicate instruments
ii) Refrigeration systems
iii) Gears
d) 6 gm of an oil sample after saponification with 50 ml of N/2 alcoholic KOH solution and subsequent titration with N/2 HCl gave the titer value of 8 ml to phenolphthalein end point. A blank experiment was conducted without taking oil sample. On repeating same procedure gave a titer value of 50 ml. Calculate saponification value of an oil sample.
e) Explain prevention of corrosion by galvanizing.
f) Explain testing and measurement of corrosion by weight loss method.

Section – II

Q.4 Attempt any Four: **16**

a) Explain different steps of manufacturing of glass.

b) During the determination of calorific value of a gaseous fuel by Boy's calorimeter, the following results were obtained:

Volume of the gaseous fuel burnt at STP	= 0.12 m^3
Weight of water used for cooling	= 34.1 Kg
Weight of steam condensed	= 0.052 Kg
Temperature of Inlet water	= 25.1°C
Temperature of Outlet water	= 39.5°C

Determine the gross and net calorific values of gaseous fuel.
(Take latent heat of condensation of steam = 587 kcal/kg)

c) Explain construction and working of Bomb calorimeter.

d) Explain molding of plastics in to articles by following methods:
i) Compression molding
ii) Injection molding

e) Explain properties and applications of PVC and PET.

f) Explain how components of mixture are separated by GLC.

Q.5 Attempt any Four: **12**

a) Explain composition, properties and applications of cast iron.

b) Explain the characteristics of good fuels.

c) Explain thermos softening and thermosetting plastics.

d) Define Normality, Molarity, and Mole fraction.

e) Calculate Degree of polymerization of PVC having molecular weight 21875. (Mol. Wt. of vinyl chloride = 62.5)

f) Calculate weight of Na_2CO_3 required to prepare 0.3 N 250 ml solution. (Mol. Wt. of Na_2CO_3 = 106)

Seat No.	

Set **Q**

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Chemistry (BTN10102)

Day & Date: Sunday,07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat and labeled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The main constituent of safety glass is: _____.
a) $CaCO_3$ b) PbO
c) vinyl plastic d) boron

2) A good fuel should possess: _____.
a) low calorific value b) high ignition temperature
c) high calorific value d) high ash content

3) The lowest boiling fraction of crude oil is _____.
a) Heavy oil b) Kerosene oil
c) Diesel oil d) Gasoline or petrol

4) A plastic which can be softened on heating and hardened on cooling is called _____.
a) thermo-elastic b) thermoplastic
c) thermosetting d) thermite

5) Raw rubber on vulcanization becomes: _____.
a) plastic b) tacky
c) soft d) less elastic

6) Number of moles of solute present in a liter of solution is called _____.
a) Normality b) Molarity
c) Molality d) Mole fraction

7) A fuel cell is used to convert chemical energy into _____.
a) Mechanical energy b) Solar energy
c) Electrical energy d) Potential energy

8) Hard water is unfit for use in boilers for "steam raising" because: _____.
a) its boiling point is higher
b) steam is generated at a high pressure
c) it leads to scale formation inside boiler
d) water undergoes decomposition into oxygen and hydrogen

9) The flow of water through a membrane from saline water into fresh water takes place when the applied pressure on saline water is _____.
a) higher than osmotic pressure b) lower than osmotic pressure
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10) A suitable lubricant for watches is: _____.
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c) vegetable oil d) mineral oil

11) When graphite is dispersed in oil, it is called: _____.
a) greases b) aquadag
c) oildag d) blended oil

12) During galvanic corrosion, the more noble metals act as: _____.
a) anode b) cathode
c) anode as well as cathode d) corroding metal

13) Electrode potential of standard hydrogen electrode is _____.
a) 2.00 volt b) -1.00 volt
c) 0.00 volt d) Highest

14) Purest form of iron is: _____.
a) steel b) wrought iron
c) pig iron d) cast iron

Seat No.	

Set **Q**

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Chemistry (BTN10102)

Day & Date: Sunday,07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and labelled diagrams wherever necessary.

Section – I

Q.2 Attempt any Four: **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	30.15	162
$Mg(HCO_3)_2$	28.73	146
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$MgCl_2$	46.5	95

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Explain Ion exchange process for softening of hard water.
c) Explain principle of Li-ion batteries.
d) Explain types of liquid lubricants.
e) Define Lubricant. Explain its functions.
f) Define corrosion. List the types of corrosion? Explain mechanism of oxidation corrosion.

Q.3 Attempt any Four: **12**

a) Define disinfection. Explain disinfection of water by chlorine.
b) Define BOD. How it is determined. Explain its importance.
c) Select proper lubricants for
i) Delicate instruments
ii) Refrigeration systems
iii) Gears
d) 6 gm of an oil sample after saponification with 50 ml of N/2 alcoholic KOH solution and subsequent titration with N/2 HCl gave the titer value of 8 ml to phenolphthalein end point. A blank experiment was conducted without taking oil sample. On repeating same procedure gave a titer value of 50 ml. Calculate saponification value of an oil sample.
e) Explain prevention of corrosion by galvanizing.
f) Explain testing and measurement of corrosion by weight loss method.

Section – II

Q.4 Attempt any Four: **16**

a) Explain different steps of manufacturing of glass.

b) During the determination of calorific value of a gaseous fuel by Boy's calorimeter, the following results were obtained:

Volume of the gaseous fuel burnt at STP	= 0.12 m^3
Weight of water used for cooling	= 34.1 Kg
Weight of steam condensed	= 0.052 Kg
Temperature of Inlet water	= 25.1°C
Temperature of Outlet water	= 39.5°C

Determine the gross and net calorific values of gaseous fuel.
(Take latent heat of condensation of steam = 587 kcal/kg)

c) Explain construction and working of Bomb calorimeter.

d) Explain molding of plastics in to articles by following methods:
i) Compression molding
ii) Injection molding

e) Explain properties and applications of PVC and PET.

f) Explain how components of mixture are separated by GLC.

Q.5 Attempt any Four: **12**

a) Explain composition, properties and applications of cast iron.

b) Explain the characteristics of good fuels.

c) Explain thermos softening and thermosetting plastics.

d) Define Normality, Molarity, and Mole fraction.

e) Calculate Degree of polymerization of PVC having molecular weight 21875. (Mol. Wt. of vinyl chloride = 62.5)

f) Calculate weight of Na_2CO_3 required to prepare 0.3 N 250 ml solution. (Mol. Wt. of Na_2CO_3 = 106)

Seat No.	

Set **R**

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Chemistry (BTN10102)

Day & Date: Sunday,07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat and labeled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) A plastic which can be softened on heating and hardened on cooling is called _____.
a) thermo-elastic b) thermoplastic
c) thermosetting d) thermite

2) Raw rubber on vulcanization becomes: _____.
a) plastic b) tacky
c) soft d) less elastic

3) Number of moles of solute present in a liter of solution is called _____.
a) Normality b) Molarity
c) Molality d) Mole fraction

4) A fuel cell is used to convert chemical energy into _____.
a) Mechanical energy b) Solar energy
c) Electrical energy d) Potential energy

5) Hard water is unfit for use in boilers for "steam raising" because: _____.
a) its boiling point is higher
b) steam is generated at a high pressure
c) it leads to scale formation inside boiler
d) water undergoes decomposition into oxygen and hydrogen

6) The flow of water through a membrane from saline water into fresh water takes place when the applied pressure on saline water is _____.
a) higher than osmotic pressure b) lower than osmotic pressure
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7) A suitable lubricant for watches is: _____.
a) greases b) graphite
c) vegetable oil d) mineral oil

8) When graphite is dispersed in oil, it is called: _____.
a) greases b) aquadag
c) oildag d) blended oil

9) During galvanic corrosion, the more noble metals act as: _____.
a) anode b) cathode
c) anode as well as cathode d) corroding metal

10) Electrode potential of standard hydrogen electrode is _____.
a) 2.00 volt b) -1.00 volt
c) 0.00 volt d) Highest

11) Purest form of iron is: _____.
a) steel b) wrought iron
c) pig iron d) cast iron

12) The main constituent of safety glass is: _____.
a) $CaCO_3$ b) PbO
c) vinyl plastic d) boron

13) A good fuel should possess: _____.
a) low calorific value b) high ignition temperature
c) high calorific value d) high ash content

14) The lowest boiling fraction of crude oil is _____.
a) Heavy oil b) Kerosene oil
c) Diesel oil d) Gasoline or petrol

Seat No.	

Set **R**

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Chemistry (BTN10102)

Day & Date: Sunday,07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and labelled diagrams wherever necessary.

Section – I

Q.2 Attempt any Four: **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	30.15	162
$Mg(HCO_3)_2$	28.73	146
$CaSO_4$	17.00	136
$MgCl_2$	46.5	95

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Explain Ion exchange process for softening of hard water.
c) Explain principle of Li-ion batteries.
d) Explain types of liquid lubricants.
e) Define Lubricant. Explain its functions.
f) Define corrosion. List the types of corrosion? Explain mechanism of oxidation corrosion.

Q.3 Attempt any Four: **12**

a) Define disinfection. Explain disinfection of water by chlorine.
b) Define BOD. How it is determined. Explain its importance.
c) Select proper lubricants for
i) Delicate instruments
ii) Refrigeration systems
iii) Gears
d) 6 gm of an oil sample after saponification with 50 ml of N/2 alcoholic KOH solution and subsequent titration with N/2 HCl gave the titer value of 8 ml to phenolphthalein end point. A blank experiment was conducted without taking oil sample. On repeating same procedure gave a titer value of 50 ml. Calculate saponification value of an oil sample.
e) Explain prevention of corrosion by galvanizing.
f) Explain testing and measurement of corrosion by weight loss method.

Section – II

Q.4 Attempt any Four: **16**

a) Explain different steps of manufacturing of glass.

b) During the determination of calorific value of a gaseous fuel by Boy's calorimeter, the following results were obtained:

Volume of the gaseous fuel burnt at STP	= 0.12 m^3
Weight of water used for cooling	= 34.1 Kg
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Temperature of Inlet water	= 25.1°C
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(Take latent heat of condensation of steam = 587 kcal/kg)

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e) Explain properties and applications of PVC and PET.

f) Explain how components of mixture are separated by GLC.

Q.5 Attempt any Four: **12**

a) Explain composition, properties and applications of cast iron.

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d) Define Normality, Molarity, and Mole fraction.

e) Calculate Degree of polymerization of PVC having molecular weight 21875. (Mol. Wt. of vinyl chloride = 62.5)

f) Calculate weight of Na_2CO_3 required to prepare 0.3 N 250 ml solution. (Mol. Wt. of Na_2CO_3 = 106)

Seat No.	

Set | S

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Chemistry (BTN10102)

Day & Date: Sunday,07-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Draw neat and labeled diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Electrode potential of standard hydrogen electrode is _____.
a) 2.00 volt b) -1.00 volt
c) 0.00 volt d) Highest

2) Purest form of iron is: _____.
a) steel b) wrought iron
c) pig iron d) cast iron

3) The main constituent of safety glass is: _____.
a) $CaCO_3$ b) PbO
c) vinyl plastic d) boron

4) A good fuel should possess: _____.
a) low calorific value b) high ignition temperature
c) high calorific value d) high ash content

5) The lowest boiling fraction of crude oil is _____.
a) Heavy oil b) Kerosene oil
c) Diesel oil d) Gasoline or petrol

6) A plastic which can be softened on heating and hardened on cooling is called _____.
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7) Raw rubber on vulcanization becomes: _____.
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8) Number of moles of solute present in a liter of solution is called _____.
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12) A suitable lubricant for watches is: _____.
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b) graphite
c) vegetable oil
d) mineral oil

13) When graphite is dispersed in oil, it is called: _____.
a) greases
b) aquadag
c) oildag
d) blended oil

14) During galvanic corrosion, the more noble metals act as: _____.
a) anode
b) cathode
c) anode as well as cathode
d) corroding metal

Seat No.		Set	S

F.Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Chemistry (BTN10102)

Day & Date: Sunday,07-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and labelled diagrams wherever necessary.

Section – I

Q.2 Attempt any Four: **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	30.15	162
$Mg(HCO_3)_2$	28.73	146
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b) Explain Ion exchange process for softening of hard water.
c) Explain principle of Li-ion batteries.
d) Explain types of liquid lubricants.
e) Define Lubricant. Explain its functions.
f) Define corrosion. List the types of corrosion? Explain mechanism of oxidation corrosion.

Q.3 Attempt any Four: **12**

a) Define disinfection. Explain disinfection of water by chlorine.
b) Define BOD. How it is determined. Explain its importance.
c) Select proper lubricants for
i) Delicate instruments
ii) Refrigeration systems
iii) Gears
d) 6 gm of an oil sample after saponification with 50 ml of N/2 alcoholic KOH solution and subsequent titration with N/2 HCl gave the titer value of 8 ml to phenolphthalein end point. A blank experiment was conducted without taking oil sample. On repeating same procedure gave a titer value of 50 ml. Calculate saponification value of an oil sample.
e) Explain prevention of corrosion by galvanizing.
f) Explain testing and measurement of corrosion by weight loss method.

Section – II

Q.4 Attempt any Four: **16**

a) Explain different steps of manufacturing of glass.

b) During the determination of calorific value of a gaseous fuel by Boy's calorimeter, the following results were obtained:

Volume of the gaseous fuel burnt at STP	= 0.12 m^3
Weight of water used for cooling	= 34.1 Kg
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Determine the gross and net calorific values of gaseous fuel.
(Take latent heat of condensation of steam = 587 kcal/kg)

c) Explain construction and working of Bomb calorimeter.

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e) Explain properties and applications of PVC and PET.

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Q.5 Attempt any Four: **12**

a) Explain composition, properties and applications of cast iron.

b) Explain the characteristics of good fuels.

c) Explain thermos softening and thermosetting plastics.

d) Define Normality, Molarity, and Mole fraction.

e) Calculate Degree of polymerization of PVC having molecular weight 21875. (Mol. Wt. of vinyl chloride = 62.5)

f) Calculate weight of Na_2CO_3 required to prepare 0.3 N 250 ml solution. (Mol. Wt. of Na_2CO_3 = 106)

SLR-GF-710

Seat No.	

Set P

F. Y. (B. Tech) (Sem - I) (Old) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume additional suitable data if necessary and state it clearly.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. **07**

1) The Global Positioning System (GPS) is a network of following number of Navstar satellites _____
a) 24 b) 23
c) 22 d) 21

2) Raft Foundation preferable when large footing area required is _____
a) less than half the area covered by the building
b) more than half the area covered by the building
c) more than half the area covered by the column
d) less than half the area covered by the column

3) "A basin or haven or road stead of nevigable water well protected naturally or artificially from action of winds and waves", is known as ____
a) Harbours b) Docks
c) Both d) none

4) In framed structure load transfer mechanism is ____
a) wall-footing b) footing-column-beam-slab
c) slab-beam-column-footing d) beam-slab-column-footing

5) Which of the following is surface water?
a) open well b) streams
c) tube well d) springs

6) Which of the following methods of aeration?
a) Aeration by air diffusion b) Aeration by trickling beds
c) Aeration by using spray nozzles d) All

7) Soil and its behaviour under the application of load is studied under the following sub branch of civil engineering.
a) Geotechnical Engineering b) Environment Engineering
c) Surveying d) Town planning

Section - II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. 07

1) Which type of pump is commonly used for high-pressure applications?
a) Reciprocating pump b) Centrifugal pump
c) Vane blower d) Rotary compressor

2) Which type of compressor is known for its continuous flow of compressed air?
a) Reciprocating compressor b) Centrifugal compressor
c) Vane blower d) Rotary compressor

3) Which type of turbine is commonly used for high head, low flow rate applications?
a) Pelton wheel b) Francis turbine
c) Kaplan turbine d) Turgo turbine

4) What is the function of the tool post in a lathe?
a) Supports the workpiece
b) Provides rotational power
c) Holds the cutting tool
d) Controls the movement of the carriage

5) Which metal joining process involves the fusion of two or more pieces of metal?
a) Brazing b) Soldering
c) Welding d) Spot welding

6) What is the purpose of a belt in a belt drive system?
a) To transmit power
b) To provide rotational motion
c) To support the pulleys
d) To control the tension in the system

7) In thermodynamics, the surrounding refers to: _____
a) The immediate environment of the system
b) The universe as a whole
c) The laboratory where experiments are conducted
d) The external forces acting on the system

Seat No.	

Set **P**

F. Y. (B. Tech) (Sem - I) (Old) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume additional suitable data if necessary and state it clearly.
4) Use university graph paper & semi-log paper if required.
5) Use of scientific calculator is allowed.

Section - I

Q.2 Attempt any five **15**

a) What are the sub branches of civil engineering?
b) Give the classification of bridges?
c) Explain the term fire safety for buildings.
d) Write short note of GPS.
e) Give the different classification of surveying.
f) Explain the term rain water harvesting.
g) What are the advantages of railways?

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) A Civil engineer is supposed to follow different steps during construction of a house. Which are these steps? **05**
b) Explain load bearing wall and framed structure in brief. **05**
c) Explain the principles of Survey. **04**
d) Write a short note on green building. **04**
e) Differentiate between Plane Surveying and Geodetic Surveying. **04**
f) Write a short note on solid waste management? Why it is essential. **04**

Section - II

Q.2 Answer the following questions. (Any Three) **12**

a) Explain construction and working of Centrifugal Pump with neat sketch.
b) Explain Francis Turbine with neat sketch.
c) Differentiate between brazing & Soldering
d) Explain turning and Facing operations of Lathe Machine.

Q.3 Answer any Two. **10**

a) Derive an equation to calculate length of Cross Belt Drive.
b) Describe first law applied to flow process.
c) Explain simple and compound.

Q.4 Attempt Any One of the following: **06**

a) A cycle consists of three processes. The energy transfer in each process is tabulated below Complete the table & determines the network of cycle.

Process	Q (kw)	W (Kw)	ΔU (Kw)
1-2	50	-	20
2-3	-30	-40	-
3-1	-	-	-30

b) Explain Kelvin Plank and Clausius statements of second law of thermodynamics.

SLR-GF-710

Seat No.	

Set Q

F. Y. (B. Tech) (Sem - I) (Old) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume additional suitable data if necessary and state it clearly.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. **07**

1) The Global Positioning System (GPS) is a network of following number of Navstar satellites _____
a) 24 b) 23
c) 22 d) 21

2) Raft Foundation preferable when large footing area required is _____
a) less than half the area covered by the building
b) more than half the area covered by the building
c) more than half the area covered by the column
d) less than half the area covered by the column

3) "A basin or haven or road stead of nevigable water well protected naturally or artificially from action of winds and waves", is known as ____
a) Harbours b) Docks
c) Both d) none

4) In framed structure load transfer mechanism is ____
a) wall-footing b) footing-column-beam-slab
c) slab-beam-column-footing d) beam-slab-column-footing

5) Which of the following is surface water?
a) open well b) streams
c) tube well d) springs

6) Which of the following methods of aeration?
a) Aeration by air diffusion b) Aeration by trickling beds
c) Aeration by using spray nozzles d) All

7) Soil and its behaviour under the application of load is studied under the following sub branch of civil engineering.
a) Geotechnical Engineering b) Environment Engineering
c) Surveying d) Town planning

Section - II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. 07

1) Which type of pump is commonly used for high-pressure applications?
a) Reciprocating pump b) Centrifugal pump
c) Vane blower d) Rotary compressor

2) Which type of compressor is known for its continuous flow of compressed air?
a) Reciprocating compressor b) Centrifugal compressor
c) Vane blower d) Rotary compressor

3) Which type of turbine is commonly used for high head, low flow rate applications?
a) Pelton wheel b) Francis turbine
c) Kaplan turbine d) Turgo turbine

4) What is the function of the tool post in a lathe?
a) Supports the workpiece
b) Provides rotational power
c) Holds the cutting tool
d) Controls the movement of the carriage

5) Which metal joining process involves the fusion of two or more pieces of metal?
a) Brazing b) Soldering
c) Welding d) Spot welding

6) What is the purpose of a belt in a belt drive system?
a) To transmit power
b) To provide rotational motion
c) To support the pulleys
d) To control the tension in the system

7) In thermodynamics, the surrounding refers to: _____
a) The immediate environment of the system
b) The universe as a whole
c) The laboratory where experiments are conducted
d) The external forces acting on the system

Seat No.	

Set **Q**

F. Y. (B. Tech) (Sem - I) (Old) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume additional suitable data if necessary and state it clearly.
4) Use university graph paper & semi-log paper if required.
5) Use of scientific calculator is allowed.

Section - I

Q.2 Attempt any five **15**

a) What are the sub branches of civil engineering?
b) Give the classification of bridges?
c) Explain the term fire safety for buildings.
d) Write short note of GPS.
e) Give the different classification of surveying.
f) Explain the term rain water harvesting.
g) What are the advantages of railways?

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) A Civil engineer is supposed to follow different steps during construction of a house. Which are these steps? **05**
b) Explain load bearing wall and framed structure in brief. **05**
c) Explain the principles of Survey. **04**
d) Write a short note on green building. **04**
e) Differentiate between Plane Surveying and Geodetic Surveying. **04**
f) Write a short note on solid waste management? Why it is essential. **04**

Section - II

Q.2 Answer the following questions. (Any Three) **12**

a) Explain construction and working of Centrifugal Pump with neat sketch.
b) Explain Francis Turbine with neat sketch.
c) Differentiate between brazing & Soldering
d) Explain turning and Facing operations of Lathe Machine.

Q.3 Answer any Two. **10**

a) Derive an equation to calculate length of Cross Belt Drive.
b) Describe first law applied to flow process.
c) Explain simple and compound.

Q.4 Attempt Any One of the following: **06**

a) A cycle consists of three processes. The energy transfer in each process is tabulated below Complete the table & determines the network of cycle.

Process	Q (kw)	W (Kw)	ΔU (Kw)
1-2	50	-	20
2-3	-30	-40	-
3-1	-	-	-30

b) Explain Kelvin Plank and Clausius statements of second law of thermodynamics.

SLR-GF-710

Seat No.	

Set R

F. Y. (B. Tech) (Sem - I) (Old) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume additional suitable data if necessary and state it clearly.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. **07**

1) The Global Positioning System (GPS) is a network of following number of Navstar satellites _____
a) 24 b) 23
c) 22 d) 21

2) Raft Foundation preferable when large footing area required is _____
a) less than half the area covered by the building
b) more than half the area covered by the building
c) more than half the area covered by the column
d) less than half the area covered by the column

3) "A basin or haven or road stead of nevigable water well protected naturally or artificially from action of winds and waves", is known as ____
a) Harbours b) Docks
c) Both d) none

4) In framed structure load transfer mechanism is ____
a) wall-footing b) footing-column-beam-slab
c) slab-beam-column-footing d) beam-slab-column-footing

5) Which of the following is surface water?
a) open well b) streams
c) tube well d) springs

6) Which of the following methods of aeration?
a) Aeration by air diffusion b) Aeration by trickling beds
c) Aeration by using spray nozzles d) All

7) Soil and its behaviour under the application of load is studied under the following sub branch of civil engineering.
a) Geotechnical Engineering b) Environment Engineering
c) Surveying d) Town planning

Section - II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. 07

1) Which type of pump is commonly used for high-pressure applications?
a) Reciprocating pump b) Centrifugal pump
c) Vane blower d) Rotary compressor

2) Which type of compressor is known for its continuous flow of compressed air?
a) Reciprocating compressor b) Centrifugal compressor
c) Vane blower d) Rotary compressor

3) Which type of turbine is commonly used for high head, low flow rate applications?
a) Pelton wheel b) Francis turbine
c) Kaplan turbine d) Turgo turbine

4) What is the function of the tool post in a lathe?
a) Supports the workpiece
b) Provides rotational power
c) Holds the cutting tool
d) Controls the movement of the carriage

5) Which metal joining process involves the fusion of two or more pieces of metal?
a) Brazing b) Soldering
c) Welding d) Spot welding

6) What is the purpose of a belt in a belt drive system?
a) To transmit power
b) To provide rotational motion
c) To support the pulleys
d) To control the tension in the system

7) In thermodynamics, the surrounding refers to: _____
a) The immediate environment of the system
b) The universe as a whole
c) The laboratory where experiments are conducted
d) The external forces acting on the system

Seat No.	

Set **R**

F. Y. (B. Tech) (Sem - I) (Old) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume additional suitable data if necessary and state it clearly.
4) Use university graph paper & semi-log paper if required.
5) Use of scientific calculator is allowed.

Section - I

Q.2 Attempt any five **15**

a) What are the sub branches of civil engineering?
b) Give the classification of bridges?
c) Explain the term fire safety for buildings.
d) Write short note of GPS.
e) Give the different classification of surveying.
f) Explain the term rain water harvesting.
g) What are the advantages of railways?

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) A Civil engineer is supposed to follow different steps during construction of a house. Which are these steps? **05**
b) Explain load bearing wall and framed structure in brief. **05**
c) Explain the principles of Survey. **04**
d) Write a short note on green building. **04**
e) Differentiate between Plane Surveying and Geodetic Surveying. **04**
f) Write a short note on solid waste management? Why it is essential. **04**

Section - II

Q.2 Answer the following questions. (Any Three) **12**

a) Explain construction and working of Centrifugal Pump with neat sketch.
b) Explain Francis Turbine with neat sketch.
c) Differentiate between brazing & Soldering
d) Explain turning and Facing operations of Lathe Machine.

Q.3 Answer any Two. **10**

a) Derive an equation to calculate length of Cross Belt Drive.
b) Describe first law applied to flow process.
c) Explain simple and compound.

Q.4 Attempt Any One of the following: **06**

a) A cycle consists of three processes. The energy transfer in each process is tabulated below Complete the table & determines the network of cycle.

Process	Q (kw)	W (Kw)	ΔU (Kw)
1-2	50	-	20
2-3	-30	-40	-
3-1	-	-	-30

b) Explain Kelvin Plank and Clausius statements of second law of thermodynamics.

SLR-GF-710

Seat No.	

Set S

F. Y. (B. Tech) (Sem - I) (Old) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume additional suitable data if necessary and state it clearly.

Section - I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. **07**

1) The Global Positioning System (GPS) is a network of following number of Navstar satellites _____
a) 24 b) 23
c) 22 d) 21

2) Raft Foundation preferable when large footing area required is _____
a) less than half the area covered by the building
b) more than half the area covered by the building
c) more than half the area covered by the column
d) less than half the area covered by the column

3) "A basin or haven or road stead of nevigable water well protected naturally or artificially from action of winds and waves", is known as ____
a) Harbours b) Docks
c) Both d) none

4) In framed structure load transfer mechanism is ____
a) wall-footing b) footing-column-beam-slab
c) slab-beam-column-footing d) beam-slab-column-footing

5) Which of the following is surface water?
a) open well b) streams
c) tube well d) springs

6) Which of the following methods of aeration?
a) Aeration by air diffusion b) Aeration by trickling beds
c) Aeration by using spray nozzles d) All

7) Soil and its behaviour under the application of load is studied under the following sub branch of civil engineering.
a) Geotechnical Engineering b) Environment Engineering
c) Surveying d) Town planning

Section - II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. 07

1) Which type of pump is commonly used for high-pressure applications?
a) Reciprocating pump b) Centrifugal pump
c) Vane blower d) Rotary compressor

2) Which type of compressor is known for its continuous flow of compressed air?
a) Reciprocating compressor b) Centrifugal compressor
c) Vane blower d) Rotary compressor

3) Which type of turbine is commonly used for high head, low flow rate applications?
a) Pelton wheel b) Francis turbine
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4) What is the function of the tool post in a lathe?
a) Supports the workpiece
b) Provides rotational power
c) Holds the cutting tool
d) Controls the movement of the carriage

5) Which metal joining process involves the fusion of two or more pieces of metal?
a) Brazing b) Soldering
c) Welding d) Spot welding

6) What is the purpose of a belt in a belt drive system?
a) To transmit power
b) To provide rotational motion
c) To support the pulleys
d) To control the tension in the system

7) In thermodynamics, the surrounding refers to: _____
a) The immediate environment of the system
b) The universe as a whole
c) The laboratory where experiments are conducted
d) The external forces acting on the system

Seat No.	

Set **S**

F. Y. (B. Tech) (Sem - I) (Old) Examination: Oct/Nov-2023
Basics of Civil and Mechanical Engineering (BTN10104)

Day & Date: Tuesday, 09-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume additional suitable data if necessary and state it clearly.
4) Use university graph paper & semi-log paper if required.
5) Use of scientific calculator is allowed.

Section - I

Q.2 Attempt any five **15**

a) What are the sub branches of civil engineering?
b) Give the classification of bridges?
c) Explain the term fire safety for buildings.
d) Write short note of GPS.
e) Give the different classification of surveying.
f) Explain the term rain water harvesting.
g) What are the advantages of railways?

Q.3 Attempt any one out of (a) and (b) and solve any two out of (c) to (f) **13**

a) A Civil engineer is supposed to follow different steps during construction of a house. Which are these steps? **05**
b) Explain load bearing wall and framed structure in brief. **05**
c) Explain the principles of Survey. **04**
d) Write a short note on green building. **04**
e) Differentiate between Plane Surveying and Geodetic Surveying. **04**
f) Write a short note on solid waste management? Why it is essential. **04**

Section - II

Q.2 Answer the following questions. (Any Three) **12**

a) Explain construction and working of Centrifugal Pump with neat sketch.
b) Explain Francis Turbine with neat sketch.
c) Differentiate between brazing & Soldering
d) Explain turning and Facing operations of Lathe Machine.

Q.3 Answer any Two. **10**

a) Derive an equation to calculate length of Cross Belt Drive.
b) Describe first law applied to flow process.
c) Explain simple and compound.

Q.4 Attempt Any One of the following: **06**

a) A cycle consists of three processes. The energy transfer in each process is tabulated below Complete the table & determines the network of cycle.

Process	Q (kw)	W (Kw)	ΔU (Kw)
1-2	50	-	20
2-3	-30	-40	-
3-1	-	-	-30

b) Explain Kelvin Plank and Clausius statements of second law of thermodynamics.

SLR-GF-711

Seat No.	

Set P

F. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTN10105)

Day & Date: Thursday, 11-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

1) The unit of force in SI system of units is _____.
a) dyne b) kilogram
c) Newton d) watt

2) The resultant of two equal forces P making an angle θ is given by _____.
a) 2P sin θ/2 b) 2P cos θ/2
c) 2P tan θ/2 d) 2P cot θ/2

3) Beam is continuous over the supports and it's one end is free it is called as _____.
a) cantilever beam b) continuous beam
c) over hang beam d) simply supported beam

4) A framed structure of triangular shape is _____.
a) perfect b) imperfect
c) deficient d) redundant

5) The minimum force required to slide a body of weight W on a rough horizontal plane is _____.
a) $W \sin\theta$ b) $W \cos\theta$
c) $W \tan\theta$ d) $W \operatorname{cosec}\theta$

6) M.I. semicircular section through its C.G. & parallel to x-x axis IG = _____.
a) $0.11r^4$ b) $0.11r^2$
c) $0.11r^3$ d) $0.11r^5$

7) The center of gravity of a semicircle lies at a distance of _____ from its base measured along vertical radius.
a) $3r/4\pi$ b) $4r/3\pi$
c) $4\pi/3r$ d) $3\pi/4r$

8) The differentiation of displacement (s) w.r.t. time 't' will give _____.
a) velocity b) acceleration
c) distance traveled d) none of these

9) A motion is said to be rotation if particles of rigid body moves in _____.
a) circular direction b) Arc of circle
c) concentric circle d) all of above

10) The force by which the body is attracted towards the center of earth is called _____.

a) impulsive force b) mass
c) weight d) momentum

11) Formula for final velocity in angular motion is given by _____.

a) $v = u + \alpha t$ b) $w = wo + \alpha t$
c) $wo = w + \alpha t$ d) None of these

12) The time rate of doing work is known as _____.

a) potential energy b) kinetic energy
c) power d) None of these

13) When two elastic bodies collied with each _____.

a) two bodies will momentarily come to resistance after collision
b) two bodies end to compress and deform at surface of contact
c) two bodies begum to regime their original shape
d) all of above

14) The maximum displacement from the mean position is called _____.

a) frequency b) amplitude
c) time period d) None

Seat No.	

Set **P**

F. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTN10105)

Day & Date: Thursday, 11-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Use of non-programmable scientific calculators is allowed.
3) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following questions. **12**

a) Define:
i) Equilibrium force
ii) resultant force
iii) moment of force

b) Explain different types of beam supports.

c) State the assumptions made in analysis of perfect frame.

d) State the Perpendicular Axis theorem.

e) State laws of friction.

f) Define
i) Centre of gravity
ii) radius of gyration
iii) moment of inertia

Q.3 Attempt any two of the following questions. **16**

a) Find the resultant, magnitude direction and distance from point X of the force system shown in fig. (1).

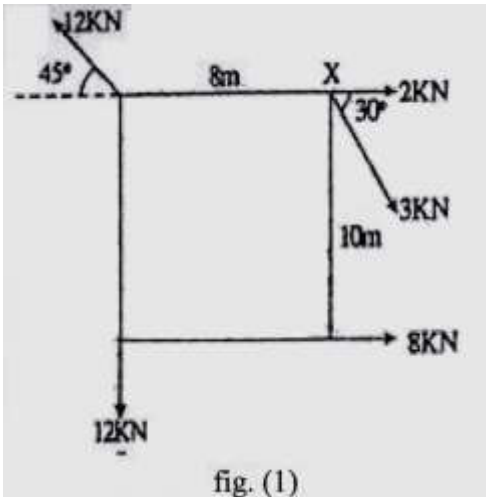


fig. (1)

b) Find the forces in all members of trass as shown in fig. (2) below

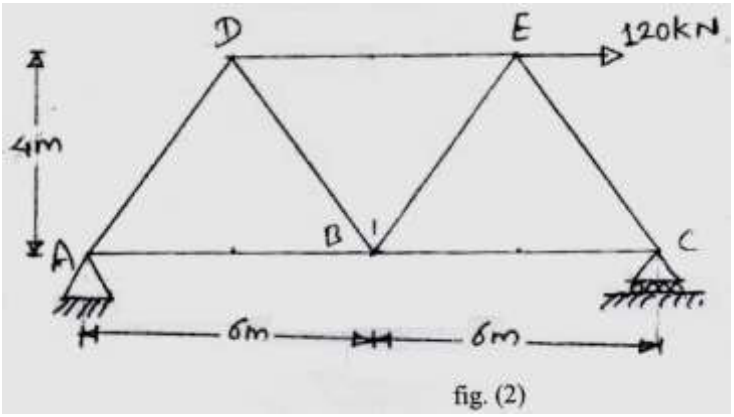


fig. (2)

c) Find the moment of inertia of the section shown in fig. (3) about the centroidal axis XX perpendicular to the web.

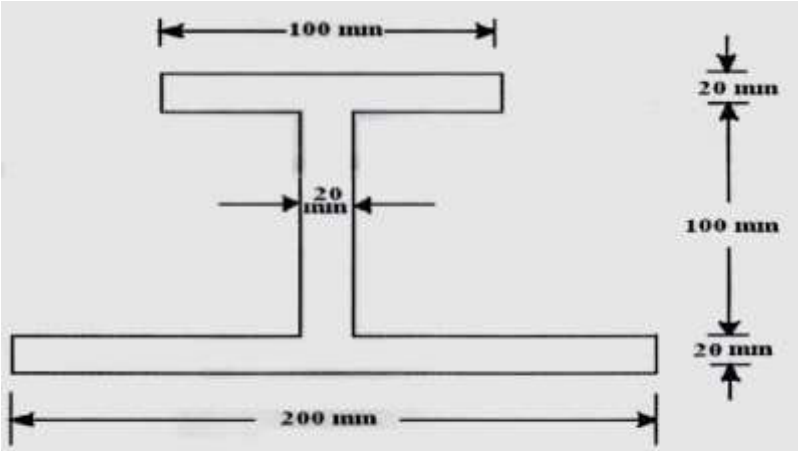


fig. (3)

Section – II

Q.4 Attempt any four of the following questions. **12**

a) Derive the following equation of motion of the body moving in a straight line with uniform acceleration from first principle.

$$S = ut + \frac{1}{2}at^2$$

b) A car is moving with a velocity of 20m/s. The car is brought to rest by applying brakes in 6seconds. Determine

i) the retardation

ii) the distance travelled by car after applying the brakes

c) State and explain principle of conservation of Energy.

d) State and explain D' Alembert's Principle.

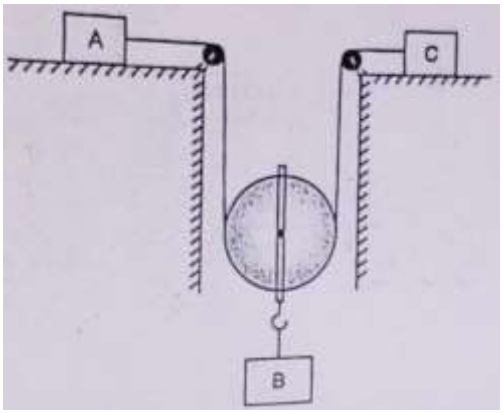
e) Define Coefficient of Restitution, write its formula and units.

f) Explain types of mechanical vibrations.

Q.5 Attempt any two of the following questions. **16**

a) A burglars car starts with an acceleration of 2m/s^2. A police van came after 10 second and continued to change the burglars car with an uniform velocity of 40m/s. Find the time taken by the police van to overtake the burglars car.

b) The weights of three blocks shown in Fig. (4) are W_A = 100 N, W_B = 200 N and Wc = 200 N. Coefficient of friction between block A and the floor is 0.2, that between floor and block C is 0.25. Assuming pulleys as weightless and smooth, find the acceleration of each block.



c) A tram car weighs 120 kN, the tractive resistance being 5 N/kN. What power will be required to propel the car at a uniform speed of 20 kmph?

i) On level surface
ii) Up on incline of 1 in 300 and
iii) Down an inclination of 1 in 300

Seat No.	

Set **Q**

F. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTN10105)

Day & Date: Thursday, 11-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

1) The differentiation of displacement (s) w.r.t. time 't' will give _____.
a) velocity b) acceleration
c) distance traveled d) none of these

2) A motion is said to be rotation if particles of rigid body moves in _____.
a) circular direction b) Arc of circle
c) concentric circle d) all of above

3) The force by which the body is attracted towards the center of earth is called _____.
a) impulsive force b) mass
c) weight d) momentum

4) Formula for final velocity in angular motion is given by _____.
a) $v = u + at$ b) $w = wo + \alpha t$
c) $wo = w + \alpha t$ d) None of these

5) The time rate of doing work is known as _____.
a) potential energy b) kinetic energy
c) power d) None of these

6) When two elastic bodies collied with each _____.
a) two bodies will momentarily come to resistance after collision
b) two bodies end to compress and deform at surface of contact
c) two bodies begum to regime their original shape
d) all of above

7) The maximum displacement from the mean position is called _____.
a) frequency b) amplitude
c) time period d) None

8) The unit of force in SI system of units is _____.
a) dyne b) kilogram
c) Newton d) watt

9) The resultant of two equal forces P making an angle θ is given by _____.
a) 2P sin $\theta/2$ b) 2P cos $\theta/2$
c) 2P tan $\theta/2$ d) 2P cot $\theta/2$

10) Beam is continuous over the supports and it's one end is free it is called as _____.

a) cantilever beam b) continuous beam
c) over hang beam d) simply supported beam

11) A framed structure of triangular shape is _____.

a) perfect b) imperfect
c) deficient d) redundant

12) The minimum force required to slide a body of weight W on a rough horizontal plane is _____.

a) $W \sin \theta$ b) $W \cos \theta$
c) $W \tan \theta$ d) $W \operatorname{cosec} \theta$

13) M.I. semicircular section through its C.G. & parallel to x-x axis IG = _____.

a) $0.11r^4$ b) $0.11r^2$
c) $0.11r^3$ d) $0.11r^5$

14) The center of gravity of a semicircle lies at a distance of _____ from its base measured along vertical radius.

a) $3r/4\pi$ b) $4r/3\pi$
c) $4\pi/3r$ d) $3\pi/4r$

Seat No.	

Set **Q**

F. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTN10105)

Day & Date: Thursday, 11-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Use of non-programmable scientific calculators is allowed.
3) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following questions. **12**

a) Define:
i) Equilibrium force
ii) resultant force
iii) moment of force

b) Explain different types of beam supports.

c) State the assumptions made in analysis of perfect frame.

d) State the Perpendicular Axis theorem.

e) State laws of friction.

f) Define
i) Centre of gravity
ii) radius of gyration
iii) moment of inertia

Q.3 Attempt any two of the following questions. **16**

a) Find the resultant, magnitude direction and distance from point X of the force system shown in fig. (1).

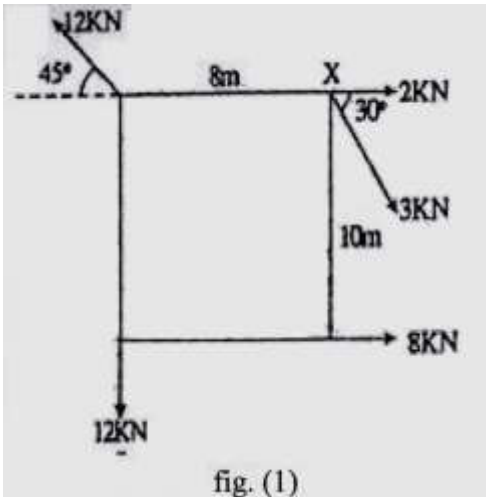


fig. (1)

b) Find the forces in all members of trass as shown in fig. (2) below

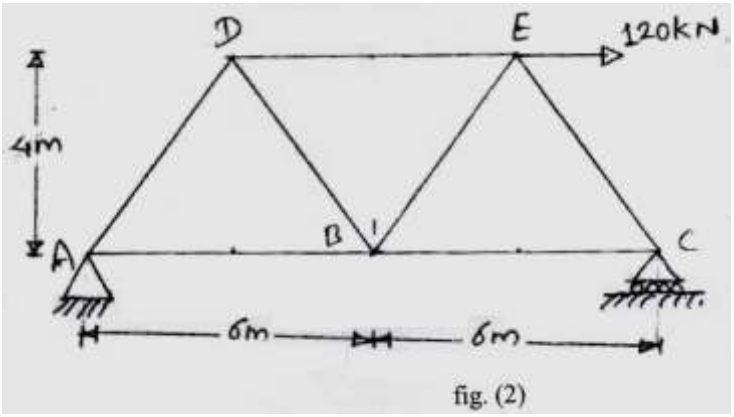


fig. (2)

c) Find the moment of inertia of the section shown in fig. (3) about the centroidal axis XX perpendicular to the web.

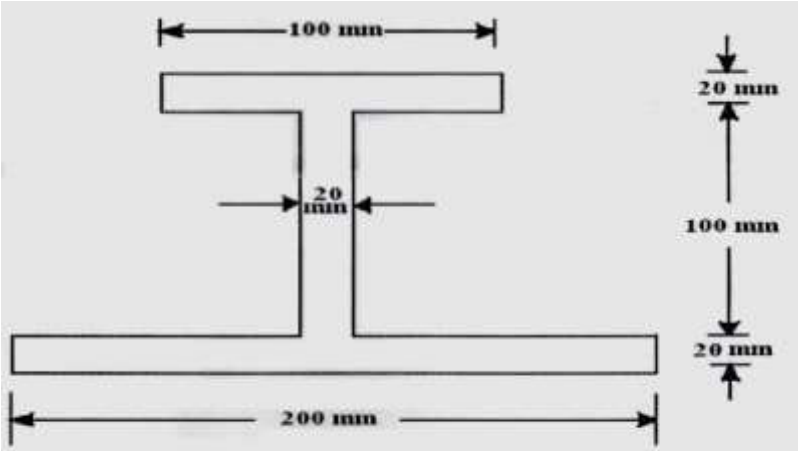


fig. (3)

Section – II

Q.4 Attempt any four of the following questions. **12**

a) Derive the following equation of motion of the body moving in a straight line with uniform acceleration from first principle.

$$S = ut + \frac{1}{2}at^2$$

b) A car is moving with a velocity of 20m/s. The car is brought to rest by applying brakes in 6seconds. Determine

i) the retardation

ii) the distance travelled by car after applying the brakes

c) State and explain principle of conservation of Energy.

d) State and explain D' Alembert's Principle.

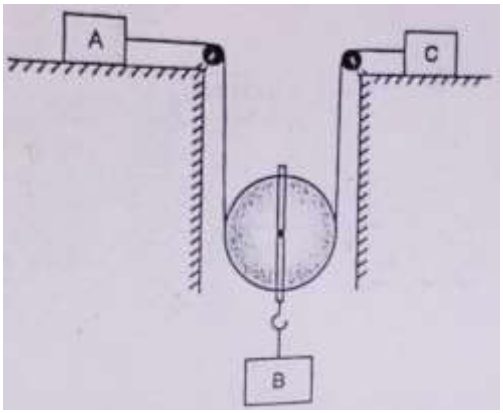
e) Define Coefficient of Restitution, write its formula and units.

f) Explain types of mechanical vibrations.

Q.5 Attempt any two of the following questions. **16**

a) A burglars car starts with an acceleration of 2m/s^2. A police van came after 10 second and continued to change the burglars car with an uniform velocity of 40m/s. Find the time taken by the police van to overtake the burglars car.

b) The weights of three blocks shown in Fig. (4) are W_A = 100 N, W_B = 200 N and Wc = 200 N. Coefficient of friction between block A and the floor is 0.2, that between floor and block C is 0.25. Assuming pulleys as weightless and smooth, find the acceleration of each block.



c) A tram car weighs 120 kN, the tractive resistance being 5 N/kN. What power will be required to propel the car at a uniform speed of 20 kmph?

i) On level surface
ii) Up on incline of 1 in 300 and
iii) Down an inclination of 1 in 300

Seat No.	

Set R

F. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTN10105)

Day & Date: Thursday, 11-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

1) Formula for final velocity in angular motion is given by _____.
a) $v = u + at$ b) $w = wo + \alpha t$
c) $wo = w + \alpha t$ d) None of these

2) The time rate of doing work is known as _____.
a) potential energy b) kinetic energy
c) power d) None of these

3) When two elastic bodies collied with each _____.
a) two bodies will momentarily come to resistance after collision
b) two bodies end to compress and deform at surface of contact
c) two bodies begum to regime their original shape
d) all of above

4) The maximum displacement from the mean position is called _____.
a) frequency b) amplitude
c) time period d) None

5) The unit of force in SI system of units is _____.
a) dyne b) kilogram
c) Newton d) watt

6) The resultant of two equal forces P making an angle θ is given by _____.
a) 2P sin $\theta/2$ b) 2P cos $\theta/2$
c) 2P tan $\theta/2$ d) 2P cot $\theta/2$

7) Beam is continuous over the supports and it's one end is free it is called as _____.
a) cantilever beam b) continuous beam
c) over hang beam d) simply supported beam

8) A framed structure of triangular shape is _____.
a) perfect b) imperfect
c) deficient d) redundant

9) The minimum force required to slide a body of weight W on a rough horizontal plane is _____.
a) $W \sin \theta$ b) $W \cos \theta$
c) $W \tan \theta$ d) $W \operatorname{cosec} \theta$

10) M.I. semicircular section through its C.G. & parallel to x-x axis IG = _____.

a) $0.11r^4$ b) $0.11r^2$

c) $0.11r^3$ d) $0.11r^5$

11) The center of gravity of a semicircle lies at a distance of _____ from its base measured along vertical radius.

a) $3r/4\pi$ b) $4r/3\pi$

c) $4\pi/3r$ d) $3\pi/4r$

12) The differentiation of displacement (s) w.r.t. time 't' will give _____.

a) velocity b) acceleration

c) distance traveled d) none of these

13) A motion is said to be rotation if particles of rigid body moves in _____.

a) circular direction b) Arc of circle

c) concentric circle d) all of above

14) The force by which the body is attracted towards the center of earth is called _____.

a) impulsive force b) mass

c) weight d) momentum

Seat No.	

Set **R**

F. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTN10105)

Day & Date: Thursday, 11-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Use of non-programmable scientific calculators is allowed.
3) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following questions. **12**

a) Define:
i) Equilibrium force
ii) resultant force
iii) moment of force

b) Explain different types of beam supports.

c) State the assumptions made in analysis of perfect frame.

d) State the Perpendicular Axis theorem.

e) State laws of friction.

f) Define
i) Centre of gravity
ii) radius of gyration
iii) moment of inertia

Q.3 Attempt any two of the following questions. **16**

a) Find the resultant, magnitude direction and distance from point X of the force system shown in fig. (1).

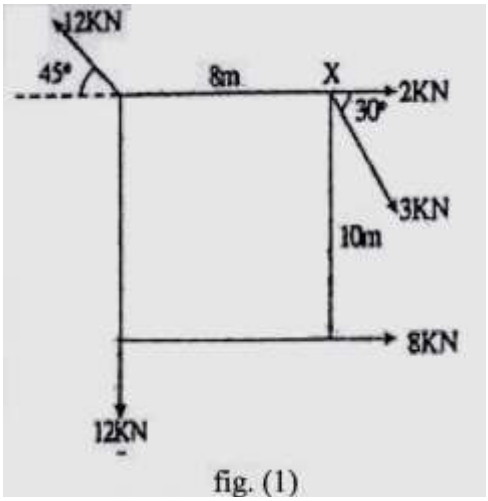


fig. (1)

b) Find the forces in all members of trass as shown in fig. (2) below

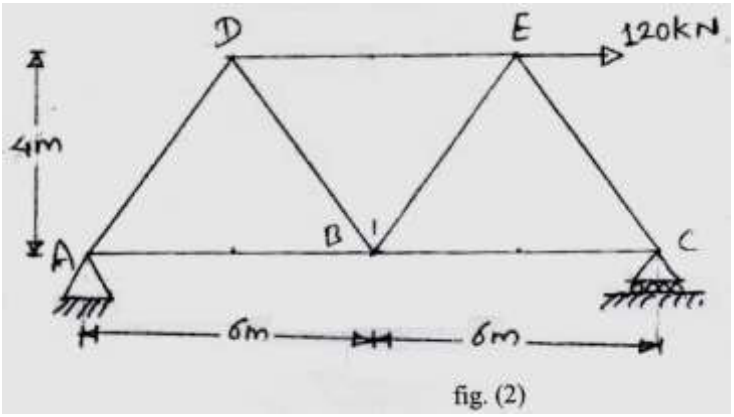


fig. (2)

c) Find the moment of inertia of the section shown in fig. (3) about the centroidal axis XX perpendicular to the web.

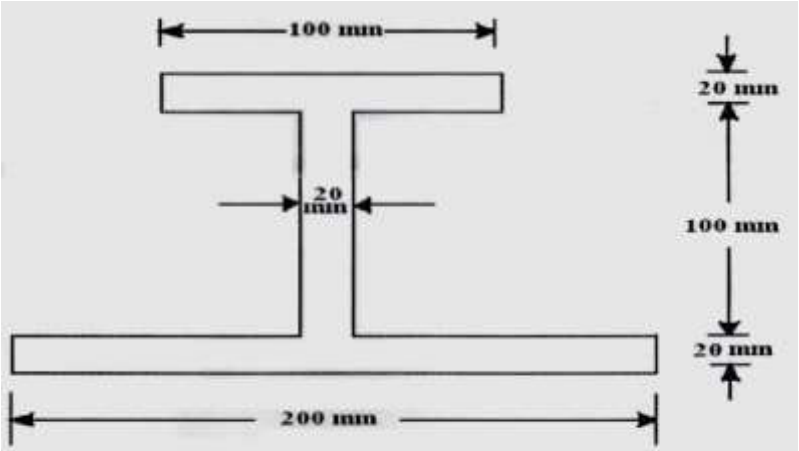


fig. (3)

Section – II

Q.4 Attempt any four of the following questions. **12**

a) Derive the following equation of motion of the body moving in a straight line with uniform acceleration from first principle.

$$S = ut + \frac{1}{2}at^2$$

b) A car is moving with a velocity of 20m/s. The car is brought to rest by applying brakes in 6seconds. Determine

i) the retardation

ii) the distance travelled by car after applying the brakes

c) State and explain principle of conservation of Energy.

d) State and explain D' Alembert's Principle.

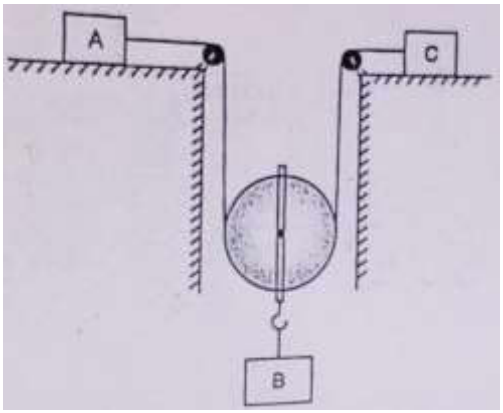
e) Define Coefficient of Restitution, write its formula and units.

f) Explain types of mechanical vibrations.

Q.5 Attempt any two of the following questions. **16**

a) A burglars car starts with an acceleration of 2m/s^2. A police van came after 10 second and continued to change the burglars car with an uniform velocity of 40m/s. Find the time taken by the police van to overtake the burglars car.

b) The weights of three blocks shown in Fig. (4) are W_A = 100 N, W_B = 200 N and Wc = 200 N. Coefficient of friction between block A and the floor is 0.2, that between floor and block C is 0.25. Assuming pulleys as weightless and smooth, find the acceleration of each block.



c) A tram car weighs 120 kN, the tractive resistance being 5 N/kN. What power will be required to propel the car at a uniform speed of 20 kmph?

i) On level surface
ii) Up on incline of 1 in 300 and
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Seat No.	

Set **S**

F. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTN10105)

Day & Date: Thursday, 11-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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1) M.I. semicircular section through its C.G. & parallel to x-x axis IG = _____.
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Seat No.		Set	S

F. Y. (B. Tech) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Engineering Mechanics (BTN10105)

Day & Date: Thursday, 11-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Use of non-programmable scientific calculators is allowed.
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Section – I

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ii) resultant force
iii) moment of force

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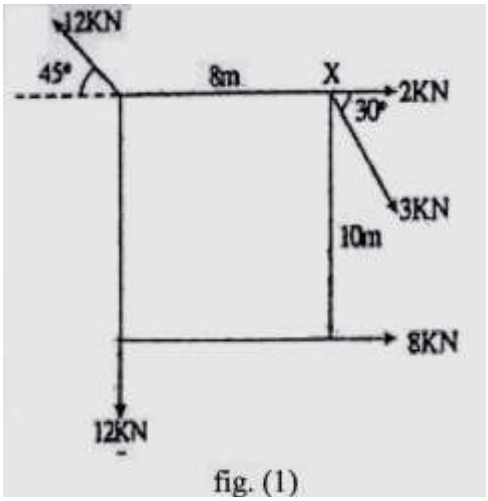

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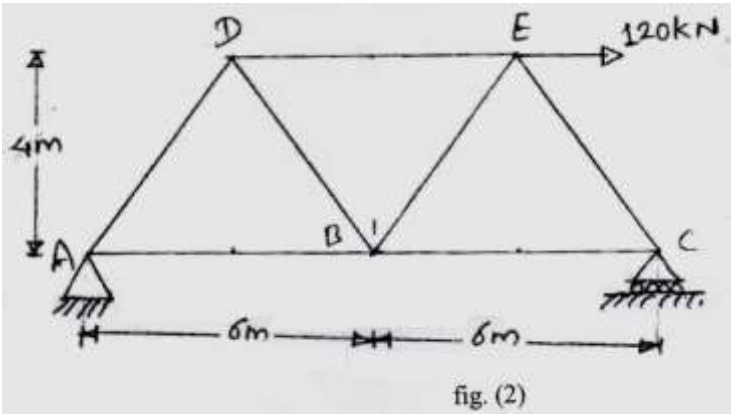

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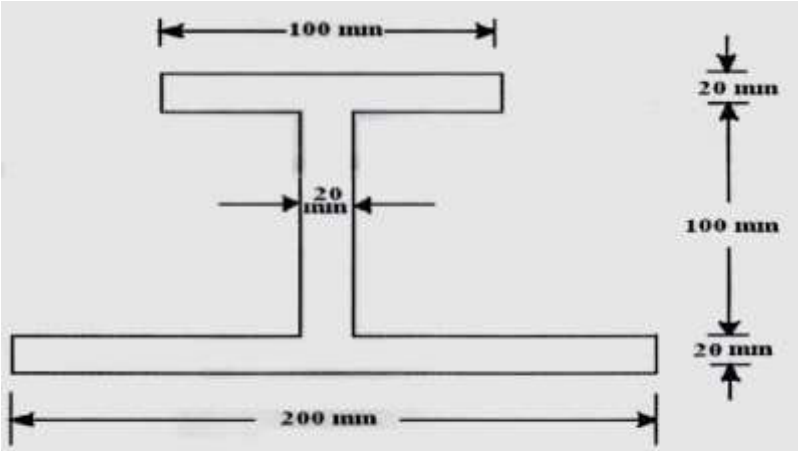

fig. (3)

Section – II

Q.4 Attempt any four of the following questions. **12**

a) Derive the following equation of motion of the body moving in a straight line with uniform acceleration from first principle.

$$S = ut + \frac{1}{2}at^2$$

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i) the retardation

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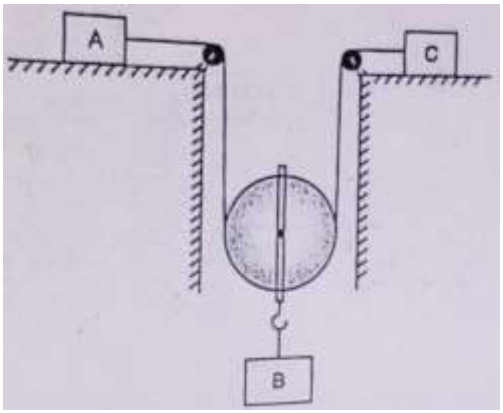

c) A tram car weighs 120 kN, the tractive resistance being 5 N/kN. What power will be required to propel the car at a uniform speed of 20 kmph?

i) On level surface
ii) Up on incline of 1 in 300 and
iii) Down an inclination of 1 in 300

SLR-GF-712

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

F. Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Universal Human Values (BTN10106)

Day & Date: Saturday, 13-01-2024 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Answer

Q.1 Choose the correct alternatives from the options.

1) Human beings inherit the _____.
a) Vansh b) Shikshã-Sanskar
c) lineage d) None

2) If during a process, a material unit in nature transforms and finally comes back to the same form, it is termed as _____.
a) recyclability b) regulation
c) regeneration d) none of above

3) Right Understanding and physical facility leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Unhappiness d) Disharmony

4) Continuous Happiness and _____ as Basic Human Aspirations.
a) Money b) Relationship
c) Physical Facility d) Prosperity

5) The feeling that I cannot fulfill my needs is _____.
a) Cunningness b) Deenata
c) Heenata d) Krurata

6) _____ and Skills go hand in hand.
a) Education b) Skills
c) Values d) Harmony

7) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn money

8) _____ is the basic unit of any human society.
a) Group b) Individual
c) Nature d) Society

9) Value education should be based on dogmas or blind beliefs.
a) True b) False
c) cannot tell d) None of above

10) For Human beings, physical facility is not required.
a) True b) False
c) cannot tell d) None of above

11) Right Understanding and relationships leads to _____.

a) Unhappiness b) Mutual Prosperity
c) Mutual Happiness d) Disharmony

12) Thought, behavior, work and _____ are dimensions covered in value education.

a) Understanding b) Nurture
c) Family d) Universe

13) Individual, _____, society, and nature/existence are the levels of human life.

a) Happiness b) Nurture
c) Family d) Universe

14) Characteristic of animal is ____.

a) will to live b) will to live happily
c) will of desire d) will to think

15) The Sentient 'I', do not transform and are complete in composition, hence they are _____.

a) gathanpurna b) gathansheel
c) archanapurna d) None

16) Disharmony leads to _____.

a) Happiness b) Prospers
c) Unhappiness d) Harmony

17) _____ is the feeling of having more than required physical facility.

a) Money b) Relationship
c) Physical Facility d) Prosperity

18) _____ has the activities of desire, thought and expectation which are continuous.

a) Self b) Body
c) Both a and b d) None of the above

19) The response of the _____ is based on recognizing and fulfilling.

a) Self b) Body
c) Both a and b d) None of the above

20) The _____ is the basic unit or building block of human organization.

a) Society b) Family
c) Both a and b d) None of the above

21) _____ is the feeling of responsibility towards the Body, for nurturing, protection and right utilization of the Body.

a) Education b) Skills
c) Sanskar d) Self- regulation

22) The _____ is an instrument of the self.

a) Education b) Skills
c) Sanskrit d) Body

23) _____ is not a possible source of Imagination.

a) Preconditioning b) Sensation
c) Natural acceptance d) Enslavement

24) _____ is limited.
a) Space b) Balance
c) Nature d) None

25) In _____ one hinders the other from reaching one's own level.
a) Mutual understanding b) Excellence
c) Competition d) None

26) Human being is co-existence of the Self and _____.
a) Feelings b) Body
c) Unhappiness d) None of the above

27) Happiness and unhappiness depend on the state of _____.
a) Imagination b) Skills
c) Unhappiness d) Body

28) _____ is a foundation value in relationship.
a) Love b) Trust
c) Care d) Respect

29) _____ is feeling of being related to every human being.
a) Nature b) Family
c) None d) Akhand Samaj

30) _____ is a complete value in relationship.
a) Love b) Trust
c) Care d) Respect

31) _____ is to be assured that the other intends to make me happy and prosperous.
a) Love b) Trust
c) Care d) Respect

32) _____ is right evaluation.
a) Gratitude b) Trust
c) Care d) Respect

33) Differentiation or discrimination leads to _____.
a) Disrespect b) Trust
c) Gratitude d) Respect

34) _____ is the feeling of being related to the other.
a) Love b) Trust
c) Care d) Affection

35) _____ is the feeling of responsibility and commitment for nurturing and protection of the Body of my relative.
a) Love b) Trust
c) Care d) Respect

36) Abhay means _____.
a) fearlessness b) bravery
c) happiness d) harmony

37) Employing body physically for production and maintenance of physical facilities is called _____.
a) happiness b) meditation
c) labour d) none of these

38) Disrespect or discrimination is based on _____.
a) Body b) Physical Facility
c) Beliefs d) All the above

39) The _____ is an instrument of _____.
a) I, body b) body, harmony
c) body, I d) None

40) If families living together, in a relationship of mutual fulfillment (common goal) we can called it.
a) Battlefield b) Crowd
c) Society d) None of the above

41) The needs of the body are _____ in nature.
a) qualitative b) intangible
c) infinite d) quantitative

42) Being self organised, being in harmony in oneself is called as _____.
a) swatantrata b) innateness
c) svatva d) None

43) Natural acceptance _____ with time.
a) change b) depends upon situation
c) doesn't change d) None of the above

44) The issues related to production-work _____.
a) What to produce? b) How to produce
c) Both a and b d) none of the above

45) Value education helps us to correctly identify our _____.
a) aspirations b) self exploration
c) experiential validation d) None

46) Harmony at all levels leads to _____.
a) Happiness b) Unhappiness
c) Enslavement d) All of the above

47) Grass, plants and trees includes in _____.
a) Physical order b) Bio order
c) Animal order d) Human order

48) What is true about Space _____.
a) Unlimited b) All pervading
c) No activity d) All the above

49) The process to understand human value is _____.
a) self exploration b) experiential validation
c) prosperity d) None of the above

50) Happiness, pleasure or joy is the _____ state of being happy.
a) emotional b) disharmony
c) contradictions d) None of the above

SLR-GF-712

Seat No.		Set	Q

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

F. Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Universal Human Values (BTN10106)

Day & Date: Saturday, 13-01-2024 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Answer

Q.1 Choose the correct alternatives from the options.

1) _____ is to be assured that the other intends to make me happy and prosperous.
a) Love b) Trust
c) Care d) Respect

2) _____ is right evaluation.
a) Gratitude b) Trust
c) Care d) Respect

3) Differentiation or discrimination leads to _____.
a) Disrespect b) Trust
c) Gratitude d) Respect

4) _____ is the feeling of being related to the other.
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c) infinite d) quantitative

12) Being self organised, being in harmony in oneself is called as _____.
a) swatantrata b) innateness
c) svatva d) None

13) Natural acceptance _____ with time.
a) change b) depends upon situation
c) doesn't change d) None of the above

14) The issues related to production-work _____.
a) What to produce? b) How to produce
c) Both a and b d) none of the above

15) Value education helps us to correctly identify our _____.
a) aspirations b) self exploration
c) experiential validation d) None

16) Harmony at all levels leads to _____.
a) Happiness b) Unhappiness
c) Enslavement d) All of the above

17) Grass, plants and trees includes in _____.
a) Physical order b) Bio order
c) Animal order d) Human order

18) What is true about Space _____.
a) Unlimited b) All pervading
c) No activity d) All the above

19) The process to understand human value is _____.
a) self exploration b) experiential validation
c) prosperity d) None of the above

20) Happiness, pleasure or joy is the _____ state of being happy.
a) emotional b) disharmony
c) contradictions d) None of the above

21) Human beings inherit the _____.
a) Vansh b) Shikshã-Sanskar
c) lineage d) None

22) If during a process, a material unit in nature transforms and finally comes back to the same form, it is termed as _____.
a) recyclability b) regulation
c) regeneration d) none of above

23) Right Understanding and physical facility leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Unhappiness d) Disharmony

24) Continuous Happiness and _____ as Basic Human Aspirations.
a) Money b) Relationship
c) Physical Facility d) Prosperity

25) The feeling that I cannot fulfill my needs is _____.
a) Cunningness b) Deenata
c) Heenata d) Krurata

26) _____ and Skills go hand in hand.
a) Education b) Skills
c) Values d) Harmony

27) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn money

28) _____ is the basic unit of any human society.
a) Group b) Individual
c) Nature d) Society

29) Value education should be based on dogmas or blind beliefs.
a) True b) False
c) cannot tell d) None of above

30) For Human beings, physical facility is not required.
a) True b) False
c) cannot tell d) None of above

31) Right Understanding and relationships leads to _____.
a) Unhappiness b) Mutual Prosperity
c) Mutual Happiness d) Disharmony

32) Thought, behavior, work and _____ are dimensions covered in value education.
a) Understanding b) Nurture
c) Family d) Universe

33) Individual, _____, society, and nature/existence are the levels of human life.
a) Happiness b) Nurture
c) Family d) Universe

34) Characteristic of animal is ____.
a) will to live b) will to live happily
c) will of desire d) will to think

35) The Sentient 'I', do not transform and are complete in composition, hence they are _____.
a) gathanpurna b) gathansheel
c) archanapurna d) None

36) Disharmony leads to _____.
a) Happiness b) Prospers
c) Unhappiness d) Harmony

37) _____ is the feeling of having more than required physical facility.
a) Money b) Relationship
c) Physical Facility d) Prosperity

38) _____ has the activities of desire, thought and expectation which are continuous.

a) Self b) Body
c) Both a and b d) None of the above

39) The response of the _____ is based on recognizing and fulfilling.

a) Self b) Body
c) Both a and b d) None of the above

40) The _____ is the basic unit or building block of human organization.

a) Society b) Family
c) Both a and b d) None of the above

41) _____ is the feeling of responsibility towards the Body, for nurturing, protection and right utilization of the Body.

a) Education b) Skills
c) Sanskar d) Self- regulation

42) The _____ is an instrument of the self.

a) Education b) Skills
c) Sanskrit d) Body

43) _____ is not a possible source of Imagination.

a) Preconditioning b) Sensation
c) Natural acceptance d) Enslavement

44) _____ is limited.

a) Space b) Balance
c) Nature d) None

45) In _____ one hinders the other from reaching one's own level.

a) Mutual understanding b) Excellence
c) Competition d) None

46) Human being is co-existence of the Self and _____.

a) Feelings b) Body
c) Unhappiness d) None of the above

47) Happiness and unhappiness depend on the state of _____.

a) Imagination b) Skills
c) Unhappiness d) Body

48) _____ is a foundation value in relationship.

a) Love b) Trust
c) Care d) Respect

49) _____ is feeling of being related to every human being.

a) Nature b) Family
c) None d) Akhand Samaj

50) _____ is a complete value in relationship.

a) Love b) Trust
c) Care d) Respect

SLR-GF-712

Seat No.		Set	R

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

F. Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Universal Human Values (BTN10106)

Day & Date: Saturday, 13-01-2024 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Answer

Q.1 Choose the correct alternatives from the options.

1) Right Understanding and relationships leads to _____.
a) Unhappiness b) Mutual Prosperity
c) Mutual Happiness d) Disharmony

2) Thought, behavior, work and _____ are dimensions covered in value education.
a) Understanding b) Nurture
c) Family d) Universe

3) Individual, _____, society, and nature/existence are the levels of human life.
a) Happiness b) Nurture
c) Family d) Universe

4) Characteristic of animal is ____.
a) will to live b) will to live happily
c) will of desire d) will to think

5) The Sentient 'I', do not transform and are complete in composition, hence they are _____.
a) gathanpurna b) gathansheel
c) archanapurna d) None

6) Disharmony leads to _____.
a) Happiness b) Prospers
c) Unhappiness d) Harmony

7) _____ is the feeling of having more than required physical facility.
a) Money b) Relationship
c) Physical Facility d) Prosperity

8) _____ has the activities of desire, thought and expectation which are continuous.
a) Self b) Body
c) Both a and b d) None of the above

9) The response of the _____ is based on recognizing and fulfilling.
a) Self b) Body
c) Both a and b d) None of the above

10) The _____ is the basic unit or building block of human organization.
a) Society b) Family
c) Both a and b d) None of the above

11) _____ is the feeling of responsibility towards the Body, for nurturing, protection and right utilization of the Body.
a) Education b) Skills
c) Sanskar d) Self- regulation

12) The _____ is an instrument of the self.
a) Education b) Skills
c) Sanskrit d) Body

13) _____ is not a possible source of Imagination.
a) Preconditioning b) Sensation
c) Natural acceptance d) Enslavement

14) _____ is limited.
a) Space b) Balance
c) Nature d) None

15) In _____ one hinders the other from reaching one's own level.
a) Mutual understanding b) Excellence
c) Competition d) None

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a) Feelings b) Body
c) Unhappiness d) None of the above

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a) Nature b) Family
c) None d) Akhand Samaj

20) _____ is a complete value in relationship.
a) Love b) Trust
c) Care d) Respect

21) _____ is to be assured that the other intends to make me happy and prosperous.
a) Love b) Trust
c) Care d) Respect

22) _____ is right evaluation.
a) Gratitude b) Trust
c) Care d) Respect

23) Differentiation or discrimination leads to _____.
a) Disrespect b) Trust
c) Gratitude d) Respect

24) _____ is the feeling of being related to the other.
a) Love b) Trust
c) Care d) Affection

25) _____ is the feeling of responsibility and commitment for nurturing and protection of the Body of my relative.
a) Love b) Trust
c) Care d) Respect

26) Abhay means _____.
a) fearlessness b) bravery
c) happiness d) harmony

27) Employing body physically for production and maintenance of physical facilities is called _____.
a) happiness b) meditation
c) labour d) none of these

28) Disrespect or discrimination is based on _____.
a) Body b) Physical Facility
c) Beliefs d) All the above

29) The _____ is an instrument of _____.
a) I, body b) body, harmony
c) body, I d) None

30) If families living together, in a relationship of mutual fulfillment (common goal) we can called it.
a) Battlefield b) Crowd
c) Society d) None of the above

31) The needs of the body are _____ in nature.
a) qualitative b) intangible
c) infinite d) quantitative

32) Being self organised, being in harmony in oneself is called as _____.
a) swatantrata b) innateness
c) svatva d) None

33) Natural acceptance _____ with time.
a) change b) depends upon situation
c) doesn't change d) None of the above

34) The issues related to production-work _____.
a) What to produce? b) How to produce
c) Both a and b d) none of the above

35) Value education helps us to correctly identify our _____.
a) aspirations b) self exploration
c) experiential validation d) None

36) Harmony at all levels leads to _____.
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37) Grass, plants and trees includes in _____.
a) Physical order b) Bio order
c) Animal order d) Human order

38) What is true about Space _____.
a) Unlimited b) All pervading
c) No activity d) All the above

39) The process to understand human value is _____.
a) self exploration b) experiential validation
c) prosperity d) None of the above

40) Happiness, pleasure or joy is the _____ state of being happy.
a) emotional b) disharmony
c) contradictions d) None of the above

41) Human beings inherit the _____.
a) Vansh b) Shikshã-Sanskar
c) lineage d) None

42) If during a process, a material unit in nature transforms and finally comes back to the same form, it is termed as _____.
a) recyclability b) regulation
c) regeneration d) none of above

43) Right Understanding and physical facility leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Unhappiness d) Disharmony

44) Continuous Happiness and _____ as Basic Human Aspirations.
a) Money b) Relationship
c) Physical Facility d) Prosperity

45) The feeling that I cannot fulfill my needs is _____.
a) Cunningness b) Deenata
c) Heenata d) Krurata

46) _____ and Skills go hand in hand.
a) Education b) Skills
c) Values d) Harmony

47) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn money

48) _____ is the basic unit of any human society.
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c) Nature d) Society

49) Value education should be based on dogmas or blind beliefs.
a) True b) False
c) cannot tell d) None of above

50) For Human beings, physical facility is not required.
a) True b) False
c) cannot tell d) None of above

SLR-GF-712

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

F. Y. (B.Tech.) (Sem - I) (Old) (CBCS) Examination: Oct/Nov-2023
Universal Human Values (BTN10106)

Day & Date: Saturday, 13-01-2024 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Answer

Q.1 Choose the correct alternatives from the options.

1) The needs of the body are _____ in nature.
a) qualitative b) intangible
c) infinite d) quantitative

2) Being self organised, being in harmony in oneself is called as _____.
a) swatantrata b) innateness
c) svatva d) None

3) Natural acceptance _____ with time.
a) change b) depends upon situation
c) doesn't change d) None of the above

4) The issues related to production-work _____.
a) What to produce? b) How to produce
c) Both a and b d) none of the above

5) Value education helps us to correctly identify our _____.
a) aspirations b) self exploration
c) experiential validation d) None

6) Harmony at all levels leads to _____.
a) Happiness b) Unhappiness
c) Enslavement d) All of the above

7) Grass, plants and trees includes in _____.
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c) Animal order d) Human order

8) What is true about Space _____.
a) Unlimited b) All pervading
c) No activity d) All the above

9) The process to understand human value is _____.
a) self exploration b) experiential validation
c) prosperity d) None of the above

10) Happiness, pleasure or joy is the _____ state of being happy.
a) emotional b) disharmony
c) contradictions d) None of the above

11) Human beings inherit the _____.
a) Vansh b) Shikshã-Sanskar
c) lineage d) None

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c) Family d) Universe

23) Individual, _____, society, and nature/existence are the levels of human life.
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c) Family d) Universe

24) Characteristic of animal is ____.
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25) The Sentient 'I', do not transform and are complete in composition, hence they are _____.
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c) archanapurna d) None

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27) _____ is the feeling of having more than required physical facility.
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c) Physical Facility d) Prosperity

28) _____ has the activities of desire, thought and expectation which are continuous.
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c) Both a and b d) None of the above

29) The response of the _____ is based on recognizing and fulfilling.
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c) Both a and b d) None of the above

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31) _____ is the feeling of responsibility towards the Body, for nurturing, protection and right utilization of the Body.
a) Education b) Skills
c) Sanskar d) Self- regulation

32) The _____ is an instrument of the self.
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c) Sanskrit d) Body

33) _____ is not a possible source of Imagination.
a) Preconditioning b) Sensation
c) Natural acceptance d) Enslavement

34) _____ is limited.
a) Space b) Balance
c) Nature d) None

35) In _____ one hinders the other from reaching one's own level.
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c) Competition d) None

36) Human being is co-existence of the Self and _____.
a) Feelings b) Body
c) Unhappiness d) None of the above

37) Happiness and unhappiness depend on the state of _____.
a) Imagination b) Skills
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38) _____ is a foundation value in relationship.
a) Love b) Trust
c) Care d) Respect

39) _____ is feeling of being related to every human being.
a) Nature b) Family
c) None d) Akhand Samaj

40) _____ is a complete value in relationship.
a) Love b) Trust
c) Care d) Respect

41) _____ is to be assured that the other intends to make me happy and prosperous.
a) Love b) Trust
c) Care d) Respect

42) _____ is right evaluation.
a) Gratitude b) Trust
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43) Differentiation or discrimination leads to _____.
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44) _____ is the feeling of being related to the other.
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46) Abhay means _____.
a) fearlessness b) bravery
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a) happiness b) meditation
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48) Disrespect or discrimination is based on _____.
a) Body b) Physical Facility
c) Beliefs d) All the above

49) The _____ is an instrument of _____.
a) I, body b) body, harmony
c) body, I d) None

50) If families living together, in a relationship of mutual fulfillment (common goal) we can called it.
a) Battlefield b) Crowd
c) Society d) None of the above

SLR-GF-713

Seat No.	

Set P

F.Y. (B.Tech.) (Sem - II) (CBCS) Examination: Oct/Nov-2023
Engineering Graphics & CAD (BTN10206)

Day & Date: Tuesday, 26-12-2023 Max. Marks: 70
Time: 03:00 PM To 07:00 PM

Instructions: 1) All questions from each section are compulsory.
2) Figures to the right indicates full marks.
3) Retain all construction lines.
4) Assume suitable dimensions, wherever required and mention it clearly.
5) All dimensions are in 'mm'.
6) Return all the answer-sheet supplied irrespective of their use.

Note: Objective type question Paper must be returned after first 40 minutes strictly.

Section – I

Duration:40 Minutes **Marks:14**

Q.1 Solve any four (objective type) **14**

1. Attempt any two questions from a) to d)
2. Questions e) & f) are compulsory.

a) **Refer FIG. (A):** Draw the projections of line AB, If **03**
1) Its true length is 65 mm
2) Inclination with FRP is 45°
3) End 'B' is 45 mm above HRP

b) **Refer FIG. (B):** Complete the projections of the line AB, If **03**
1) The grade is +50% w.r.to A
2) Bearing is S 40° E w.r.to A
3) Top View Length is 60 mm
Determine its True Length and True angles.

c) **Refer FIG. (C):** Complete the projections of the line PQ and find its True Length, if it bears due south w.r.to P having grade of +75% w.r.to P. **03**

d) **Refer FIG. (D):** A line AB carries a Front View length of 50 mm and apparent inclination of 45° with HP. The line carries a true inclination of 30° with VP. Complete the projections of the line and determine the true inclination with HP. **03**

e) **Refer FIG. (E):** Complete the projections of the plane ABC which has a dip of 50° south west and strike of N 60° W. **04**

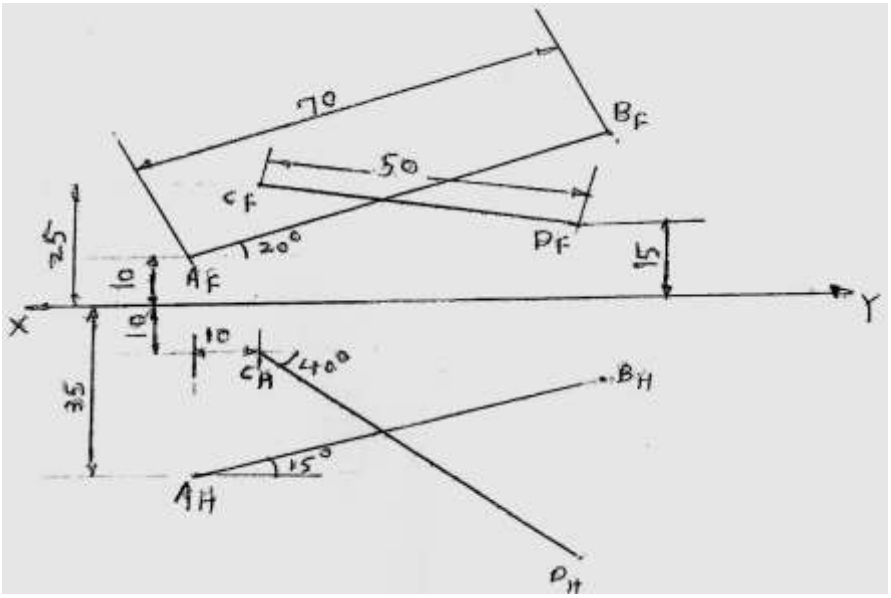
f) **Refer FIG. (F):** Find the strike and dip of the given plane ABC. **04**

Descriptive Type Questions

Q.2 Solve the following

a) A line PQ has its grade of +75%, its hearing w.r.to P = S 45° E and its front view length = 60 mm. Draw the projections of the line PQ and determine its angle w.r.to VP. Consider point 'P' is 15 mm above HP and 15 mm in front of VP. **04**

b) Redraw the lines and determine the angle of intersection between Line AB and CD. **03**



c) A rectangular plane ABCD with side AB = 30 mm and BC = 50 mm is resting on the VP on its smaller side AB. Draw the projections of the plane when its surface makes an angle of 45^0 with the VP. Draw the projections of the plane. **04**

Q.3 A square plate of 60 mm side is resting on HP on one of its corners in such a way that its surface makes an angle of 45^0 to the HP. Draw the projections of the square plate when diagonal passing through the corner on the HP makes an angle of 30^0 to the VP. **07**

Q.4 A square prism, side of base 40 mm and axis length 60 mm is kept on the HP on one of its base edges in such a way that its axis makes an angle of 45^0 to the HP. Draw the projections of the prism when the side of base which is on the HP is making an angle of 30° with the VP. **10**

OR

A cylinder, base diameter 50 mm and axis length 70 mm is kept on the HP on a point of its base circle in such a way that its axis makes an angle of 30° with HP. Draw the projection of the cylinder when plan of axis of marketing 45^0 to the XY line.

Section – II

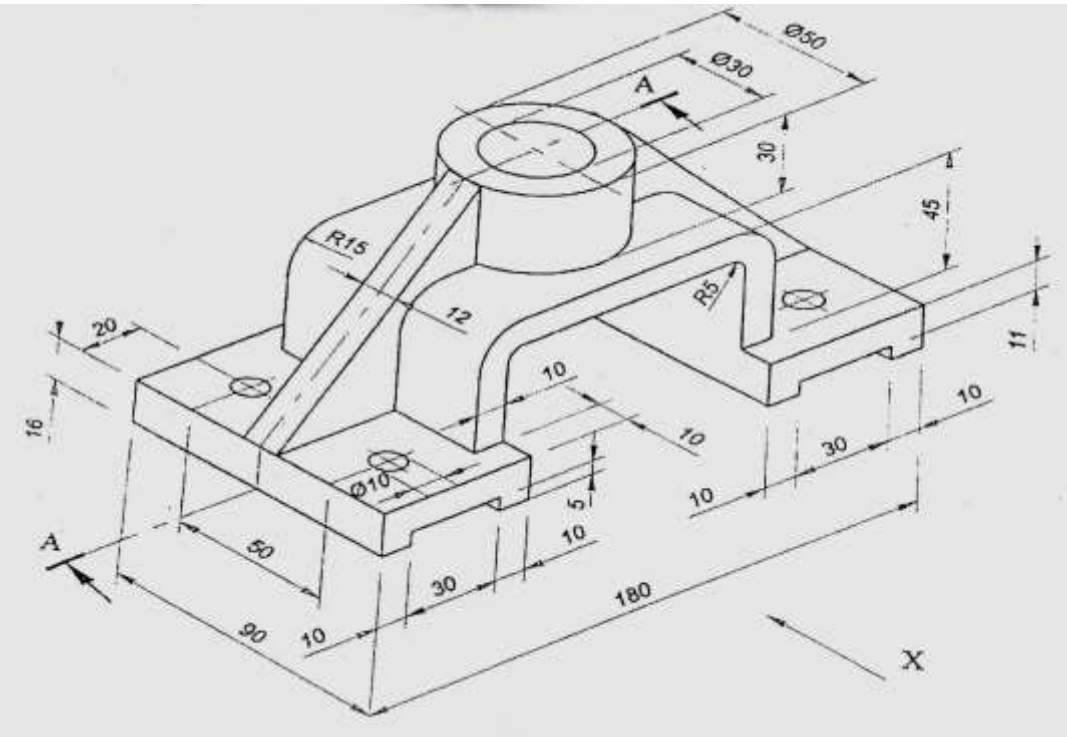
Q.5 A pictorial view as shown in the figure, draw the following views **18**

a) Sectional Front View in direction X (Refer section A - A)

b) Top View

c) Left Hand Side View

Dimensions the views



Q.6 A cone with 60 mm base diameter and 70 mm height rests with its base on the HP. It is cut by an auxiliary vertical plane with 60° inclination to the principal VP and 10 mm away from the axis of the cone. Draw the sectional FV and TV and True shape of the section. **10**

OR

A square pyramid with 40 mm base side and 60 mm height rests on the HP with its base edges at 45^0 to the VP. It is cut by a plane which is inclined to HP by 30^0 and perpendicular to the VP. This section plane passes through the center of the axis. Draw the FV and TV of frustrum and true shape of the section.

SLR-GF-714

Seat No.	

Set P

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Basic Electrical & Electronics Engineering (BTN10204)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) When two resistance are in parallel equivalent resistance is _____.
a) $R = (R_1 R_2) / (R_1 + R_2)$ b) $R = (R_1 + R_2) / (R_1 R_2)$
c) $R = R_1 / (R_1 + R_2)$ d) $R = R_2 / (R_1 + R_2)$

2) Three 2 ohm resistors are connected to form a triangle. The resistance between any two corners is _____.
a) $6\ \Omega$ b) $2\ \Omega$
c) $3/4\ \Omega(0.75)$ d) $4/3\ \Omega(1.33)$

3) Flux density B = ?
a) $\mu_0\mu_r/H$ b) $\mu_0 H/\mu_r$
c) $\mu_0\mu_r\ H$ d) $(\mu_0)^2 H$

4) A transformer having, 1000 primary turns is connected to a 250 V a.c supply. For a secondary voltage of 400V, the number of turns should be _____.
a) 1600 b) 250
c) 400 d) 1250

5) A series a.c circuit has $R = 4\Omega \text{ and } \mathrm{X_L} = 2\Omega$. It will be expressed in the rectangular form as _____.
a) $(-4 - j2)$ b) $(-4 + j2)$
c) $(4 + j2)$ d) $(4 - j2)$

6) In an R-L series circuit $R = 10\ \Omega\ and\ X_L = 10\ \Omega$. The phase angle between applied voltage and circuit is _____.
a) $45°$ b) $20°$
c) $60°$ d) $26.8°$

7) The power taken by a 3 - $ load is given by the expression _____.
a) $3V_L I_L \cos\varphi$ b) $\sqrt{3}V_L I_L \cos\varphi$
c) $3V_L I_L \sin\varphi$ d) $\sqrt{3}V_L I_L \sin\varphi$

8) An N-type semiconductor is _____.
a) positively charged b) negatively charged
c) electrically neutral d) none of these

9) Rectification efficiency of full-wave rectifier will be _____.

a) 81.2% b) 40.6%

c) 48% d) 78.5%

10) $IC = \alpha\ IE +$ _____.

a) IB b) ICEO

c) ICBO d) $\beta\ IB$

11) Lowest output resistance is obtained in _____ configuration of transistor.

a) CB b) CC

c) CE d) none of above

12) LVDT is a _____.

a) capacitive transducer b) resistive transducer

c) inductive transducer d) none

13) $(\overline{A + B}) =$ _____.

a) $\bar{A} + \bar{B}$ b) $\bar{A} - \bar{B}$

c) $\bar{A}.\bar{B}$ d) none of the above

14) Octal equivalent of $(10010110.1011)_2$ is _____.

a) $(226.51)_8$ b) $(452.13)_8$

c) $(226.54)_8$ d) none of the above

Seat No.		Set	P

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Basic Electrical & Electronics Engineering (BTN10204)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any FOUR. **16**

a) Define resistance and discuss the factors on which resistance of conductor material it depends.

b) Three resistors are connected in series across 12 V batteries. The first resistor has a value of 1Ω, second has a voltage drop of 4 volt and third has power dissipation of 12 watts. Calculate the value of circuit current.

c) Discuss in detail the similarities and dissimilarities between electrical circuit and magnetic circuit.

d) Explain principle of operation, working and construction of single phase transformer.

e) Define and derive expression for average value for sinusoidal current.

f) Three impedances, each of resistance $12\ \Omega$ and inductive reactance $5\ \Omega$ are connected in star across a 3- phase 440 V, 50 Hz supply. Find the line current and the total power consumed in the circuit.

Q.3 Solve any TWO **12**

a) Describe the importance of delta -star transformation. Derive the equations for converting delta resistances into equivalent star resistances.

b) A coil of 500 turns and resistance of 20 ohms is wound uniformly on an iron ring of mean circumstance 50 cm and cross sectional area 4 cm^2. It is connected to 24V DC supply & relative permeability of material is 800. Find
1) MMF
2) magnetic field strength
3) total flux
4) reluctance

c) A resistance of $1\ \Omega$ an inductive of 1H and a capacitance of $1\mu F$ are connected in series across 230 V, 50 Hz supply. Calculate:-
1) total impedance
2) current
3) power factor and its nature and
4) Active Power
5) Reactive power
6) Apparent power

Section – II

Q.4 Solve any FOUR. **16**

a) Explain the operation of Half wave rectifier. Draw input and output waveforms.

b) Draw and explain input and output characteristics of common emitter transistor.

c) Explain strain gauge as a transducer with its types. What is gauge factor?

d) Explain working of Bipolar Junction Transistor as a switch.

e) Perform subtraction using 2's complement and convert the result into Octal: $(123)_8 - (50)_8$

f) What is electrical transducer? Give various factors for selection of transducer.

Q.5 Solve any TWO. **12**

a) Why filters are required? Draw the circuit diagram of full wave rectifier using two diodes and capacitor filter. Also explain its working and draw necessary waveforms.

b) Prove the Following Boolean expressions.

1) A+AB =A
2) (A+B) (A+C) = A+BC
3) (A+B) (A+B) (A+C) = A+BC

c) What is meant by universal gate? Derive basic gates using NAND gate.

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Basic Electrical & Electronics Engineering (BTN10204)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) An N-type semiconductor is _____.
a) positively charged b) negatively charged
c) electrically neutral d) none of these

2) Rectification efficiency of full-wave rectifier will be _____.
a) 81.2% b) 40.6%
c) 48% d) 78.5%

3) $IC = \alpha\, IE +$ _____.
a) IB b) ICEO
c) ICBO d) $\beta\, IB$

4) Lowest output resistance is obtained in _____ configuration of transistor.
a) CB b) CC
c) CE d) none of above

5) LVDT is a _____.
a) capacitive transducer b) resistive transducer
c) inductive transducer d) none

6) $(\overline{A+B}) =$ _____.
a) $\bar{A}+\bar{B}$ b) $\bar{A}-\bar{B}$
c) $\bar{A}.\bar{B}$ d) none of the above

7) Octal equivalent of $(10010110.1011)_2$ is _____.
a) $(226.51)_8$ b) $(452.13)_8$
c) $(226.54)_8$ d) none of the above

8) When two resistance are in parallel equivalent resistance is _____.
a) $R = (R_1 R_2) / (R_1 + R_2)$ b) $R = (R_1 + R_2) / (R_1 R_2)$
c) $R = R_1 / (R_1 + R_2)$ d) $R = R_2 / (R_1 + R_2)$

9) Three 2 ohm resistors are connected to form a triangle. The resistance between any two corners is _____.
a) $6\ \Omega$ b) $2\ \Omega$
c) $3/4\ \Omega(0.75)$ d) $4/3\ \Omega(1.33)$

10) Flux density B = ?

a) $\mu_0\mu_r/H$ b) $\mu_0 H/\mu_r$

c) $\mu_0\mu_r\, H$ d) $(\mu_0)^2 H$

11) A transformer having, 1000 primary turns is connected to a 250 V a.c supply. For a secondary voltage of 400V, the number of turns should be _____.

a) 1600 b) 250

c) 400 d) 1250

12) A series a.c circuit has $R = 4\Omega \text{ and } \mathrm{X_L} = 2\Omega$. It will be expressed in the rectangular form as _____.

a) $(-4 - j2)$ b) $(-4 + j2)$

c) $(4 + j2)$ d) $(4 - j2)$

13) In an R-L series circuit $R = 10\ \Omega\ and\ X_L = 10\ \Omega$. The phase angle between applied voltage and circuit is _____.

a) $45°$ b) $20°$

c) $60°$ d) $26.8°$

14) The power taken by a 3 - $ load is given by the expression _____.

a) $3V_L I_L \cos\varphi$ b) $\sqrt{3}V_L I_L \cos\varphi$

c) $3V_L I_L \sin\varphi$ d) $\sqrt{3}V_L I_L \sin\varphi$

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Basic Electrical & Electronics Engineering (BTN10204)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any FOUR. **16**

a) Define resistance and discuss the factors on which resistance of conductor material it depends.

b) Three resistors are connected in series across 12 V batteries. The first resistor has a value of 1Ω, second has a voltage drop of 4 volt and third has power dissipation of 12 watts. Calculate the value of circuit current.

c) Discuss in detail the similarities and dissimilarities between electrical circuit and magnetic circuit.

d) Explain principle of operation, working and construction of single phase transformer.

e) Define and derive expression for average value for sinusoidal current.

f) Three impedances, each of resistance $12\ \Omega$ and inductive reactance $5\ \Omega$ are connected in star across a 3- phase 440 V, 50 Hz supply. Find the line current and the total power consumed in the circuit.

Q.3 Solve any TWO **12**

a) Describe the importance of delta -star transformation. Derive the equations for converting delta resistances into equivalent star resistances.

b) A coil of 500 turns and resistance of 20 ohms is wound uniformly on an iron ring of mean circumstance 50 cm and cross sectional area 4 cm^2. It is connected to 24V DC supply & relative permeability of material is 800. Find
1) MMF
2) magnetic field strength
3) total flux
4) reluctance

c) A resistance of $1\ \Omega$ an inductive of 1H and a capacitance of $1\mu F$ are connected in series across 230 V, 50 Hz supply. Calculate:-
1) total impedance
2) current
3) power factor and its nature and
4) Active Power
5) Reactive power
6) Apparent power

Section – II

Q.4 Solve any FOUR. **16**

a) Explain the operation of Half wave rectifier. Draw input and output waveforms.

b) Draw and explain input and output characteristics of common emitter transistor.

c) Explain strain gauge as a transducer with its types. What is gauge factor?

d) Explain working of Bipolar Junction Transistor as a switch.

e) Perform subtraction using 2's complement and convert the result into Octal: $(123)_8 - (50)_8$

f) What is electrical transducer? Give various factors for selection of transducer.

Q.5 Solve any TWO. **12**

a) Why filters are required? Draw the circuit diagram of full wave rectifier using two diodes and capacitor filter. Also explain its working and draw necessary waveforms.

b) Prove the Following Boolean expressions.

1) A+AB =A
2) (A+B) (A+C) = A+BC
3) (A+B) (A+B) (A+C) = A+BC

c) What is meant by universal gate? Derive basic gates using NAND gate.

Seat No.	

Set **R**

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Basic Electrical & Electronics Engineering (BTN10204)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Lowest output resistance is obtained in _____ configuration of transistor.
a) CB b) CC
c) CE d) none of above

2) LVDT is a _____.
a) capacitive transducer b) resistive transducer
c) inductive transducer d) none

3) $(\overline{A+B}) =$ _____.
a) $\bar{A}+\bar{B}$ b) $\bar{A}-\bar{B}$
c) $\bar{A}.\bar{B}$ d) none of the above

4) Octal equivalent of $(10010110.1011)_2$ is _____.
a) $(226.51)_8$ b) $(452.13)_8$
c) $(226.54)_8$ d) none of the above

5) When two resistance are in parallel equivalent resistance is _____.
a) $R = (R_1 R_2) / (R_1 + R_2)$ b) $R = (R_1 + R_2) / (R_1 R_2)$
c) $R = R_1 / (R_1 + R_2)$ d) $R = R_2 / (R_1 + R_2)$

6) Three 2 ohm resistors are connected to form a triangle. The resistance between any two corners is _____.
a) $6\ \Omega$ b) $2\ \Omega$
c) $3/4\ \Omega(0.75)$ d) $4/3\ \Omega(1.33)$

7) Flux density B = ?
a) $\mu_0\mu_r/H$ b) $\mu_0 H/\mu_r$
c) $\mu_0\mu_r\ H$ d) $(\mu_0)^2 H$

8) A transformer having, 1000 primary turns is connected to a 250 V a.c supply. For a secondary voltage of 400V, the number of turns should be _____.
a) 1600 b) 250
c) 400 d) 1250

9) A series a.c circuit has $R = 4\Omega \text{ and } X_L = 2\Omega$. It will be expressed in the rectangular form as _____.
a) $(-4-j2)$ b) $(-4+j2)$
c) $(4+j2)$ d) $(4-j2)$

10) In an R-L series circuit $R = 10\ \Omega\ and\ X_L = 10\ \Omega$. The phase angle between applied voltage and circuit is _____.

a) $45°$ b) $20°$

c) $60°$ d) $26.8°$

11) The power taken by a 3 - $ load is given by the expression _____.

a) $3V_L I_L \cos\varphi$ b) $\sqrt{3}V_L I_L \cos\varphi$

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12) An N-type semiconductor is _____.

a) positively charged b) negatively charged

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13) Rectification efficiency of full-wave rectifier will be _____.

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14) $IC = \alpha\ IE +$ _____.

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SLR-GF-714

Seat No.	

Set R

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Basic Electrical & Electronics Engineering (BTN10204)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any FOUR. **16**

a) Define resistance and discuss the factors on which resistance of conductor material it depends.

b) Three resistors are connected in series across 12 V batteries. The first resistor has a value of 1Ω, second has a voltage drop of 4 volt and third has power dissipation of 12 watts. Calculate the value of circuit current.

c) Discuss in detail the similarities and dissimilarities between electrical circuit and magnetic circuit.

d) Explain principle of operation, working and construction of single phase transformer.

e) Define and derive expression for average value for sinusoidal current.

f) Three impedances, each of resistance $12\ \Omega$ and inductive reactance $5\ \Omega$ are connected in star across a 3- phase 440 V, 50 Hz supply. Find the line current and the total power consumed in the circuit.

Q.3 Solve any TWO **12**

a) Describe the importance of delta -star transformation. Derive the equations for converting delta resistances into equivalent star resistances.

b) A coil of 500 turns and resistance of 20 ohms is wound uniformly on an iron ring of mean circumstance 50 cm and cross sectional area 4 cm^2. It is connected to 24V DC supply & relative permeability of material is 800. Find
1) MMF
2) magnetic field strength
3) total flux
4) reluctance

c) A resistance of $1\ \Omega$ an inductive of 1H and a capacitance of $1\mu F$ are connected in series across 230 V, 50 Hz supply. Calculate:-
1) total impedance
2) current
3) power factor and its nature and
4) Active Power
5) Reactive power
6) Apparent power

Section – II

Q.4 Solve any FOUR. **16**

a) Explain the operation of Half wave rectifier. Draw input and output waveforms.

b) Draw and explain input and output characteristics of common emitter transistor.

c) Explain strain gauge as a transducer with its types. What is gauge factor?

d) Explain working of Bipolar Junction Transistor as a switch.

e) Perform subtraction using 2's complement and convert the result into Octal: $(123)_8 - (50)_8$

f) What is electrical transducer? Give various factors for selection of transducer.

Q.5 Solve any TWO. **12**

a) Why filters are required? Draw the circuit diagram of full wave rectifier using two diodes and capacitor filter. Also explain its working and draw necessary waveforms.

b) Prove the Following Boolean expressions.

1) A+AB =A
2) (A+B) (A+C) = A+BC
3) (A+B) (A+B) (A+C) = A+BC

c) What is meant by universal gate? Derive basic gates using NAND gate.

Seat No.	

Set **S**

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Basic Electrical & Electronics Engineering (BTN10204)

Day & Date: Thursday, 28-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In an R-L series circuit $R = 10\ \Omega\ and\ X_L = 10\ \Omega$. The phase angle between applied voltage and circuit is _____.
a) $45°$ b) $20°$
c) $60°$ d) $26.8°$

2) The power taken by a 3 - $ load is given by the expression _____.
a) $3V_L I_L \cos\varphi$ b) $\sqrt{3}V_L I_L \cos\varphi$
c) $3V_L I_L \sin\varphi$ d) $\sqrt{3}V_L I_L \sin\varphi$

3) An N-type semiconductor is _____.
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4) Rectification efficiency of full-wave rectifier will be _____.
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6) Lowest output resistance is obtained in _____ configuration of transistor.
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9) Octal equivalent of $(10010110.1011)_2$ is _____.
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11) Three 2 ohm resistors are connected to form a triangle. The resistance between any two corners is _____.

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c) $3/4\ \Omega(0.75)$ d) $4/3\ \Omega(1.33)$

12) Flux density B = ?

a) $\mu_0\mu_r/H$ b) $\mu_0 H/\mu_r$

c) $\mu_0\mu_r\ H$ d) $(\mu_0)^2 H$

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14) A series a.c circuit has $R = 4\Omega \text{ and } \mathrm{X_L} = 2\Omega$. It will be expressed in the rectangular form as _____.

a) $(-4 - j2)$ b) $(-4 + j2)$

c) $(4 + j2)$ d) $(4 - j2)$

SLR-GF-714

Seat No.		Set	S

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Basic Electrical & Electronics Engineering (BTN10204)

Day & Date: Thursday, 28-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any FOUR. **16**

a) Define resistance and discuss the factors on which resistance of conductor material it depends.

b) Three resistors are connected in series across 12 V batteries. The first resistor has a value of 1Ω, second has a voltage drop of 4 volt and third has power dissipation of 12 watts. Calculate the value of circuit current.

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d) Explain principle of operation, working and construction of single phase transformer.

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f) Three impedances, each of resistance $12\ \Omega$ and inductive reactance $5\ \Omega$ are connected in star across a 3- phase 440 V, 50 Hz supply. Find the line current and the total power consumed in the circuit.

Q.3 Solve any TWO **12**

a) Describe the importance of delta -star transformation. Derive the equations for converting delta resistances into equivalent star resistances.

b) A coil of 500 turns and resistance of 20 ohms is wound uniformly on an iron ring of mean circumstance 50 cm and cross sectional area 4 cm^2. It is connected to 24V DC supply & relative permeability of material is 800. Find
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c) A resistance of $1\ \Omega$ an inductive of 1H and a capacitance of $1\mu F$ are connected in series across 230 V, 50 Hz supply. Calculate:-
1) total impedance
2) current
3) power factor and its nature and
4) Active Power
5) Reactive power
6) Apparent power

Section – II

Q.4 Solve any FOUR. **16**

a) Explain the operation of Half wave rectifier. Draw input and output waveforms.

b) Draw and explain input and output characteristics of common emitter transistor.

c) Explain strain gauge as a transducer with its types. What is gauge factor?

d) Explain working of Bipolar Junction Transistor as a switch.

e) Perform subtraction using 2's complement and convert the result into Octal: $(123)_8 - (50)_8$

f) What is electrical transducer? Give various factors for selection of transducer.

Q.5 Solve any TWO. **12**

a) Why filters are required? Draw the circuit diagram of full wave rectifier using two diodes and capacitor filter. Also explain its working and draw necessary waveforms.

b) Prove the Following Boolean expressions.

1) A+AB =A
2) (A+B) (A+C) = A+BC
3) (A+B) (A+B) (A+C) = A+BC

c) What is meant by universal gate? Derive basic gates using NAND gate.

SLR-GF-715

Seat No.	

Set P

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics–II (BTN10203)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) $\sin(ix)$ is equal to _____.
a) $i\sin x$ b) $-i\sin x$
c) $i\sinh x$ d) $-i\sinh x$

2) The function ϕ will be harmonic if it satisfies _____.
a) $\frac{\partial\phi}{\partial x}.\frac{\partial\phi}{\partial y}=0$ b) $\frac{\partial\phi}{\partial x}+\frac{\partial\phi}{\partial y}=0$
c) $\frac{\partial^2\phi}{\partial x^2}.\frac{\partial^2\phi}{\partial y^2}=0$ d) $\frac{\partial^2\phi}{\partial x^2}+\frac{\partial^2\phi}{\partial y^2}=0$

3) The integrating factor of the differential equation $x\frac{dy}{dx}+y=e^x$ is _____.
a) $x\log x$ b) e^x
c) x d) xe^x

4) The series $\sum\frac{1}{n^p}, p>1$ is _____.
a) convergent b) divergent
c) oscillatory d) conditionally convergent

5) The different equation $(3a^2x^2+by\cos x)dx+(2\sin x-4ay^3)dy=0$ is exact for _____.
a) $a=3,b=2$ b) $a=2,b=3$
c) $a=3,b=4$ d) $a=2,b=5$

6) For the differential equation $Mdx+Ndy=0$, the condition for exact $\frac{\partial M}{\partial y}=\frac{\partial N}{\partial x}$ is _____.
a) a necessary condition
b) sufficient condition
c) necessary and sufficient condition
d) none of these

7) The orthogonal trajectory for the family $y=mx$ is _____.
a) Circles b) Ellipse
c) Parabolas d) None of these

8) $\frac{B(m+1,n)}{B(m,n)}$ is equal to _____.

a) $\frac{m}{n}$ b) $\frac{m+1}{n}$

c) $\frac{m-1}{n}$ d) $\frac{m}{m+n}$

9) The value of $\int_0^\infty \frac{e^{-x}}{x} dx$ is _____.

a) 0 b) ∞

c) -1 d) 1

10) For the curve $y^2\ (a\ -\ x)\ =\ x^3$ which of the following is not true?

a) The curve is symmetrical about y axis

b) Curve passes through origin

c) ∃ one tangent parallel to y axis

d) The x-axis is a tangent at origin

11) The numbers of loops of $r = a \sin 2\theta$ are _____.

a) two b) three

c) four d) eight

12) The area enclosed by the curve $y^2 = x$ and the lines $x = 0$ to $x = 4$ is _____.

a) $\frac{16}{3}$ b) $\frac{32}{3}$

c) 16 d) 32

13) In the integral $\int_0^1 \int_0^y \int_0^{x^2 y} f(x,y,z)\ dx\ dy\ dz$ integration is taken _____.

a) first w.r.t. z then w.r.t. y then w.r.t.

b) first w.r.t. z then w.r.t. x then w.r.t. y

c) first w.r.t. x then w.r.t. y then w.r.t. z

d) first w.r.t. y then w.r.t. y then w.r.t. x

14) The value of $\int_0^{\pi/2} \int_0^{\pi/2} \sin(x+y)\ dx\ dy$ is _____.

a) 0 b) 2

c) π d) -2

Seat No.	

Set **P**

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics–II (BTN10203)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any three. **09**

a) Solve $\frac{dy}{dx} = \frac{2x+4y+3}{2y+x+1}$

b) Determine if the following series converges or diverges.

$$\sum_{n=1}^{\infty} \frac{\sqrt{n}}{n^2+1}$$

c) If $a = \cos 3\alpha + i \sin 3\alpha$, $b = \cos 3\beta + i \sin 3\beta$ and $c = \cos 3\gamma + i \sin 3\gamma$,
Prove that $\sqrt[3]{\frac{ab}{c}} + \sqrt[3]{\frac{c}{ab}} = 2\cos(\alpha + \beta - \gamma)$

d) Find the orthogonal Trajectory of $r = a(1 + \cos\theta)$

e) Test the convergence of the series

$$\sum_{n=1}^{\infty} \frac{1}{\left(1+\frac{1}{n}\right)^{n^2}}$$

Q.3 Attempt any three. **09**

a) Solve $(\sec x \tan x \tan y - e^x)dx + (\sec x \ \sec^2 y)dy = 0.$

b) Test if the following series for convergence or divergence.

$$\sum_{n=1}^{\infty} \frac{x^{n-1}}{n.3^n}$$

c) Solve $x^4 + x^3 + x^2 + x + 1 = 0$

d) Solve $\frac{dy}{dx} = x^3y^3 - xy$

e) Find the analytic function $f(z) = u + iv$ where $u = e^x \cos y$

Q.4 Attempt any two. **10**

a) In a single closed circuit the current I at time t is given by $E - RI - L\frac{dI}{dt} = 0$. Find the current I at time t, given that at $t = 0 \ \ I = 0$ and E, L, R are constants.

b) Test the convergence of the series $\frac{1}{3} + \left(\frac{2}{3}\right)^2 + \left(\frac{3}{7}\right)^3 + \left(\frac{4}{9}\right)^4 + \ldots$

c) Show that $u = \cos x \cosh y$ is harmonic function. Find the analytic function $f(z) = u + iv$.

Section – II

Q.5 Attempt any three. **09**

a) Evaluate $\int_0^\infty x^4 e^{-x^6} dx$

b) Evaluate $\int_0^\infty \frac{e^{-\alpha x} \sin x}{x} dx$

c) Evaluate $\int_0^1 \int_{y^2}^1 \int_0^{1-x} x \, dz dx dy$

d) Trace the curve $x = a(t - \sin t), y = a(1 - \cos t)$ with full justification.

e) Find by double integration the area between the circles $r = 2\sin(\theta)$ and $r = 4\sin(\theta)$

Q.6 Attempt any three. **09**

a) Evaluate $\int_0^\pi x \sin^5 x \cos^8 x \, dx$

b) Trace the curve $r = a(1 + \cos\theta)$ with full justification.

c) Find the mass of the lamina in the form of an ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$, if density at any point varies as the product of distances from the axes of ellipse.

d) Evaluate $\iint_R (x^2 + y^2) dx \, dy$ over the area of triangle whose vertices are (0,1), (1,1), (1,2).

e) Evaluate by changing to polar co-ordinates $\int_0^{4a} \int_{y^2/4a}^{y} \frac{x^2 - y^2}{x^2 + y^2} dx \, dy$.

Q.7 Attempt any two **10**

a) Change the order of integration and evaluate $\int_0^{\frac{\pi}{2}} \int_x^{\frac{\pi}{2}} \frac{\cos y}{d} \, dy \, dx$

b) Trace the curve $x^2 y^2 = a^2(y^2 - x^2)$ with full justification.

c) State and Prove Duplication Formula.

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics–II (BTN10203)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) $\frac{B(m+1,n)}{B(m,n)}$ is equal to _____.

a) $\frac{m}{n}$ b) $\frac{m+1}{n}$

c) $\frac{m-1}{n}$ d) $\frac{m}{m+n}$

2) The value of $\int_0^\infty \frac{e^{-x}}{x} dx$ is _____.

a) 0 b) ∞

c) -1 d) 1

3) For the curve $y^2\,(a - x) = x^3$ which of the following is not true?

a) The curve is symmetrical about y axis
b) Curve passes through origin
c) ∃ one tangent parallel to y axis
d) The x-axis is a tangent at origin

4) The numbers of loops of $r = a \sin 2\theta$ are _____.

a) two b) three

c) four d) eight

5) The area enclosed by the curve $y^2 = x$ and the lines $x = 0$ to $x = 4$ is _____.

a) $\frac{16}{3}$ b) $\frac{32}{3}$

c) 16 d) 32

6) In the integral $\int_0^1 \int_0^y \int_0^{x^2 y} f(x,y,z)\, dx\, dy\, dz$ integration is taken _____.

a) first w.r.t. z then w.r.t. y then w.r.t.
b) first w.r.t. z then w.r.t. x then w.r.t. y
c) first w.r.t. x then w.r.t. y then w.r.t. z
d) first w.r.t. y then w.r.t. y then w.r.t. x

7) The value of $\int_0^{\pi/2}\int_0^{\pi/2} \sin(x+y)\,dx\,dy$ is _____.

a) 0 b) 2
c) π d) -2

8) $\sin(ix)$ is equal to _____.

a) $i\sin x$ b) $-i\sin x$
c) $i\sinh x$ d) $-i\sinh x$

9) The function ϕ will be harmonic if it satisfies _____.

a) $\frac{\partial\phi}{\partial x}.\frac{\partial\phi}{\partial y}=0$ b) $\frac{\partial\phi}{\partial x}+\frac{\partial\phi}{\partial y}=0$
c) $\frac{\partial^2\phi}{\partial x^2}.\frac{\partial^2\phi}{\partial y^2}=0$ d) $\frac{\partial^2\phi}{\partial x^2}+\frac{\partial^2\phi}{\partial y^2}=0$

10) The integrating factor of the differential equation $x\frac{dy}{dx}+y=e^x$ is _____.

a) $x\log x$ b) e^x
c) x d) xe^x

11) The series $\sum\frac{1}{n^p}, p>1$ is _____.

a) convergent b) divergent
c) oscillatory d) conditionally convergent

12) The different equation $(3a^2x^2+by\cos x)dx+(2\sin x-4ay^3)dy=0$ is exact for _____.

a) $a=3,b=2$ b) $a=2,b=3$
c) $a=3,b=4$ d) $a=2,b=5$

13) For the differential equation $Mdx+Ndy=0$, the condition for exact $\frac{\partial M}{\partial y}=\frac{\partial N}{\partial x}$ is _____.

a) a necessary condition
b) sufficient condition
c) necessary and sufficient condition
d) none of these

14) The orthogonal trajectory for the family $y=mx$ is _____.

a) Circles b) Ellipse
c) Parabolas d) None of these

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics–II (BTN10203)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any three. **09**

a) Solve $\frac{dy}{dx} = \frac{2x+4y+3}{2y+x+1}$

b) Determine if the following series converges or diverges.

$$\sum_{n=1}^{\infty} \frac{\sqrt{n}}{n^2+1}$$

c) If $a = \cos 3\alpha + i \sin 3\alpha$, $b = \cos 3\beta + i \sin 3\beta$ and $c = \cos 3\gamma + i \sin 3\gamma$,
Prove that $\sqrt[3]{\frac{ab}{c}} + \sqrt[3]{\frac{c}{ab}} = 2\cos(\alpha + \beta - \gamma)$

d) Find the orthogonal Trajectory of $r = a(1 + \cos\theta)$

e) Test the convergence of the series

$$\sum_{n=1}^{\infty} \frac{1}{\left(1+\frac{1}{n}\right)^{n^2}}$$

Q.3 Attempt any three. **09**

a) Solve $(\sec x \tan x \tan y - e^x)dx + (\sec x \ \sec^2 y)dy = 0.$

b) Test if the following series for convergence or divergence.

$$\sum_{n=1}^{\infty} \frac{x^{n-1}}{n.3^n}$$

c) Solve $x^4 + x^3 + x^2 + x + 1 = 0$

d) Solve $\frac{dy}{dx} = x^3y^3 - xy$

e) Find the analytic function $f(z) = u + iv$ where $u = e^x \cos y$

Q.4 Attempt any two. **10**

a) In a single closed circuit the current I at time t is given by $E - RI - L\frac{dI}{dt} = 0$. Find the current I at time t, given that at $t = 0 \ \ I = 0$ and E, L, R are constants.

b) Test the convergence of the series $\frac{1}{3} + \left(\frac{2}{3}\right)^2 + \left(\frac{3}{7}\right)^3 + \left(\frac{4}{9}\right)^4 + \ldots$

c) Show that $u = \cos x \cosh y$ is harmonic function. Find the analytic function $f(z) = u + iv$.

Section – II

Q.5 Attempt any three. **09**

a) Evaluate $\int_0^\infty x^4 e^{-x^6} dx$

b) Evaluate $\int_0^\infty \frac{e^{-\alpha x} \sin x}{x} dx$

c) Evaluate $\int_0^1 \int_{y^2}^1 \int_0^{1-x} x \, dz dx dy$

d) Trace the curve $x = a(t - \sin t), y = a(1 - \cos t)$ with full justification.

e) Find by double integration the area between the circles $r = 2\sin(\theta)$ and $r = 4\sin(\theta)$

Q.6 Attempt any three. **09**

a) Evaluate $\int_0^\pi x \sin^5 x \cos^8 x \, dx$

b) Trace the curve $r = a(1 + \cos\theta)$ with full justification.

c) Find the mass of the lamina in the form of an ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$, if density at any point varies as the product of distances from the axes of ellipse.

d) Evaluate $\iint_R (x^2 + y^2) dx \, dy$ over the area of triangle whose vertices are (0,1), (1,1), (1,2).

e) Evaluate by changing to polar co-ordinates $\int_0^{4a} \int_{y^2/4a}^{y} \frac{x^2 - y^2}{x^2 + y^2} dx \, dy$.

Q.7 Attempt any two **10**

a) Change the order of integration and evaluate $\int_0^{\frac{\pi}{2}} \int_x^{\frac{\pi}{2}} \frac{\cos y}{d} \, dy \, dx$

b) Trace the curve $x^2 y^2 = a^2(y^2 - x^2)$ with full justification.

c) State and Prove Duplication Formula.

Seat No.	

Set **R**

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics–II (BTN10203)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The numbers of loops of $r = a\sin 2\theta$ are _____.
a) two b) three
c) four d) eight

2) The area enclosed by the curve $y^2 = x$ and the lines $x = 0$ to $x = 4$ is _____.
a) $\frac{16}{3}$ b) $\frac{32}{3}$
c) 16 d) 32

3) In the integral $\int_0^1 \int_0^y \int_0^{x^2y} f(x,y,z)\,dx\,dy\,dz$ integration is taken _____.
a) first w.r.t. z then w.r.t. y then w.r.t.
b) first w.r.t. z then w.r.t. x then w.r.t. y
c) first w.r.t. x then w.r.t. y then w.r.t. z
d) first w.r.t. y then w.r.t. y then w.r.t. x

4) The value of $\int_0^{\pi/2} \int_0^{\pi/2} \sin(x+y)\,dx\,dy$ is _____.
a) 0 b) 2
c) π d) -2

5) $\sin(ix)$ is equal to _____.
a) $i\sin x$ b) $-i\sin x$
c) $i\sinh x$ d) $-i\sinh x$

6) The function ϕ will be harmonic if it satisfies _____.
a) $\frac{\partial\phi}{\partial x}.\frac{\partial\phi}{\partial y} = 0$ b) $\frac{\partial\phi}{\partial x} + \frac{\partial\phi}{\partial y} = 0$
c) $\frac{\partial^2\phi}{\partial x^2}.\frac{\partial^2\phi}{\partial y^2} = 0$ d) $\frac{\partial^2\phi}{\partial x^2} + \frac{\partial^2\phi}{\partial y^2} = 0$

7) The integrating factor of the differential equation $x\frac{dy}{dx} + y = e^x$ is _____.
a) $x\log x$ b) e^x
c) x d) xe^x

8) The series $\sum \frac{1}{n^p}, p > 1$ is _____.

a) convergent
b) divergent
c) oscillatory
d) conditionally convergent

9) The different equation $(3a^2x^2 + by\cos x)dx + (2\sin x - 4ay^3)dy = 0$ is exact for _____.

a) $a = 3, b = 2$
b) $a = 2, b = 3$
c) $a = 3, b = 4$
d) $a = 2, b = 5$

10) For the differential equation $Mdx + Ndy = 0$, the condition for exact $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$ is _____.

a) a necessary condition
b) sufficient condition
c) necessary and sufficient condition
d) none of these

11) The orthogonal trajectory for the family $y = mx$ is _____.

a) Circles
b) Ellipse
c) Parabolas
d) None of these

12) $\frac{B(m+1,n)}{B(m,n)}$ is equal to _____.

a) $\frac{m}{n}$
b) $\frac{m+1}{n}$
c) $\frac{m-1}{n}$
d) $\frac{m}{m+n}$

13) The value of $\int_0^\infty \frac{e^{-x}}{x} dx$ is _____.

a) 0
b) ∞
c) -1
d) 1

14) For the curve $y^2\,(a - x) = x^3$ which of the following is not true?

a) The curve is symmetrical about y axis
b) Curve passes through origin
c) ∃ one tangent parallel to y axis
d) The x-axis is a tangent at origin

Seat No.	

Set **R**

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics–II (BTN10203)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any three. **09**

a) Solve $\frac{dy}{dx} = \frac{2x+4y+3}{2y+x+1}$

b) Determine if the following series converges or diverges.

$$\sum_{n=1}^{\infty} \frac{\sqrt{n}}{n^2+1}$$

c) If $a = \cos 3\alpha + i \sin 3\alpha$, $b = \cos 3\beta + i \sin 3\beta$ and $c = \cos 3\gamma + i \sin 3\gamma$,
Prove that $\sqrt[3]{\frac{ab}{c}} + \sqrt[3]{\frac{c}{ab}} = 2\cos(\alpha + \beta - \gamma)$

d) Find the orthogonal Trajectory of $r = a(1 + \cos\theta)$

e) Test the convergence of the series

$$\sum_{n=1}^{\infty} \frac{1}{\left(1+\frac{1}{n}\right)^{n^2}}$$

Q.3 Attempt any three. **09**

a) Solve $(\sec x \tan x \tan y - e^x)dx + (\sec x \ \sec^2 y)dy = 0.$

b) Test if the following series for convergence or divergence.

$$\sum_{n=1}^{\infty} \frac{x^{n-1}}{n.3^n}$$

c) Solve $x^4 + x^3 + x^2 + x + 1 = 0$

d) Solve $\frac{dy}{dx} = x^3y^3 - xy$

e) Find the analytic function $f(z) = u + iv$ where $u = e^x \cos y$

Q.4 Attempt any two. **10**

a) In a single closed circuit the current I at time t is given by $E - RI - L\frac{dI}{dt} = 0$. Find the current I at time t, given that at $t = 0 \ \ I = 0$ and E, L, R are constants.

b) Test the convergence of the series $\frac{1}{3} + \left(\frac{2}{3}\right)^2 + \left(\frac{3}{7}\right)^3 + \left(\frac{4}{9}\right)^4 + \ldots$

c) Show that $u = \cos x \cosh y$ is harmonic function. Find the analytic function $f(z) = u + iv$.

Section – II

Q.5 Attempt any three. **09**

a) Evaluate $\int_0^\infty x^4 e^{-x^6} dx$

b) Evaluate $\int_0^\infty \frac{e^{-\alpha x} \sin x}{x} dx$

c) Evaluate $\int_0^1 \int_{y^2}^1 \int_0^{1-x} x \, dz dx dy$

d) Trace the curve $x = a(t - \sin t), y = a(1 - \cos t)$ with full justification.

e) Find by double integration the area between the circles $r = 2\sin(\theta)$ and $r = 4\sin(\theta)$

Q.6 Attempt any three. **09**

a) Evaluate $\int_0^\pi x \sin^5 x \cos^8 x \, dx$

b) Trace the curve $r = a(1 + \cos\theta)$ with full justification.

c) Find the mass of the lamina in the form of an ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$, if density at any point varies as the product of distances from the axes of ellipse.

d) Evaluate $\iint_R (x^2 + y^2) dx \, dy$ over the area of triangle whose vertices are (0,1), (1,1), (1,2).

e) Evaluate by changing to polar co-ordinates $\int_0^{4a} \int_{y^2/4a}^{y} \frac{x^2 - y^2}{x^2 + y^2} dx \, dy$.

Q.7 Attempt any two **10**

a) Change the order of integration and evaluate $\int_0^{\frac{\pi}{2}} \int_x^{\frac{\pi}{2}} \frac{\cos y}{d} \, dy \, dx$

b) Trace the curve $x^2 y^2 = a^2(y^2 - x^2)$ with full justification.

c) State and Prove Duplication Formula.

Seat No.	

Set **S**

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics–II (BTN10203)

Day & Date: Saturday, 30-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) For the differential equation $Mdx + Ndy = 0$, the condition for exact $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$ is _____.
a) a necessary condition
b) sufficient condition
c) necessary and sufficient condition
d) none of these

2) The orthogonal trajectory for the family $y = mx$ is _____.
a) Circles b) Ellipse
c) Parabolas d) None of these

3) $\frac{B(m+1,n)}{B(m,n)}$ is equal to _____.
a) $\frac{m}{n}$ b) $\frac{m+1}{n}$
c) $\frac{m-1}{n}$ d) $\frac{m}{m+n}$

4) The value of $\int_0^\infty \frac{e^{-x}}{x} dx$ is _____.
a) 0 b) ∞
c) -1 d) 1

5) For the curve $y^2\,(a - x) = x^3$ which of the following is not true?
a) The curve is symmetrical about y axis
b) Curve passes through origin
c) ∃ one tangent parallel to y axis
d) The x-axis is a tangent at origin

6) The numbers of loops of $r = a \sin 2\theta$ are _____.
a) two b) three
c) four d) eight

7) The area enclosed by the curve $y^2 = x$ and the lines $x = 0$ to $x = 4$ is _____.

a) $\frac{16}{3}$ b) $\frac{32}{3}$

c) 16 d) 32

8) In the integral $\int_0^1 \int_0^y \int_0^{x^2 y} f(x,y,z)\, dx\, dy\, dz$ integration is taken _____.

a) first w.r.t. z then w.r.t. y then w.r.t.

b) first w.r.t. z then w.r.t. x then w.r.t. y

c) first w.r.t. x then w.r.t. y then w.r.t. z

d) first w.r.t. y then w.r.t. y then w.r.t. x

9) The value of $\int_0^{\pi/2} \int_0^{\pi/2} \sin(x+y)\, dx\, dy$ is _____.

a) 0 b) 2

c) π d) -2

10) $\sin(ix)$ is equal to _____.

a) $i \sin x$ b) $-i \sin x$

c) $i \sinh x$ d) $-i \sinh x$

11) The function ϕ will be harmonic if it satisfies _____.

a) $\frac{\partial \phi}{\partial x} . \frac{\partial \phi}{\partial y} = 0$ b) $\frac{\partial \phi}{\partial x} + \frac{\partial \phi}{\partial y} = 0$

c) $\frac{\partial^2 \phi}{\partial x^2} . \frac{\partial^2 \phi}{\partial y^2} = 0$ d) $\frac{\partial^2 \phi}{\partial x^2} + \frac{\partial^2 \phi}{\partial y^2} = 0$

12) The integrating factor of the differential equation $x\frac{dy}{dx} + y = e^x$ is _____.

a) $x \log x$ b) e^x

c) x d) xe^x

13) The series $\sum \frac{1}{n^p}, p > 1$ is _____.

a) convergent b) divergent

c) oscillatory d) conditionally convergent

14) The different equation $(3a^2x^2 + by\cos x)dx + (2\sin x - 4ay^3)dy = 0$ is exact for _____.

a) $a = 3, b = 2$ b) $a = 2, b = 3$

c) $a = 3, b = 4$ d) $a = 2, b = 5$

Seat No.		Set	S

F.Y. (B.Tech.) (Sem-II) (CBCS) Examination: Oct/Nov-2023
Engineering Mathematics–II (BTN10203)

Day & Date: Saturday, 30-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

Section – I

Q.2 Attempt any three. **09**

a) Solve $\frac{dy}{dx} = \frac{2x+4y+3}{2y+x+1}$

b) Determine if the following series converges or diverges.

$$\sum_{n=1}^{\infty} \frac{\sqrt{n}}{n^2+1}$$

c) If $a = \cos 3\alpha + i \sin 3\alpha$, $b = \cos 3\beta + i \sin 3\beta$ and $c = \cos 3\gamma + i \sin 3\gamma$,
Prove that $\sqrt[3]{\frac{ab}{c}} + \sqrt[3]{\frac{c}{ab}} = 2\cos(\alpha + \beta - \gamma)$

d) Find the orthogonal Trajectory of $r = a(1 + \cos\theta)$

e) Test the convergence of the series

$$\sum_{n=1}^{\infty} \frac{1}{\left(1+\frac{1}{n}\right)^{n^2}}$$

Q.3 Attempt any three. **09**

a) Solve $(\sec x \tan x \tan y - e^x)dx + (\sec x \ \sec^2 y)dy = 0.$

b) Test if the following series for convergence or divergence.

$$\sum_{n=1}^{\infty} \frac{x^{n-1}}{n.3^n}$$

c) Solve $x^4 + x^3 + x^2 + x + 1 = 0$

d) Solve $\frac{dy}{dx} = x^3y^3 - xy$

e) Find the analytic function $f(z) = u + iv$ where $u = e^x \cos y$

Q.4 Attempt any two. **10**

a) In a single closed circuit the current I at time t is given by $E - RI - L\frac{dI}{dt} = 0$. Find the current I at time t, given that at $t = 0 \ \ I = 0$ and E, L, R are constants.

b) Test the convergence of the series $\frac{1}{3} + \left(\frac{2}{3}\right)^2 + \left(\frac{3}{7}\right)^3 + \left(\frac{4}{9}\right)^4 + \ldots$

c) Show that $u = \cos x \cosh y$ is harmonic function. Find the analytic function $f(z) = u + iv$.

Section – II

Q.5 Attempt any three. **09**

a) Evaluate $\int_0^\infty x^4 e^{-x^6} dx$

b) Evaluate $\int_0^\infty \frac{e^{-\alpha x} \sin x}{x} dx$

c) Evaluate $\int_0^1 \int_{y^2}^1 \int_0^{1-x} x \, dz dx dy$

d) Trace the curve $x = a(t - \sin t), y = a(1 - \cos t)$ with full justification.

e) Find by double integration the area between the circles $r = 2\sin(\theta)$ and $r = 4\sin(\theta)$

Q.6 Attempt any three. **09**

a) Evaluate $\int_0^\pi x \sin^5 x \cos^8 x \, dx$

b) Trace the curve $r = a(1 + \cos\theta)$ with full justification.

c) Find the mass of the lamina in the form of an ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$, if density at any point varies as the product of distances from the axes of ellipse.

d) Evaluate $\iint_R (x^2 + y^2) dx \, dy$ over the area of triangle whose vertices are (0,1), (1,1), (1,2).

e) Evaluate by changing to polar co-ordinates $\int_0^{4a} \int_{y^2/4a}^{y} \frac{x^2 - y^2}{x^2 + y^2} dx \, dy$.

Q.7 Attempt any two **10**

a) Change the order of integration and evaluate $\int_0^{\frac{\pi}{2}} \int_x^{\frac{\pi}{2}} \frac{\cos y}{d} \, dy \, dx$

b) Trace the curve $x^2 y^2 = a^2(y^2 - x^2)$ with full justification.

c) State and Prove Duplication Formula.

Seat No.	

Set **P**

F.Y. (B.Tech.) (Sem - II) (CBCS) Examination: Oct/Nov - 2023
ENGINEERING PHYSICS (BTN10201)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Make suitable assumptions, if necessary.

Constants: 1) Avogadro's no., N= 6.02 x 10^{26} / k.mol.
2) Velocity of light, c = 3 x 10^{8} m/sec.
3) Charge of electron, e = 1.6 x 10^{-19} C.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Donor type semiconductor is formed by adding impurity of valency_____.
a) 3 b) 5
c) 4 d) 6

2) In a semiconductor, current flows due to
a) electrons b) both- holes and electrons
c) protons d) holes

3) The void space for FCC structure is
a) 30 % b) 32 %
c) 26 % d) 48 %

4) The co-ordination number in case of BCC structure is
a) 6 b) 12
c) 8 d) 10

5) The absorption coefficient is measured in
a) WOU b) OWU
c) m/s d) UOW

6) Sabine's formula is
a) $T = \frac{0.651\,V}{\Sigma as}$ b) $T = \frac{\Sigma as}{0.651\ \mathrm{V}}$
c) $T = \frac{0.165\,V}{\Sigma as}$ d) $T = \frac{\Sigma as}{0.165\ \mathrm{V}}$

7) The length of the rod moving with velocity v relative to the observer is same when
a) $\mathrm{v} << \mathrm{c}$ b) $\mathrm{v} \geq \mathrm{c}$
c) v is comparable to c d) v is zero

8) The criterion of resolution of optical instruments was given by
a) Huygen b) Rayleigh
c) Ramsden d) Newton

9) The restriction of vibration of light waves to one particular plane is called as

a) Reflection
b) Diffraction
c) Polarization
d) Refraction

10) Holography means

a) To get 2D image of 3D object
b) To get zero dimension image
c) To get 3D image of 3D object
d) To get 3D image of 2D object

11) For population inversion

a) $N_2 \gg N_1$
b) $N_1 \gg N_2$
c) $N_1 = N_2$
d) none of these

12) If core has non uniform refractive index, the fibre is called as_____fibre

a) Single mode
b) Graded index MMF
c) Step index MMF
d) Step index SMF

13) The Armchair carbon nano tubes are formed for

a) $\theta = 0$
b) $\theta = \pi/8$
c) $\theta = 0\ to\ \pi/6$
d) $\theta = \pi/6$

14) The wave associated with a moving particle is called

a) Longitudinal wave
b) Mechanical wave
c) De Broglie wave
d) Plank's wave

Seat No.	

Set **P**

F.Y. (B.Tech.) (Sem - II) (CBCS) Examination: Oct/Nov - 2023
ENGINEERING PHYSICS (BTN10201)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions, if necessary.

Section – I

Q.2 Attempt any SIX of the following. **18**

a) Explain: Plane of symmetry.

b) Derive an expression for Fermi energy in intrinsic semiconductors.

$$E_F = \frac{Eg}{2}$$

c) Define: valence band, conduction band and forbidden energy band. Show them with neat diagram

d) State: Properties of ultrasonic waves.

e) State: Fundamental postulates of special theory of relativity.

f) Explain: Reverberation and reverberation time.

g) The volume of a hall is 475 m^3. The area of wall is 200 m^2, area of ceiling and floor each is 100 m^2. If absorption of the wall, ceiling and floor are 0.025, 0.02 and 0.55 resp. Calculate the reverberation time for the hall.

h) Copper belongs to FCC lattice. If the atomic radius of Cu is 1.278 A^0, calculate its density. The atomic mass of copper is 63.54.

Q.3 Attempt any TWO of the following: **10**

a) Explain Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H) with neat diagram.

b) Explain the term Miller indices. Derive the relation between lattice constant and interplanar spacing for cubic crystal.

$$d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

c) Slate and explain the factors affecting the architectural acoustics and their remedies.

d) i) A rocket ship is 100 m long on the ground. When it is in flight, its length is 99 m to an observer on the ground. What is its speed.
ii) Deduce Einstein's expression for mass-energy ($E = m.c^2$) equivalence.

Section – II

Q.4 Attempt any SIX of the following: **18**

a) Derive an expression for resolving power of plane diffraction grating.

b) Explain the terms:
- i) Optical activity and
- ii) Specific rotation

c) Explain in brief:
- i) Spontaneous Emission and
- ii) Stimulated Emission

d) Explain: Properties of LASER.

e) Give advantages of optical fiber over conducting wires.

f) Write: applications of nanotechnology in various fields.

g) A fiber cable has an acceptance angle of 30° and a core index of refraction is 1.4. Calculate the refractive index of the cladding.

h) Calculate the De-Broglie wavelength of electron accelerating through the potential of 182 volts.

Q.5 Attempt any TWO of the following. **10**

a) Obtain the expression for acceptance angle, acceptance cone, numerical aperture and fractional refractive index change of an optical fiber.

b) Describe Laurent's half shade polarimeter for the determination of specific rotation of the substance.

c)
1) Calculate specific rotation, if the plane of polarization is rotated through 39°. Length of tube is 30 cm. Given: Density of solution 20%.
2) A parallel beam of sodium light is allowed to be incident normally on a plane grating having 4250 lines per cm and a second order spectral line is observed to be deviated through 30°. Calculate the wavelength of spectral

d) Describe construction and working with energy diagrams of He-Ne laser.

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Sem - II) (CBCS) Examination: Oct/Nov - 2023
ENGINEERING PHYSICS (BTN10201)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Make suitable assumptions, if necessary.

Constants: 1) Avogadro's no., N= 6.02 x 10^{26} / k.mol.
2) Velocity of light, c = 3 x 10^{8} m/sec.
3) Charge of electron, e = 1.6 x 10^{-19} C.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The criterion of resolution of optical instruments was given by
a) Huygen b) Rayleigh
c) Ramsden d) Newton

2) The restriction of vibration of light waves to one particular plane is called as
a) Reflection b) Diffraction
c) Polarization d) Refraction

3) Holography means
a) To get 2D image of 3D object b) To get zero dimension image
c) To get 3D image of 3D object d) To get 3D image of 2D object

4) For population inversion
a) $N_2 \gg N_1$ b) $N_1 \gg N_2$
c) $N_1 = N_2$ d) none of these

5) If core has non uniform refractive index, the fibre is called as_____fibre
a) Single mode b) Graded index MMF
c) Step index MMF d) Step index SMF

6) The Armchair carbon nano tubes are formed for
a) $\theta = 0$ b) $\theta = \pi/8$
c) $\theta = 0\ to\ \pi/6$ d) $\theta = \pi/6$

7) The wave associated with a moving particle is called
a) Longitudinal wave b) Mechanical wave
c) De Broglie wave d) Plank's wave

8) Donor type semiconductor is formed by adding impurity of valency_____.
a) 3 b) 5
c) 4 d) 6

9) In a semiconductor, current flows due to

a) electrons b) both- holes and electrons

c) protons d) holes

10) The void space for FCC structure is

a) 30 % b) 32 %

c) 26 % d) 48 %

11) The co-ordination number in case of BCC structure is

a) 6 b) 12

c) 8 d) 10

12) The absorption coefficient is measured in

a) WOU b) OWU

c) m/s d) UOW

13) Sabine's formula is

a) $T = \frac{0.651\ V}{\Sigma as}$ b) $T = \frac{\Sigma as}{0.651\ \mathrm{V}}$

c) $T = \frac{0.165\ V}{\Sigma as}$ d) $T = \frac{\Sigma as}{0.165\ \mathrm{V}}$

14) The length of the rod moving with velocity v relative to the observer is same when

a) $\mathrm{v} << \mathrm{c}$ b) $\mathrm{v} \geq \mathrm{c}$

c) v is comparable to c d) v is zero

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Sem - II) (CBCS) Examination: Oct/Nov - 2023
ENGINEERING PHYSICS (BTN10201)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions, if necessary.

Section – I

Q.2 Attempt any SIX of the following. **18**

a) Explain: Plane of symmetry.

b) Derive an expression for Fermi energy in intrinsic semiconductors.

$$E_F = \frac{Eg}{2}$$

c) Define: valence band, conduction band and forbidden energy band. Show them with neat diagram

d) State: Properties of ultrasonic waves.

e) State: Fundamental postulates of special theory of relativity.

f) Explain: Reverberation and reverberation time.

g) The volume of a hall is 475 m^3. The area of wall is 200 m^2, area of ceiling and floor each is 100 m^2. If absorption of the wall, ceiling and floor are 0.025, 0.02 and 0.55 resp. Calculate the reverberation time for the hall.

h) Copper belongs to FCC lattice. If the atomic radius of Cu is 1.278 A^0, calculate its density. The atomic mass of copper is 63.54.

Q.3 Attempt any TWO of the following: **10**

a) Explain Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H) with neat diagram.

b) Explain the term Miller indices. Derive the relation between lattice constant and interplanar spacing for cubic crystal.

$$d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

c) Slate and explain the factors affecting the architectural acoustics and their remedies.

d) i) A rocket ship is 100 m long on the ground. When it is in flight, its length is 99 m to an observer on the ground. What is its speed.
ii) Deduce Einstein's expression for mass-energy ($E = m.c^2$) equivalence.

Section – II

Q.4 Attempt any SIX of the following: **18**

a) Derive an expression for resolving power of plane diffraction grating.

b) Explain the terms:
- i) Optical activity and
- ii) Specific rotation

c) Explain in brief:
- i) Spontaneous Emission and
- ii) Stimulated Emission

d) Explain: Properties of LASER.

e) Give advantages of optical fiber over conducting wires.

f) Write: applications of nanotechnology in various fields.

g) A fiber cable has an acceptance angle of 30° and a core index of refraction is 1.4. Calculate the refractive index of the cladding.

h) Calculate the De-Broglie wavelength of electron accelerating through the potential of 182 volts.

Q.5 Attempt any TWO of the following. **10**

a) Obtain the expression for acceptance angle, acceptance cone, numerical aperture and fractional refractive index change of an optical fiber.

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c)
1) Calculate specific rotation, if the plane of polarization is rotated through 39°. Length of tube is 30 cm. Given: Density of solution 20%.
2) A parallel beam of sodium light is allowed to be incident normally on a plane grating having 4250 lines per cm and a second order spectral line is observed to be deviated through 30°. Calculate the wavelength of spectral

d) Describe construction and working with energy diagrams of He-Ne laser.

Seat No.	

Set **R**

F.Y. (B.Tech.) (Sem - II) (CBCS) Examination: Oct/Nov - 2023
ENGINEERING PHYSICS (BTN10201)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions, if necessary.

Constants: 1) Avogadro's no., N= 6.02 x 10^{26} / k.mol.
2) Velocity of light, c = 3 x 10^{8} m/sec.
3) Charge of electron, e = 1.6 x 10^{-19} C.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) For population inversion
a) $N_2 \gg N_1$ b) $N_1 \gg N_2$
c) $N_1 = N_2$ d) none of these

2) If core has non uniform refractive index, the fibre is called as_____fibre
a) Single mode b) Graded index MMF
c) Step index MMF d) Step index SMF

3) The Armchair carbon nano tubes are formed for
a) $\theta = 0$ b) $\theta = \pi/8$
c) $\theta = 0 \; to \; \pi/6$ d) $\theta = \pi/6$

4) The wave associated with a moving particle is called
a) Longitudinal wave b) Mechanical wave
c) De Broglie wave d) Plank's wave

5) Donor type semiconductor is formed by adding impurity of valency_____.
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9) The absorption coefficient is measured in

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10) Sabine's formula is

a) $T = \frac{0.651\ V}{\Sigma as}$ b) $T = \frac{\Sigma as}{0.651\ \mathrm{V}}$

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11) The length of the rod moving with velocity v relative to the observer is same when

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12) The criterion of resolution of optical instruments was given by

a) Huygen b) Rayleigh

c) Ramsden d) Newton

13) The restriction of vibration of light waves to one particular plane is called as

a) Reflection b) Diffraction

c) Polarization d) Refraction

14) Holography means

a) To get 2D image of 3D object b) To get zero dimension image

c) To get 3D image of 3D object d) To get 3D image of 2D object

Seat No.	

Set **R**

F.Y. (B.Tech.) (Sem - II) (CBCS) Examination: Oct/Nov - 2023
ENGINEERING PHYSICS (BTN10201)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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3) Make suitable assumptions, if necessary.

Section – I

Q.2 Attempt any SIX of the following. **18**

a) Explain: Plane of symmetry.

b) Derive an expression for Fermi energy in intrinsic semiconductors.

$$E_F = \frac{Eg}{2}$$

c) Define: valence band, conduction band and forbidden energy band. Show them with neat diagram

d) State: Properties of ultrasonic waves.

e) State: Fundamental postulates of special theory of relativity.

f) Explain: Reverberation and reverberation time.

g) The volume of a hall is 475 m^3. The area of wall is 200 m^2, area of ceiling and floor each is 100 m^2. If absorption of the wall, ceiling and floor are 0.025, 0.02 and 0.55 resp. Calculate the reverberation time for the hall.

h) Copper belongs to FCC lattice. If the atomic radius of Cu is 1.278 A^0, calculate its density. The atomic mass of copper is 63.54.

Q.3 Attempt any TWO of the following: **10**

a) Explain Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H) with neat diagram.

b) Explain the term Miller indices. Derive the relation between lattice constant and interplanar spacing for cubic crystal.

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c) Slate and explain the factors affecting the architectural acoustics and their remedies.

d) i) A rocket ship is 100 m long on the ground. When it is in flight, its length is 99 m to an observer on the ground. What is its speed.
ii) Deduce Einstein's expression for mass-energy ($E = m.c^2$) equivalence.

Section – II

Q.4 Attempt any SIX of the following: **18**

a) Derive an expression for resolving power of plane diffraction grating.

b) Explain the terms:
- i) Optical activity and
- ii) Specific rotation

c) Explain in brief:
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c) 1) Calculate specific rotation, if the plane of polarization is rotated through 39°. Length of tube is 30 cm. Given: Density of solution 20%.

2) A parallel beam of sodium light is allowed to be incident normally on a plane grating having 4250 lines per cm and a second order spectral line is observed to be deviated through 30°. Calculate the wavelength of spectral

d) Describe construction and working with energy diagrams of He-Ne laser.

Seat No.		Set	S

F.Y. (B.Tech.) (Sem - II) (CBCS) Examination: Oct/Nov - 2023
ENGINEERING PHYSICS (BTN10201)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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Constants: 1) Avogadro's no., N= 6.02 x 10^{26} / k.mol.
2) Velocity of light, c = 3 x 10^{8} m/sec.
3) Charge of electron, e = 1.6 x 10^{-19} C.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Sabine's formula is
a) $T = \frac{0.651\,V}{\Sigma as}$ b) $T = \frac{\Sigma as}{0.651\ \mathrm{V}}$
c) $T = \frac{0.165\,V}{\Sigma as}$ d) $T = \frac{\Sigma as}{0.165\ \mathrm{V}}$

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12) The void space for FCC structure is

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c) 26 % d) 48 %

13) The co-ordination number in case of BCC structure is

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c) 8 d) 10

14) The absorption coefficient is measured in

a) WOU b) OWU

c) m/s d) UOW

Seat No.		Set	S

F.Y. (B.Tech.) (Sem - II) (CBCS) Examination: Oct/Nov - 2023
ENGINEERING PHYSICS (BTN10201)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions, if necessary.

Section – I

Q.2 Attempt any SIX of the following. **18**

a) Explain: Plane of symmetry.

b) Derive an expression for Fermi energy in intrinsic semiconductors.

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c) Define: valence band, conduction band and forbidden energy band. Show them with neat diagram

d) State: Properties of ultrasonic waves.

e) State: Fundamental postulates of special theory of relativity.

f) Explain: Reverberation and reverberation time.

g) The volume of a hall is 475 m^3. The area of wall is 200 m^2, area of ceiling and floor each is 100 m^2. If absorption of the wall, ceiling and floor are 0.025, 0.02 and 0.55 resp. Calculate the reverberation time for the hall.

h) Copper belongs to FCC lattice. If the atomic radius of Cu is 1.278 A^0, calculate its density. The atomic mass of copper is 63.54.

Q.3 Attempt any TWO of the following: **10**

a) Explain Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H) with neat diagram.

b) Explain the term Miller indices. Derive the relation between lattice constant and interplanar spacing for cubic crystal.

$$d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

c) Slate and explain the factors affecting the architectural acoustics and their remedies.

d) i) A rocket ship is 100 m long on the ground. When it is in flight, its length is 99 m to an observer on the ground. What is its speed.
ii) Deduce Einstein's expression for mass-energy ($E = m.c^2$) equivalence.

Section – II

Q.4 Attempt any SIX of the following: **18**

a) Derive an expression for resolving power of plane diffraction grating.

b) Explain the terms:
- i) Optical activity and
- ii) Specific rotation

c) Explain in brief:
- i) Spontaneous Emission and
- ii) Stimulated Emission

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g) A fiber cable has an acceptance angle of 30° and a core index of refraction is 1.4. Calculate the refractive index of the cladding.

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Q.5 Attempt any TWO of the following. **10**

a) Obtain the expression for acceptance angle, acceptance cone, numerical aperture and fractional refractive index change of an optical fiber.

b) Describe Laurent's half shade polarimeter for the determination of specific rotation of the substance.

c) 1) Calculate specific rotation, if the plane of polarization is rotated through 39°. Length of tube is 30 cm. Given: Density of solution 20%.

2) A parallel beam of sodium light is allowed to be incident normally on a plane grating having 4250 lines per cm and a second order spectral line is observed to be deviated through 30°. Calculate the wavelength of spectral

d) Describe construction and working with energy diagrams of He-Ne laser.

Seat No.	

Set **P**

F. Y. (B.Tech.) (Sem - II) (New) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTN10202)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select correct option: **14**

1) Water is hard when it contains:
a) acid solution b) precipitate in suspension
c) dissolved sodium salts d) dissolved Ca and Mg salts

2) Water containing dissolved salts with a peculiar salty taste is called:
a) soft water b) brackish water
c) hard water d) desalinated water

3) Lubricant used in a machine working at low temperature should possess:
a) high pour point b) low flash point
c) high cloud point d) low pour point

4) Mineral oils are :
a) Very costly b) Poor in oiliness
c) Unstable d) Easily oxidized

5) Metal at the top of electrochemical series is :
a) most stable b) least active
c) most noble d) most active

6) Galvanizing is the process of coating iron with:
a) Sn b) Zn
c) Cu d) Ni

7) Highest percentage of carbon is present in :
a) high carbon steel b) wrought iron
c) cast iron d) medium carbon steel

8) Glass used extensively for making superior laboratory apparatus is :
a) soda glass b) potash glass
c) pyrex glass/ borosilicate glass d) flint glass

9) In bomb calorimeter the ignition of fuel is made with the help of
a) Cu fuse wire b) Mg fuse wire
c) Al fuse wire d) Zn fuse wire

10) The total quantity of heat liberated when unit mass (or volume) of a fuel is burnt completely is called its

a) Heat value
b) Burning value
c) Calorific value
d) Combustion value

11) GR-S rubber in an example of:

a) condensation polymerization
b) copolymerization
c) cross-linked polymerization
d) addition polymerization in which single monomer takes part

12) Which of the following is an addition polymer?

a) Bakelite
b) Nylon
c) Terylene
d) Polyethylene

13) The technique by which a mixture is separated into its constituents by a moving gas phase passing over a stationary adsorbent, is called :

a) column chromatography
b) gas chromatography
c) Spectroscopy
d) ion-exchange chromatography

14) A fuel cell is used to convert chemical energy into _____

a) Mechanical energy
b) Solar energy
c) Electrical energy
d) Potential energy

Seat No.		Set	P

F. Y. (B.Tech.) (Sem - II) (New) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTN10202)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Answer the four **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	40.15	162
$Mg(HCO_3)_2$	38.73	146
CaSO4	24.10	136
$CaCl_2$	23.90	111

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Explain Ion exchange process for softening of hard water.
c) Explain principle of Li-ion batteries.
d) Explain semisolid lubricants.
e) Define Lubricant. Explain its functions.
f) Explain factors affecting on rate of corrosion.

Q.3 Attempt any four **12**

a) Define disinfection. Explain disinfection of water by bleaching powder.
b) Define BOD. How it is determined. Explain its importance.
c) Define following terms
1) Oiliness
2) Acid value
3) Saponification value.
d) In acid value determination of a lubricating oil 8 gm of oil sample required 3.4 ml of N/10 KOH solution calculate its acid value.
e) Define corrosion. Explain mechanism of oxidation corrosion.
f) Explain prevention of corrosion by galvanizing.

Section – II

Q.4 Attempt any four **16**

a) Define alloy. Explain purpose of alloying.
b) Calculate gross and net calorific value of a coal sample of coal having C = 82%, H = 6%, O = 3%, S = 2.5%, N = 2.5% and ash = 3.4%. (Take latent heat of steam - 587 cal/g)
c) Explain construction and working of Boy's calorimeter.
d) Explain molding of plastics in to articles by following methods.
1) Injection molding
2) Extrusion molding
e) Explain properties and applications of BUNA-S rubber and PET.
f) Define TGA. Explain instrumentation of TGA. What are its applications.

Q.5 Attempt any four **12**

a) Explain composition, properties and applications of cast iron.

b) Explain the characteristics of good fuels.

c) Explain thermosoftening and thermosetting plastics.

d) Define Normality, Molality and Mole fraction.

e) Calculate Molecular weight of polyvinyl chloride having degree of polymerization 280. (Mol. Wt. of vinyl chloride = 62.5)

f) Calculate weight of $AgNO_3$ required to prepare 0.2 M 100 ml solution. (Mo. Wt. of $AgNO_3$ = 170)

Seat No.	

Set **Q**

F. Y. (B.Tech.) (Sem - II) (New) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTN10202)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select correct option: **14**

1) Glass used extensively for making superior laboratory apparatus is :
a) soda glass b) potash glass
c) pyrex glass/ borosilicate glass d) flint glass

2) In bomb calorimeter the ignition of fuel is made with the help of
a) Cu fuse wire b) Mg fuse wire
c) Al fuse wire d) Zn fuse wire

3) The total quantity of heat liberated when unit mass (or volume) of a fuel is burnt completely is called its
a) Heat value b) Burning value
c) Calorific value d) Combustion value

4) GR-S rubber in an example of:
a) condensation polymerization
b) copolymerization
c) cross-linked polymerization
d) addition polymerization in which single monomer takes part

5) Which of the following is an addition polymer?
a) Bakelite b) Nylon
c) Terylene d) Polyethylene

6) The technique by which a mixture is separated into its constituents by a moving gas phase passing over a stationary adsorbent, is called :
a) column chromatography
b) gas chromatography
c) Spectroscopy
d) ion-exchange chromatography

7) A fuel cell is used to convert chemical energy into _____
a) Mechanical energy b) Solar energy
c) Electrical energy d) Potential energy

8) Water is hard when it contains:
a) acid solution b) precipitate in suspension
c) dissolved sodium salts d) dissolved Ca and Mg salts

9) Water containing dissolved salts with a peculiar salty taste is called:

a) soft water
b) brackish water
c) hard water
d) desalinated water

10) Lubricant used in a machine working at low temperature should possess:

a) high pour point
b) low flash point
c) high cloud point
d) low pour point

11) Mineral oils are :

a) Very costly
b) Poor in oiliness
c) Unstable
d) Easily oxidized

12) Metal at the top of electrochemical series is :

a) most stable
b) least active
c) most noble
d) most active

13) Galvanizing is the process of coating iron with:

a) Sn
b) Zn
c) Cu
d) Ni

14) Highest percentage of carbon is present in :

a) high carbon steel
b) wrought iron
c) cast iron
d) medium carbon steel

Seat No.	

Set | Q

F. Y. (B.Tech.) (Sem - II) (New) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTN10202)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Answer the four **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	40.15	162
$Mg(HCO_3)_2$	38.73	146
CaSO4	24.10	136
$CaCl_2$	23.90	111

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Explain Ion exchange process for softening of hard water.
c) Explain principle of Li-ion batteries.
d) Explain semisolid lubricants.
e) Define Lubricant. Explain its functions.
f) Explain factors affecting on rate of corrosion.

Q.3 Attempt any four **12**

a) Define disinfection. Explain disinfection of water by bleaching powder.
b) Define BOD. How it is determined. Explain its importance.
c) Define following terms
1) Oiliness
2) Acid value
3) Saponification value.
d) In acid value determination of a lubricating oil 8 gm of oil sample required 3.4 ml of N/10 KOH solution calculate its acid value.
e) Define corrosion. Explain mechanism of oxidation corrosion.
f) Explain prevention of corrosion by galvanizing.

Section – II

Q.4 Attempt any four **16**

a) Define alloy. Explain purpose of alloying.
b) Calculate gross and net calorific value of a coal sample of coal having C = 82%, H = 6%, O = 3%, S = 2.5%, N = 2.5% and ash = 3.4%. (Take latent heat of steam - 587 cal/g)
c) Explain construction and working of Boy's calorimeter.
d) Explain molding of plastics in to articles by following methods.
1) Injection molding
2) Extrusion molding
e) Explain properties and applications of BUNA-S rubber and PET.
f) Define TGA. Explain instrumentation of TGA. What are its applications.

Q.5 Attempt any four **12**

a) Explain composition, properties and applications of cast iron.

b) Explain the characteristics of good fuels.

c) Explain thermosoftening and thermosetting plastics.

d) Define Normality, Molality and Mole fraction.

e) Calculate Molecular weight of polyvinyl chloride having degree of polymerization 280. (Mol. Wt. of vinyl chloride = 62.5)

f) Calculate weight of $AgNO_3$ required to prepare 0.2 M 100 ml solution. (Mo. Wt. of $AgNO_3$ = 170)

Seat No.	

Set **R**

F. Y. (B.Tech.) (Sem - II) (New) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTN10202)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select correct option: **14**

1) GR-S rubber in an example of:
a) condensation polymerization
b) copolymerization
c) cross-linked polymerization
d) addition polymerization in which single monomer takes part

2) Which of the following is an addition polymer?
a) Bakelite b) Nylon
c) Terylene d) Polyethylene

3) The technique by which a mixture is separated into its constituents by a moving gas phase passing over a stationary adsorbent, is called :
a) column chromatography
b) gas chromatography
c) Spectroscopy
d) ion-exchange chromatography

4) A fuel cell is used to convert chemical energy into _____
a) Mechanical energy b) Solar energy
c) Electrical energy d) Potential energy

5) Water is hard when it contains:
a) acid solution b) precipitate in suspension
c) dissolved sodium salts d) dissolved Ca and Mg salts

6) Water containing dissolved salts with a peculiar salty taste is called:
a) soft water b) brackish water
c) hard water d) desalinated water

7) Lubricant used in a machine working at low temperature should possess:
a) high pour point b) low flash point
c) high cloud point d) low pour point

8) Mineral oils are :
a) Very costly b) Poor in oiliness
c) Unstable d) Easily oxidized

9) Metal at the top of electrochemical series is :
a) most stable b) least active
c) most noble d) most active

10) Galvanizing is the process of coating iron with:
a) Sn b) Zn
c) Cu d) Ni

11) Highest percentage of carbon is present in :
a) high carbon steel b) wrought iron
c) cast iron d) medium carbon steel

12) Glass used extensively for making superior laboratory apparatus is :
a) soda glass b) potash glass
c) pyrex glass/ borosilicate glass d) flint glass

13) In bomb calorimeter the ignition of fuel is made with the help of
a) Cu fuse wire b) Mg fuse wire
c) Al fuse wire d) Zn fuse wire

14) The total quantity of heat liberated when unit mass (or volume) of a fuel is burnt completely is called its
a) Heat value b) Burning value
c) Calorific value d) Combustion value

Seat No.	

Set **R**

F. Y. (B.Tech.) (Sem - II) (New) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTN10202)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Answer the four **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	40.15	162
$Mg(HCO_3)_2$	38.73	146
CaSO4	24.10	136
$CaCl_2$	23.90	111

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Explain Ion exchange process for softening of hard water.
c) Explain principle of Li-ion batteries.
d) Explain semisolid lubricants.
e) Define Lubricant. Explain its functions.
f) Explain factors affecting on rate of corrosion.

Q.3 Attempt any four **12**

a) Define disinfection. Explain disinfection of water by bleaching powder.
b) Define BOD. How it is determined. Explain its importance.
c) Define following terms
1) Oiliness
2) Acid value
3) Saponification value.
d) In acid value determination of a lubricating oil 8 gm of oil sample required 3.4 ml of N/10 KOH solution calculate its acid value.
e) Define corrosion. Explain mechanism of oxidation corrosion.
f) Explain prevention of corrosion by galvanizing.

Section – II

Q.4 Attempt any four **16**

a) Define alloy. Explain purpose of alloying.
b) Calculate gross and net calorific value of a coal sample of coal having C = 82%, H = 6%, O = 3%, S = 2.5%, N = 2.5% and ash = 3.4%. (Take latent heat of steam - 587 cal/g)
c) Explain construction and working of Boy's calorimeter.
d) Explain molding of plastics in to articles by following methods.
1) Injection molding
2) Extrusion molding
e) Explain properties and applications of BUNA-S rubber and PET.
f) Define TGA. Explain instrumentation of TGA. What are its applications.

Q.5 Attempt any four **12**

a) Explain composition, properties and applications of cast iron.

b) Explain the characteristics of good fuels.

c) Explain thermosoftening and thermosetting plastics.

d) Define Normality, Molality and Mole fraction.

e) Calculate Molecular weight of polyvinyl chloride having degree of polymerization 280. (Mol. Wt. of vinyl chloride = 62.5)

f) Calculate weight of $AgNO_3$ required to prepare 0.2 M 100 ml solution. (Mo. Wt. of $AgNO_3$ = 170)

Seat No.		Set	S

F. Y. (B.Tech.) (Sem - II) (New) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTN10202)

Day & Date: Monday, 01-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select correct option: **14**

1) Galvanizing is the process of coating iron with:
a) Sn b) Zn
c) Cu d) Ni

2) Highest percentage of carbon is present in :
a) high carbon steel b) wrought iron
c) cast iron d) medium carbon steel

3) Glass used extensively for making superior laboratory apparatus is :
a) soda glass b) potash glass
c) pyrex glass/ borosilicate glass d) flint glass

4) In bomb calorimeter the ignition of fuel is made with the help of
a) Cu fuse wire b) Mg fuse wire
c) Al fuse wire d) Zn fuse wire

5) The total quantity of heat liberated when unit mass (or volume) of a fuel is burnt completely is called its
a) Heat value b) Burning value
c) Calorific value d) Combustion value

6) GR-S rubber in an example of:
a) condensation polymerization
b) copolymerization
c) cross-linked polymerization
d) addition polymerization in which single monomer takes part

7) Which of the following is an addition polymer?
a) Bakelite b) Nylon
c) Terylene d) Polyethylene

8) The technique by which a mixture is separated into its constituents by a moving gas phase passing over a stationary adsorbent, is called :
a) column chromatography
b) gas chromatography
c) Spectroscopy
d) ion-exchange chromatography

9) A fuel cell is used to convert chemical energy into _____

a) Mechanical energy b) Solar energy
c) Electrical energy d) Potential energy

10) Water is hard when it contains:

a) acid solution b) precipitate in suspension
c) dissolved sodium salts d) dissolved Ca and Mg salts

11) Water containing dissolved salts with a peculiar salty taste is called:

a) soft water b) brackish water
c) hard water d) desalinated water

12) Lubricant used in a machine working at low temperature should possess:

a) high pour point b) low flash point
c) high cloud point d) low pour point

13) Mineral oils are :

a) Very costly b) Poor in oiliness
c) Unstable d) Easily oxidized

14) Metal at the top of electrochemical series is :

a) most stable b) least active
c) most noble d) most active

Seat No.	

Set | S

F. Y. (B.Tech.) (Sem - II) (New) Examination: Oct/Nov-2023
ENGINEERING CHEMISTRY (BTN10202)

Day & Date: Monday, 01-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Answer the four **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	40.15	162
$Mg(HCO_3)_2$	38.73	146
CaSO4	24.10	136
$CaCl_2$	23.90	111

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Explain Ion exchange process for softening of hard water.
c) Explain principle of Li-ion batteries.
d) Explain semisolid lubricants.
e) Define Lubricant. Explain its functions.
f) Explain factors affecting on rate of corrosion.

Q.3 Attempt any four **12**

a) Define disinfection. Explain disinfection of water by bleaching powder.
b) Define BOD. How it is determined. Explain its importance.
c) Define following terms
1) Oiliness
2) Acid value
3) Saponification value.
d) In acid value determination of a lubricating oil 8 gm of oil sample required 3.4 ml of N/10 KOH solution calculate its acid value.
e) Define corrosion. Explain mechanism of oxidation corrosion.
f) Explain prevention of corrosion by galvanizing.

Section – II

Q.4 Attempt any four **16**

a) Define alloy. Explain purpose of alloying.
b) Calculate gross and net calorific value of a coal sample of coal having C = 82%, H = 6%, O = 3%, S = 2.5%, N = 2.5% and ash = 3.4%. (Take latent heat of steam - 587 cal/g)
c) Explain construction and working of Boy's calorimeter.
d) Explain molding of plastics in to articles by following methods.
1) Injection molding
2) Extrusion molding
e) Explain properties and applications of BUNA-S rubber and PET.
f) Define TGA. Explain instrumentation of TGA. What are its applications.

Q.5 Attempt any four **12**

a) Explain composition, properties and applications of cast iron.

b) Explain the characteristics of good fuels.

c) Explain thermosoftening and thermosetting plastics.

d) Define Normality, Molality and Mole fraction.

e) Calculate Molecular weight of polyvinyl chloride having degree of polymerization 280. (Mol. Wt. of vinyl chloride = 62.5)

f) Calculate weight of $AgNO_3$ required to prepare 0.2 M 100 ml solution. (Mo. Wt. of $AgNO_3$ = 170)

SLR-GF-718

Seat No.	

Set P

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Surveying & Geomatics (BTN01301)

Day & Date: Thursday,18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

Multiple Choice Questions / Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options.

1) What is Surveying?
a) Surveying is used to find the elevations of given points with respect to given or assumed datum
b) Surveying shows the relative positions of the objects on the surface of the earth
c) Surveying is to find the elevation of points having the same contour interval
d) All of the mentioned

2) Which of the following is the first principle of surveying?
a) Whole to whole b) Part to part
c) Part to whole d) Whole to part

3) In which of the following type of surveying only linear measurements are made?
a) Dumpy level b) Theodolite surveying
c) Chain surveying d) Contouring

4) Which of the following is an indirect method of surveying?
a) Contouring b) Chain surveying
c) Tacheometry d) All of the mentioned

5) Which of the following is having the same principle as that of photo-theodolite?
a) Theodolite surveying b) Plane-table surveying
c) Traverse surveying d) Compass surveying

6) Two contour lines of different elevations unite to form one line only in the case of _____.
a) Hills b) Vertical cliff
c) Horizontal cliff d) Overhanging Cliff

7) A series of straight parallel and equally spaced contours represent _____
a) Hills b) Ponds
c) Plane surface d) Desert

8) Which of the following cannot be done with the help of theodolite in surveying?
a) Laying off horizontal angles
b) Locating points on lines
c) Prolonging survey lines
d) Measuring horizontal distances

9) The distance in EDM is measured by _____
a) Frequency of the wave
b) Wave length
c) Phase difference
d) Amplitude

10) Which of the following can be affected by atmospheric path disturbances?
a) Modern GPS surveying
b) Conventional GPS
c) Absolute positioning
d) Resection method

11) GIS uses the information from which of the following sources?
a) Non- spatial information system
b) Spatial information system
c) Global information system
d) Position information system

12) The relation between velocity, wavelength and frequency can be given as _____
a) $\lambda = c \,/\, r$
b) $\lambda = c/f$
c) $\lambda = c/h$
d) $\lambda = h^{*}c/f$

13) Among the following, which describes Stefan- Boltzmann formula?
a) $M = \sigma/T^4$
b) $M = \sigma -/T^4$
c) $M = \sigma +/T^4$
d) $M = \sigma */T^4$

14) Flying height in Aerial Photogrammetry refers to _____.
a) Upper portion of the exposure station
b) Bottom of the exposure station
c) Depression of the exposure station
d) Elevation of the exposure station

SLR-GF-718

Seat No.		Set	P

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Surveying & Geomatics (BTN01301)

Day & Date: Thursday,18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Assume any suitable data wherever necessary.
2) Q.2 & Q.6 are Compulsory.
3) Solve any two questions out of Q.no. 3, 4 and 5 in section - I.
4) Solve any two questions out of Q.no. 7, 8 and 9 in Section - II.
5) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Elaborate the characteristics of Contour. **05**
b) Discuss the temporary and permanent adjustments in levelling. **05**

Q.3 **a)** Describe direct method of contouring. **04**
b) With a neat diagram explain repetition method in theodolite. **05**

Q.4 **a)** Discuss the procedure for Area Measurement using a Total Station. **05**
b) With the help of a diagram, explain the working of digital level. **04**

Q.5 **Define: (Any Three)** **09**
a) Face left observations
b) Stake out in Total Station.
c) Transiting the telescope
d) Phase difference.

Section – II

Q.6 **a)** Differentiate between Digitizer and Scanner. **05**
b) Classify the types of Remote sensing. **05**

Q.7 **a)** What are the major Software components of GIS? **04**
b) With the help diagram, explain the process of satellite remote sensing. **05**

Q.8 **Explain the Project Survey for**
a) Canal **04**
b) Bridge **05**

Q.9 **Define: (Any Three)** **09**
a) Components of GPS
b) Flight Planning
c) Electromagnetic Wave
d) Types of Platforms in Remote Sensing.

Seat No.	

Set **Q**

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Surveying & Geomatics (BTN01301)

Day & Date: Thursday,18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

Multiple Choice Questions / Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options.

1) Which of the following cannot be done with the help of theodolite in surveying?
a) Laying off horizontal angles b) Locating points on lines
c) Prolonging survey lines d) Measuring horizontal distances

2) The distance in EDM is measured by _____
a) Frequency of the wave b) Wave length
c) Phase difference d) Amplitude

3) Which of the following can be affected by atmospheric path disturbances?
a) Modern GPS surveying b) Conventional GPS
c) Absolute positioning d) Resection method

4) GIS uses the information from which of the following sources?
a) Non- spatial information system
b) Spatial information system
c) Global information system
d) Position information system

5) The relation between velocity, wavelength and frequency can be given as _____
a) $\lambda = c\ /\ r$ b) $\lambda = c/f$
c) $\lambda = c/h$ d) $\lambda = h^{*}c/f$

6) Among the following, which describes Stefan- Boltzmann formula?
a) $M = \sigma/T^4$ b) $M = \sigma\ -/T^4$
c) $M = \sigma\ +/T^4$ d) $M = \sigma\ */T^4$

7) Flying height in Aerial Photogrammetry refers to _____.
a) Upper portion of the exposure station
b) Bottom of the exposure station
c) Depression of the exposure station
d) Elevation of the exposure station

8) What is Surveying?
a) Surveying is used to find the elevations of given points with respect to given or assumed datum
b) Surveying shows the relative positions of the objects on the surface of the earth
c) Surveying is to find the elevation of points having the same contour interval
d) All of the mentioned

9) Which of the following is the first principle of surveying?
a) Whole to whole
b) Part to part
c) Part to whole
d) Whole to part

10) In which of the following type of surveying only linear measurements are made?
a) Dumpy level
b) Theodolite surveying
c) Chain surveying
d) Contouring

11) Which of the following is an indirect method of surveying?
a) Contouring
b) Chain surveying
c) Tacheometry
d) All of the mentioned

12) Which of the following is having the same principle as that of photo-theodolite?
a) Theodolite surveying
b) Plane-table surveying
c) Traverse surveying
d) Compass surveying

13) Two contour lines of different elevations unite to form one line only in the case of _____.
a) Hills
b) Vertical cliff
c) Horizontal cliff
d) Overhanging Cliff

14) A series of straight parallel and equally spaced contours represent _____
a) Hills
b) Ponds
c) Plane surface
d) Desert

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Seat No.		Set	Q

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Surveying & Geomatics (BTN01301)

Day & Date: Thursday,18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Assume any suitable data wherever necessary.
2) Q.2 & Q.6 are Compulsory.
3) Solve any two questions out of Q.no. 3, 4 and 5 in section - I.
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Section – I

Q.2 **a)** Elaborate the characteristics of Contour. **05**
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Q.5 **Define: (Any Three)** **09**
a) Face left observations
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Section – II

Q.6 **a)** Differentiate between Digitizer and Scanner. **05**
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Q.7 **a)** What are the major Software components of GIS? **04**
b) With the help diagram, explain the process of satellite remote sensing. **05**

Q.8 **Explain the Project Survey for**
a) Canal **04**
b) Bridge **05**

Q.9 **Define: (Any Three)** **09**
a) Components of GPS
b) Flight Planning
c) Electromagnetic Wave
d) Types of Platforms in Remote Sensing.

Seat No.	

Set **R**

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Surveying & Geomatics (BTN01301)

Day & Date: Thursday,18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

Multiple Choice Questions / Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options.

1) GIS uses the information from which of the following sources?
a) Non- spatial information system
b) Spatial information system
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d) Position information system

2) The relation between velocity, wavelength and frequency can be given as _____
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9) Which of the following is having the same principle as that of photo-theodolite?
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a) Hills
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a) Hills
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13) The distance in EDM is measured by _____
a) Frequency of the wave
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c) Phase difference
d) Amplitude

14) Which of the following can be affected by atmospheric path disturbances?
a) Modern GPS surveying
b) Conventional GPS
c) Absolute positioning
d) Resection method

SLR-GF-718

Seat No.	

Set R

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Surveying & Geomatics (BTN01301)

Day & Date: Thursday,18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Assume any suitable data wherever necessary.
2) Q.2 & Q.6 are Compulsory.
3) Solve any two questions out of Q.no. 3, 4 and 5 in section - I.
4) Solve any two questions out of Q.no. 7, 8 and 9 in Section - II.
5) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Elaborate the characteristics of Contour. **05**
b) Discuss the temporary and permanent adjustments in levelling. **05**

Q.3 **a)** Describe direct method of contouring. **04**
b) With a neat diagram explain repetition method in theodolite. **05**

Q.4 **a)** Discuss the procedure for Area Measurement using a Total Station. **05**
b) With the help of a diagram, explain the working of digital level. **04**

Q.5 **Define: (Any Three)** **09**
a) Face left observations
b) Stake out in Total Station.
c) Transiting the telescope
d) Phase difference.

Section – II

Q.6 **a)** Differentiate between Digitizer and Scanner. **05**
b) Classify the types of Remote sensing. **05**

Q.7 **a)** What are the major Software components of GIS? **04**
b) With the help diagram, explain the process of satellite remote sensing. **05**

Q.8 **Explain the Project Survey for**
a) Canal **04**
b) Bridge **05**

Q.9 **Define: (Any Three)** **09**
a) Components of GPS
b) Flight Planning
c) Electromagnetic Wave
d) Types of Platforms in Remote Sensing.

Seat No.	

Set **S**

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Surveying & Geomatics (BTN01301)

Day & Date: Thursday,18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

Multiple Choice Questions / Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options.

1) Two contour lines of different elevations unite to form one line only in the case of _____.
a) Hills b) Vertical cliff
c) Horizontal cliff d) Overhanging Cliff

2) A series of straight parallel and equally spaced contours represent _____
a) Hills b) Ponds
c) Plane surface d) Desert

3) Which of the following cannot be done with the help of theodolite in surveying?
a) Laying off horizontal angles b) Locating points on lines
c) Prolonging survey lines d) Measuring horizontal distances

4) The distance in EDM is measured by _____
a) Frequency of the wave b) Wave length
c) Phase difference d) Amplitude

5) Which of the following can be affected by atmospheric path disturbances?
a) Modern GPS surveying b) Conventional GPS
c) Absolute positioning d) Resection method

6) GIS uses the information from which of the following sources?
a) Non- spatial information system
b) Spatial information system
c) Global information system
d) Position information system

7) The relation between velocity, wavelength and frequency can be given as _____
a) $\lambda = c\ /\ r$ b) $\lambda = c/f$
c) $\lambda = c/h$ d) $\lambda = h^{*}c/f$

8) Among the following, which describes Stefan- Boltzmann formula?
a) $M = \sigma/T^4$ b) $M = \sigma\ -/T^4$
c) $M = \sigma\ +/T^4$ d) $M = \sigma\ */T^4$

9) Flying height in Aerial Photogrammetry refers to _____.
a) Upper portion of the exposure station
b) Bottom of the exposure station
c) Depression of the exposure station
d) Elevation of the exposure station

10) What is Surveying?
a) Surveying is used to find the elevations of given points with respect to given or assumed datum
b) Surveying shows the relative positions of the objects on the surface of the earth
c) Surveying is to find the elevation of points having the same contour interval
d) All of the mentioned

11) Which of the following is the first principle of surveying?
a) Whole to whole
b) Part to part
c) Part to whole
d) Whole to part

12) In which of the following type of surveying only linear measurements are made?
a) Dumpy level
b) Theodolite surveying
c) Chain surveying
d) Contouring

13) Which of the following is an indirect method of surveying?
a) Contouring
b) Chain surveying
c) Tacheometry
d) All of the mentioned

14) Which of the following is having the same principle as that of photo-theodolite?
a) Theodolite surveying
b) Plane-table surveying
c) Traverse surveying
d) Compass surveying

SLR-GF-718

Seat No.		Set	S

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Surveying & Geomatics (BTN01301)

Day & Date: Thursday,18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Assume any suitable data wherever necessary.
2) Q.2 & Q.6 are Compulsory.
3) Solve any two questions out of Q.no. 3, 4 and 5 in section - I.
4) Solve any two questions out of Q.no. 7, 8 and 9 in Section - II.
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Section – I

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b) Discuss the temporary and permanent adjustments in levelling. **05**

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b) With the help of a diagram, explain the working of digital level. **04**

Q.5 **Define: (Any Three)** **09**
a) Face left observations
b) Stake out in Total Station.
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d) Phase difference.

Section – II

Q.6 **a)** Differentiate between Digitizer and Scanner. **05**
b) Classify the types of Remote sensing. **05**

Q.7 **a)** What are the major Software components of GIS? **04**
b) With the help diagram, explain the process of satellite remote sensing. **05**

Q.8 **Explain the Project Survey for**
a) Canal **04**
b) Bridge **05**

Q.9 **Define: (Any Three)** **09**
a) Components of GPS
b) Flight Planning
c) Electromagnetic Wave
d) Types of Platforms in Remote Sensing.

SLR-GF-719

Seat No.		Set	P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/NOv-2023
Civil Engineering
Fluid Mechanics and Fluid Machines (BTN01302)

Day & Date: Saturday 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The Viscosity of the gas _____ with increase in temperature.
a) Decreases
b) Increases
c) First increases and then decreases
d) First decreases and then increases

2) Surface Tension is caused by the force of _____ at the free surface.
a) Cohesion b) Adhesion
c) Both a and b d) None of the above

3) The pressure of a liquid on a surface always acts _____ to the surface.
a) Parallel b) Normal
c) 45° d) 60°

4) Floating body will be in stable equilibrium when _____
a) M is above G b) M is below G
c) B is above G d) B is below G
where M is Meta-Centre and G is Centre of Gravity B is Centre of Buoyancy

5) A line that is everywhere tangent to the velocity field is _____
a) path line b) streamline
c) streak line d) flow line

6) The included angle of convergent section of Venturimeter is _____ that of divergent section.
a) is equal to b) is more than
c) is less than d) none of the above

7) An error of 1% in measuring Head will produce _____ error in discharge over a triangular notch or weir.
a) 1% b) 1.5%
c) 2% d) 2.5%

8) The shear stress distribution in laminar flow through a pipe follows law.
a) Parabolic b) Logarithmic
c) Linear d) Exponential

9) When the pipes are connected in parallel, the total loss of head ____
a) is equal to the sum of the loss of head in each pipe
b) is same as in each pipe
c) is equal to the reciprocal of the sum of loss of head in each pipe
d) None of the above

10) The pressure at the summit of Syphon should be _____
a) Positive b) Negative
c) Atmospheric d) Can't be said

11) The square root of the ratio of inertia force to pressure force is known as ___.
a) Reynolds number b) Froude number
c) Euler number d) Mach number

12) The force exerted by jet of water on a stationary inclined plate in the normal direction of plate is given by _____.
a) $\rho aV\sin\theta$ b) $\rho aV^2\sin\theta$
c) $\rho aV^2\sin^2\theta$ d) $\rho aV^3\sin\theta$

13) Which of the following turbines is not the reaction turbine?
a) Kaplan b) Propeller
c) Francis d) Pelton wheel

14) In a centrifugal pump the sum of suction head and delivery head is known as _____.
a) manometric head b) static head
c) dynamic head d) total head

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/NOv-2023
Civil Engineering
Fluid Mechanics and Fluid Machines (BTN01302)

Day & Date: Saturday 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 8 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 6, 7 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and state it clearly.

Section – I

Q.2 **a)** Define the following terms: **05**
i) Viscosity
ii) Surface tension
iii) Capillarity
iv) Compressibility
v) Vapour Pressure

b) A rectangular plate 1.2m X 0.4m, weighing 970 N slides down a 45° inclined surface at a uniform velocity of 2.25 m/s. If 2mm gap between the plate and inclined surface is filled with oil, determine the viscosity of oil. **04**

Q.3 **a)** State and prove Hydrostatic law. **05**

b) A flat rectangular plate 1m wide 2m long is immersed in water. The shorter side parallel to water surface of 0.5m below it. Longer side is inclined at 60° to the vertical. Calculate magnitude, direction and location of force acting upon one side of plate due to water pressure. **05**

Q.4 **a)** Derive the expression for the theoretical discharge through venture meter with neat sketch. **05**

b) Water is flowing through a pipe having diameter 300mm and 200mm at the bottom and upper end respectively. The intensity of pressure at bottom end is 24.525 N/cm^2 and pressure at upper end is 9.81 N/m^2. Determine the difference in datum head if rate of flow through pipe is 40 lps. **04**

Q.5 **a)** Show that for triangular notch 1% of error in measurement of head causes 2.5% error in measurement of discharge. **04**

b) Water is flowing in a rectangular channel of 1m wide and 0.75m deep. Find the discharge over a rectangular weir of crest length 60cm, if the head of water over the crest of weir is 20cm and water from channel flows over the weir. Take Cd=0.62, neglect end contraction. Consider velocity of Approach. **05**

Section – II

Q.6 **a)** Derive Darcy Weisbach equation for head loss due to friction in pipes flow. Draw the sketch. **05**

b) A compound piping system consist of 1800 in long pipe of 0.5 m diameter. 1200 m long pipe of 0.4 m diameter and 600 m long pipe of 0.3 m diameter connected in series. Convert the system to **04**

i) An equivalent length of 0.4 m diameter pipe
ii) Equivalent size pipe 3600 m long.

Q.7 **a)** Write the important points to be considered while selecting the repeating variables in Buckingham's π theorem. **04**

b) The resistance R experienced by a partially submerged body depends upon the velocity V, length of the body l, viscosity of the fluid μ. density of the fluid ρ and gravitational acceleration g. Obtain a dimensionless expression for R. **05**

Q.8 **a)** Derive an expression for specific speed of turbine. **05**

b) A jet of water of diameter 10cm strikes a flat plate normally with a velocity of 15 m/s. The plate is moving with a velocity of 6m/s in the direction of jet. Find: **05**

i) The force on the plate
ii) The work done by jet per second and
iii) Power of jet
iv) The efficiency of jet

Q.9 **a)** Draw neat sketch of centrifugal pump and explain function of any three Components. **04**

b) A centrifugal pump is to discharge 0.118 m^3/s at a speed of 1450 rpm against a head of 25m. The impeller diameter is 250 mm and the width at outlet is 50 mm and manometric efficiency is 75%. Determine vane angle at outer periphery of the impeller. **05**

Seat No.		Set	Q

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/NOv-2023
Civil Engineering
Fluid Mechanics and Fluid Machines (BTN01302)

Day & Date: Saturday 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The shear stress distribution in laminar flow through a pipe follows law.
a) Parabolic b) Logarithmic
c) Linear d) Exponential

2) When the pipes are connected in parallel, the total loss of head ____
a) is equal to the sum of the loss of head in each pipe
b) is same as in each pipe
c) is equal to the reciprocal of the sum of loss of head in each pipe
d) None of the above

3) The pressure at the summit of Syphon should be _____
a) Positive b) Negative
c) Atmospheric d) Can't be said

4) The square root of the ratio of inertia force to pressure force is known as ___.
a) Reynolds number b) Froude number
c) Euler number d) Mach number

5) The force exerted by jet of water on a stationary inclined plate in the normal direction of plate is given by _____.
a) $\rho aV\sin\theta$ b) $\rho aV^2\sin\theta$
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6) Which of the following turbines is not the reaction turbine?
a) Kaplan b) Propeller
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c) Both a and b d) None of the above

10) The pressure of a liquid on a surface always acts _____ to the surface.
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c) 45° d) 60°

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where M is Meta-Centre and G is Centre of Gravity B is Centre of Buoyancy

12) A line that is everywhere tangent to the velocity field is _____
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14) An error of 1% in measuring Head will produce _____ error in discharge over a triangular notch or weir.
a) 1% b) 1.5%
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Seat No.	

Set | Q

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/NOv-2023
Civil Engineering
Fluid Mechanics and Fluid Machines (BTN01302)

Day & Date: Saturday 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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Section – I

Q.2 **a)** Define the following terms: **05**
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ii) Surface tension
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b) A rectangular plate 1.2m X 0.4m, weighing 970 N slides down a 45° inclined surface at a uniform velocity of 2.25 m/s. If 2mm gap between the plate and inclined surface is filled with oil, determine the viscosity of oil. **04**

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b) A flat rectangular plate 1m wide 2m long is immersed in water. The shorter side parallel to water surface of 0.5m below it. Longer side is inclined at 60° to the vertical. Calculate magnitude, direction and location of force acting upon one side of plate due to water pressure. **05**

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b) Water is flowing through a pipe having diameter 300mm and 200mm at the bottom and upper end respectively. The intensity of pressure at bottom end is 24.525 N/cm^2 and pressure at upper end is 9.81 N/m^2. Determine the difference in datum head if rate of flow through pipe is 40 lps. **04**

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Q.6 **a)** Derive Darcy Weisbach equation for head loss due to friction in pipes flow. Draw the sketch. **05**

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b) A jet of water of diameter 10cm strikes a flat plate normally with a velocity of 15 m/s. The plate is moving with a velocity of 6m/s in the direction of jet. Find: **05**

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Seat No.		Set	R

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/NOv-2023
Civil Engineering
Fluid Mechanics and Fluid Machines (BTN01302)

Day & Date: Saturday 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The square root of the ratio of inertia force to pressure force is known as ___.
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a) Positive b) Negative
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Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/NOv-2023
Civil Engineering
Fluid Mechanics and Fluid Machines (BTN01302)

Day & Date: Saturday 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
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Section – I

Q.2 **a)** Define the following terms: **05**
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b) A centrifugal pump is to discharge 0.118 m^3/s at a speed of 1450 rpm against a head of 25m. The impeller diameter is 250 mm and the width at outlet is 50 mm and manometric efficiency is 75%. Determine vane angle at outer periphery of the impeller. **05**

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/NOv-2023
Civil Engineering
Fluid Mechanics and Fluid Machines (BTN01302)

Day & Date: Saturday 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The included angle of convergent section of Venturimeter is _____ that of divergent section.
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c) is less than d) none of the above

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a) Parabolic b) Logarithmic
c) Linear d) Exponential

4) When the pipes are connected in parallel, the total loss of head ____
a) is equal to the sum of the loss of head in each pipe
b) is same as in each pipe
c) is equal to the reciprocal of the sum of loss of head in each pipe
d) None of the above

5) The pressure at the summit of Syphon should be _____
a) Positive b) Negative
c) Atmospheric d) Can't be said

6) The square root of the ratio of inertia force to pressure force is known as ___.
a) Reynolds number b) Froude number
c) Euler number d) Mach number

7) The force exerted by jet of water on a stationary inclined plate in the normal direction of plate is given by _____.
a) $\rho aV\sin\theta$ b) $\rho aV^2\sin\theta$
c) $\rho aV^2\sin^2\theta$ d) $\rho aV^3\sin\theta$

8) Which of the following turbines is not the reaction turbine?
a) Kaplan b) Propeller
c) Francis d) Pelton wheel

9) In a centrifugal pump the sum of suction head and delivery head is known as _____.

a) manometric head b) static head
c) dynamic head d) total head

10) The Viscosity of the gas _____ with increase in temperature.

a) Decreases
b) Increases
c) First increases and then decreases
d) First decreases and then increases

11) Surface Tension is caused by the force of _____ at the free surface.

a) Cohesion b) Adhesion
c) Both a and b d) None of the above

12) The pressure of a liquid on a surface always acts _____ to the surface.

a) Parallel b) Normal
c) 45° d) 60°

13) Floating body will be in stable equilibrium when _____

a) M is above G b) M is below G
c) B is above G d) B is below G

where M is Meta-Centre and G is Centre of Gravity B is Centre of Buoyancy

14) A line that is everywhere tangent to the velocity field is _____

a) path line b) streamline
c) streak line d) flow line

Seat No.	

Set | S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/NOv-2023
Civil Engineering
Fluid Mechanics and Fluid Machines (BTN01302)

Day & Date: Saturday 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 3 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 2, 4 & 5)
2) Question no. 8 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 6, 7 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and state it clearly.

Section – I

Q.2 **a)** Define the following terms: **05**
i) Viscosity
ii) Surface tension
iii) Capillarity
iv) Compressibility
v) Vapour Pressure

b) A rectangular plate 1.2m X 0.4m, weighing 970 N slides down a 45° inclined surface at a uniform velocity of 2.25 m/s. If 2mm gap between the plate and inclined surface is filled with oil, determine the viscosity of oil. **04**

Q.3 **a)** State and prove Hydrostatic law. **05**

b) A flat rectangular plate 1m wide 2m long is immersed in water. The shorter side parallel to water surface of 0.5m below it. Longer side is inclined at 60° to the vertical. Calculate magnitude, direction and location of force acting upon one side of plate due to water pressure. **05**

Q.4 **a)** Derive the expression for the theoretical discharge through venture meter with neat sketch. **05**

b) Water is flowing through a pipe having diameter 300mm and 200mm at the bottom and upper end respectively. The intensity of pressure at bottom end is 24.525 N/cm^2 and pressure at upper end is 9.81 N/m^2. Determine the difference in datum head if rate of flow through pipe is 40 lps. **04**

Q.5 **a)** Show that for triangular notch 1% of error in measurement of head causes 2.5% error in measurement of discharge. **04**

b) Water is flowing in a rectangular channel of 1m wide and 0.75m deep. Find the discharge over a rectangular weir of crest length 60cm, if the head of water over the crest of weir is 20cm and water from channel flows over the weir. Take Cd=0.62, neglect end contraction. Consider velocity of Approach. **05**

Section – II

Q.6 **a)** Derive Darcy Weisbach equation for head loss due to friction in pipes flow. Draw the sketch. **05**

b) A compound piping system consist of 1800 in long pipe of 0.5 m diameter. 1200 m long pipe of 0.4 m diameter and 600 m long pipe of 0.3 m diameter connected in series. Convert the system to **04**

i) An equivalent length of 0.4 m diameter pipe
ii) Equivalent size pipe 3600 m long.

Q.7 **a)** Write the important points to be considered while selecting the repeating variables in Buckingham's π theorem. **04**

b) The resistance R experienced by a partially submerged body depends upon the velocity V, length of the body l, viscosity of the fluid μ. density of the fluid ρ and gravitational acceleration g. Obtain a dimensionless expression for R. **05**

Q.8 **a)** Derive an expression for specific speed of turbine. **05**

b) A jet of water of diameter 10cm strikes a flat plate normally with a velocity of 15 m/s. The plate is moving with a velocity of 6m/s in the direction of jet. Find: **05**

i) The force on the plate
ii) The work done by jet per second and
iii) Power of jet
iv) The efficiency of jet

Q.9 **a)** Draw neat sketch of centrifugal pump and explain function of any three Components. **04**

b) A centrifugal pump is to discharge 0.118 m^3/s at a speed of 1450 rpm against a head of 25m. The impeller diameter is 250 mm and the width at outlet is 50 mm and manometric efficiency is 75%. Determine vane angle at outer periphery of the impeller. **05**

SLR-GF-720

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Concrete Technology, Material Testing & Evaluation (BTN01303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.
5) Draw neat sketches wherever necessary.
6) Supplements will not be provided.
7) Use of nonprogrammable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions. **14**

1) Which chemical composition has highest content in OPC?
a) Alumina b) Silica
c) Lime d) Iron Oxide

2) While cooling down of clinker in cement manufacturing process, it is brought to about 500°C in about _____ minutes and from the 500°C the temperature is brought down to normal atmospheric temperature in about _____ minutes.
a) 15, 10 b) 10, 10
c) 20, 15 d) 5, 10

3) The quality of paste in the transition zone is of _____ quality.
a) rich b) poorer
c) standard d) mediocre

4) A total _____ per cent of water by weight of cement is required for the complete chemical reactions and to occupy the space within gel-pores.
a) 15 b) 23
c) 35 d) 38

5) In rapid hardening cement, the rapid rate of development of strength is attributed to the _____ fineness of grinding.
a) lower b) higher
c) medium d) none

6) The unsoundness in cement is due to the presence of _____ than that could be combined with acidic oxide at the kiln.
a) excess of sulfur b) excess of gypsum
c) excess of silica d) excess of lime

7) Use of right quality fly ash, results in _____ of water demand for desired Slump.

a) increase b) retention
c) reduction d) none

8) _____ can be defined as “the time-dependent” part of the strain resulting from stress.

a) carbonation b) shrinkage
c) creeped d) All of these

9) Compacting factor test is used for _____ concrete.

a) Highly workable b) Stiff
c) Both a and b d) None

10) Cement content not including fly ash and ground granulated blast furnace slag in excess of _____ kg/m^3 should not be used in concrete mix.

a) 300 b) 350
c) 400 d) 450

11) Target mean strength of M 20 concrete is, _____.

a) 20 b) 25.6
c) 26.6 d) 31.60

12) Density of the normal concrete is in the order of _____ kN/m^3

a) 15 to 20 b) 20 to 22
c) 22 to 26 d) 27 to 30

13) _____ concrete is made up of only coarse aggregate, cement and water.

a) Self -compacting b) Fiber reinforced
c) Light weight d) No fines

14) The phenomenon of slow growth of strain under a steady tensile stress is called _____.

a) Yielding b) Creeping
c) Breaking d) None of the mentioned

Seat No.		Set	P

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Concrete Technology, Material Testing & Evaluation (BTN01303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Draw neat sketches wherever necessary.
5) Supplements will not be provided.
6) Use of non-programmable calculator is permitted.

Section – I

Q.2 Attempt any Four **16**

a) What is the chemical composition of Cement with its signification?
b) Explain the manufacturing process of Cement by Wet Process with flow chart construction.
c) What are Bogue's compounds? State their influence on cement strength.
d) Which are the factors affecting workability of concrete? Give the normal values of slump for different workability ranges as specified by I.S. 456 – 2000.
e) Differentiate between "Segregation and Bleeding".

Q.3 Attempt any Two **12**

a) Write a note on bulking of Sand.
b) Write a brief note on Retarders and retarding admixtures and Accelerators and Accelerating Admixture.
c) What are different curing methods used? Explain with neat sketches.

Section – II

Q.4 Attempt any Four

a) What is Maturity concept and gel space ratio? **16**
b) Distinguish between creep and shrinkage of concrete.
c) Which are the durability requirements of concrete as per I.S. 456-2000?
d) What is In-situ testing of concrete? How is rebound hammer test performed?
e) What is Fibre reinforced concrete? Give types of fibres used in concrete.

Q.5 Attempt any Two **12**

a) Elaborate on steps followed in performing concrete mix design as per I.S. Method.
b) Write a note sulphate and chloride attack on concrete.
c) Explain is "High Strength Concrete and High-Performance Concrete". Discuss their advantages and disadvantages.

SLR-GF-720

Seat No.	

Set Q

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Concrete Technology, Material Testing & Evaluation (BTN01303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.
5) Draw neat sketches wherever necessary.
6) Supplements will not be provided.
7) Use of nonprogrammable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions. **14**

1) _____ can be defined as "the time-dependent" part of the strain resulting from stress.
a) carbonation b) shrinkage
c) creeped d) All of these

2) Compacting factor test is used for _____ concrete.
a) Highly workable b) Stiff
c) Both a and b d) None

3) Cement content not including fly ash and ground granulated blast furnace slag in excess of _____ kg/m^3 should not be used in concrete mix.
a) 300 b) 350
c) 400 d) 450

4) Target mean strength of M 20 concrete is, _____.
a) 20 b) 25.6
c) 26.6 d) 31.60

5) Density of the normal concrete is in the order of _____ kN/m^3
a) 15 to 20 b) 20 to 22
c) 22 to 26 d) 27 to 30

6) _____ concrete is made up of only coarse aggregate, cement and water.
a) Self -compacting b) Fiber reinforced
c) Light weight d) No fines

7) The phenomenon of slow growth of strain under a steady tensile stress is called _____.
a) Yielding b) Creeping
c) Breaking d) None of the mentioned

8) Which chemical composition has highest content in OPC?
a) Alumina b) Silica
c) Lime d) Iron Oxide

9) While cooling down of clinker in cement manufacturing process, it is brought to about 500°C in about _____ minutes and from the 500°C the temperature is brought down to normal atmospheric temperature in about _____ minutes.
a) 15, 10 b) 10, 10
c) 20, 15 d) 5, 10

10) The quality of paste in the transition zone is of _____ quality.
a) rich b) poorer
c) standard d) mediocre

11) A total _____ per cent of water by weight of cement is required for the complete chemical reactions and to occupy the space within gel-pores.
a) 15 b) 23
c) 35 d) 38

12) In rapid hardening cement, the rapid rate of development of strength is attributed to the _____ fineness of grinding.
a) lower b) higher
c) medium d) none

13) The unsoundness in cement is due to the presence of _____ than that could be combined with acidic oxide at the kiln.
a) excess of sulfur b) excess of gypsum
c) excess of silica d) excess of lime

14) Use of right quality fly ash, results in _____ of water demand for desired Slump.
a) increase b) retention
c) reduction d) none

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Concrete Technology, Material Testing & Evaluation (BTN01303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Draw neat sketches wherever necessary.
5) Supplements will not be provided.
6) Use of non-programmable calculator is permitted.

Section – I

Q.2 Attempt any Four **16**

a) What is the chemical composition of Cement with its signification?
b) Explain the manufacturing process of Cement by Wet Process with flow chart construction.
c) What are Bogue's compounds? State their influence on cement strength.
d) Which are the factors affecting workability of concrete? Give the normal values of slump for different workability ranges as specified by I.S. 456 – 2000.
e) Differentiate between "Segregation and Bleeding".

Q.3 Attempt any Two **12**

a) Write a note on bulking of Sand.
b) Write a brief note on Retarders and retarding admixtures and Accelerators and Accelerating Admixture.
c) What are different curing methods used? Explain with neat sketches.

Section – II

Q.4 Attempt any Four

a) What is Maturity concept and gel space ratio? **16**
b) Distinguish between creep and shrinkage of concrete.
c) Which are the durability requirements of concrete as per I.S. 456-2000?
d) What is In-situ testing of concrete? How is rebound hammer test performed?
e) What is Fibre reinforced concrete? Give types of fibres used in concrete.

Q.5 Attempt any Two **12**

a) Elaborate on steps followed in performing concrete mix design as per I.S. Method.
b) Write a note sulphate and chloride attack on concrete.
c) Explain is "High Strength Concrete and High-Performance Concrete". Discuss their advantages and disadvantages.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Concrete Technology, Material Testing & Evaluation (BTN01303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.
5) Draw neat sketches wherever necessary.
6) Supplements will not be provided.
7) Use of nonprogrammable calculator is permitted.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions. **14**

1) Target mean strength of M 20 concrete is, _____.
a) 20 b) 25.6
c) 26.6 d) 31.60

2) Density of the normal concrete is in the order of _____ kN/m^3
a) 15 to 20 b) 20 to 22
c) 22 to 26 d) 27 to 30

3) _____ concrete is made up of only coarse aggregate, cement and water.
a) Self -compacting b) Fiber reinforced
c) Light weight d) No fines

4) The phenomenon of slow growth of strain under a steady tensile stress is called _____.
a) Yielding b) Creeping
c) Breaking d) None of the mentioned

5) Which chemical composition has highest content in OPC?
a) Alumina b) Silica
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6) While cooling down of clinker in cement manufacturing process, it is brought to about 500°C in about _____ minutes and from the 500°C the temperature is brought down to normal atmospheric temperature in about _____ minutes.
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a) Highly workable b) Stiff
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14) Cement content not including fly ash and ground granulated blast furnace slag in excess of _____ kg/m^3 should not be used in concrete mix.

a) 300 b) 350
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Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Concrete Technology, Material Testing & Evaluation (BTN01303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt any Four **16**

a) What is the chemical composition of Cement with its signification?
b) Explain the manufacturing process of Cement by Wet Process with flow chart construction.
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d) Which are the factors affecting workability of concrete? Give the normal values of slump for different workability ranges as specified by I.S. 456 – 2000.
e) Differentiate between "Segregation and Bleeding".

Q.3 Attempt any Two **12**

a) Write a note on bulking of Sand.
b) Write a brief note on Retarders and retarding admixtures and Accelerators and Accelerating Admixture.
c) What are different curing methods used? Explain with neat sketches.

Section – II

Q.4 Attempt any Four

a) What is Maturity concept and gel space ratio? **16**
b) Distinguish between creep and shrinkage of concrete.
c) Which are the durability requirements of concrete as per I.S. 456-2000?
d) What is In-situ testing of concrete? How is rebound hammer test performed?
e) What is Fibre reinforced concrete? Give types of fibres used in concrete.

Q.5 Attempt any Two **12**

a) Elaborate on steps followed in performing concrete mix design as per I.S. Method.
b) Write a note sulphate and chloride attack on concrete.
c) Explain is "High Strength Concrete and High-Performance Concrete". Discuss their advantages and disadvantages.

Seat No.	

Set | S

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Concrete Technology, Material Testing & Evaluation (BTN01303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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5) Draw neat sketches wherever necessary.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Multiple Choice Questions. **14**

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2) Use of right quality fly ash, results in _____ of water demand for desired Slump.
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c) reduction d) none

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13) A total _____ per cent of water by weight of cement is required for the complete chemical reactions and to occupy the space within gel-pores.

a) 15 b) 23
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a) lower b) higher
c) medium d) none

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Concrete Technology, Material Testing & Evaluation (BTN01303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.
4) Draw neat sketches wherever necessary.
5) Supplements will not be provided.
6) Use of non-programmable calculator is permitted.

Section – I

Q.2 Attempt any Four **16**

a) What is the chemical composition of Cement with its signification?
b) Explain the manufacturing process of Cement by Wet Process with flow chart construction.
c) What are Bogue's compounds? State their influence on cement strength.
d) Which are the factors affecting workability of concrete? Give the normal values of slump for different workability ranges as specified by I.S. 456 – 2000.
e) Differentiate between "Segregation and Bleeding".

Q.3 Attempt any Two **12**

a) Write a note on bulking of Sand.
b) Write a brief note on Retarders and retarding admixtures and Accelerators and Accelerating Admixture.
c) What are different curing methods used? Explain with neat sketches.

Section – II

Q.4 Attempt any Four

a) What is Maturity concept and gel space ratio? **16**
b) Distinguish between creep and shrinkage of concrete.
c) Which are the durability requirements of concrete as per I.S. 456-2000?
d) What is In-situ testing of concrete? How is rebound hammer test performed?
e) What is Fibre reinforced concrete? Give types of fibres used in concrete.

Q.5 Attempt any Two **12**

a) Elaborate on steps followed in performing concrete mix design as per I.S. Method.
b) Write a note sulphate and chloride attack on concrete.
c) Explain is "High Strength Concrete and High-Performance Concrete". Discuss their advantages and disadvantages.

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - I (BTN01305)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each Questions carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct alternative **14**

1) The ratio of shear modulus to modulus of elasticity for a Poisson's ratio of 0.4 will be _____.
a) 5/7 b) 7/5
c) 5/14 d) 14/5

2) The Poisson's ratio cannot have that value _____.
a) 0.7 b) 0.2
c) 0.1 d) none of these

3) The value on shear stress on principal plane is _____.
a) Zero b) Maximum
c) Minimum but positive d) Average value

4) In case of biaxial stress, the maximum value of shear stress is _____.
a) Difference of normal stresses
b) Half the difference of normal stress
c) Sum of normal stresses
d) Half the sum of normal stress

5) Which one is correct representation of flexural formula?
a) $\frac{E}{R}=\frac{M}{F}=\frac{I}{Y}$ b) $\frac{E}{R}=\frac{Y}{I}=\frac{F}{M}$
c) $\frac{E}{R}=\frac{M}{I}=\frac{F}{Y}$ d) $\frac{I}{R}=\frac{M}{E}=\frac{F}{Y}$

6) Maximum bending moment in a beam occurs when _____.
a) Deflection is zero b) Shear force is maximum
c) Shear force is minimum d) Shear force is changes sign

7) A Shaft is simultaneously subjected to torque T and bending moment M. The ratio of maximum bending stress to shear stress is _____.
a) M/T b) T/M
c) 2M/T d) T/2M

8) Maximum Principal strain energy theory is also known as _____.
a) Rankine theory
b) Tresca Theory
c) Von mises Henky theory
d) Saint Venant theory

9) Where the Shear stress in a section of beam is maximum _____.
a) Top fiber
b) Bottom Fiber
c) Depend on the section of beam
d) centroid of the section

10) The strength of beam section is determined by its _____.
a) Compressive stress
b) Section modulus
c) Shear modulus
d) Tensile stress

11) As per assumption of theory of bending, the beam is subjected to _____.
a) Pure bending
b) Pure shear
c) Pure tension
d) Simple shear

12) Maximum Shear stress theory satisfactory results for _____.
a) Ductile material
b) Brittle material
c) Elastic material
d) None of the above

13) For which structure influence line are drawn?
a) Statically in determinate structure
b) Statically Determinate
c) Pin Jointed Truss
d) All of the above

14) Muller-Breslau principal in a structural analysis is used for?
a) Drawing ILD for any force function
b) Writing virtual work equation
c) Superposition of load effects
d) None of the above

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - I (BTN01305)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section - I, Q. No. 2 is compulsory and solve any TWO questions from remaining questions (Q. No. 3, 4 & 5).
2) In Section - II, Q. No. 6 is compulsory and solve any TWO questions from remaining questions (Q. No. 7,8 & 9).
3) Figures to right indicate full marks.
4) Assume suitable data is necessary and mention it clearly

Section – I

Q.2 A member ABCD is subjected to point loads P1, P2, P3 and P4 as shown in Fig. I. Calculate the force P3 necessary for equilibrium if P1 = 45 kN, P2 = 365 kN, and P4 = 130 kN. Determine total elongation of the member, assuming Modulus of Elasticity to be E = 2.1 x 10^5 N/mm^2 **10**

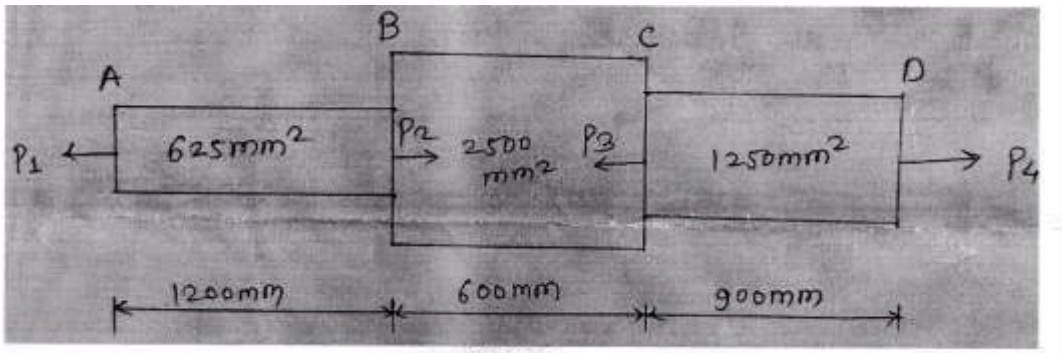

Fig No-I

Q.3 A Rectangular Block of material is subjected to a tensile stress of 110 N/mm^2 on one plane. And a tensile stress 47 N/mm^2 at the plane of right angle to the former each of the above stress is accompanied by a shear stress of 63 N/mm^2 and that associated with the former tensile stress tend to rotate the block anticlockwise. Find, **09**
i) The direction and magnitude of each of the principal stress.
ii) Magnitude of greatest shear stress.

Q.4 A solid shaft in a rolling mill transmits 20kW at 2Hz. Determine the diameter of the shaft if the shear stress is not to exceed 40MPa and the angle of twist is limited to 6^0 in a length of 3 m. G= 83 GPa. **09**
i) Diameter of shaft based on shear stress
ii) Diameter based on angle of twist.

Q.5 Define the following theories of failure. Solve any three of the following **09**
a) Maximum principal stress theory
b) Maximum principal strain theory
c) Maximum shear stress theory
d) Maximum strain energy theory
e) Assumption Made in theory of pure bending

Section – II

Q.6 A beam of 10 m length simply supported at its ends. It carries a uniformly distributed load of 20 kN/m run over the length of left half of its span, together with concentrated load of 20 kN, 40 kN and 20 kN situated at 1.5 m, 2.5 m, 5 m respectively from right hand support. Draw SFD and BMD Diagram for a beam. **10**

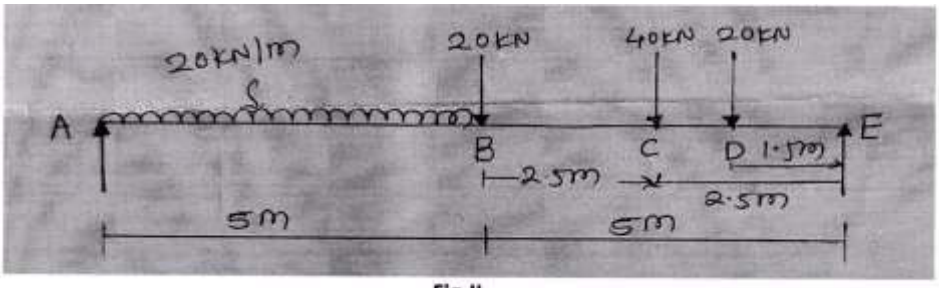

Fig-II

Q.7 A beam of T- section, 4 m long carries a uniformly distributed load w per meter run throughout its length. The beam is simply supported at its ends. The T section is 200 mm x 100 mm x 12 mm. i.e. web 188 mm x 12 mm. And flange 100 mm x 12 mm. What is the maximum value of w so that the stress in the section does not exceed 60 MPa. **09**

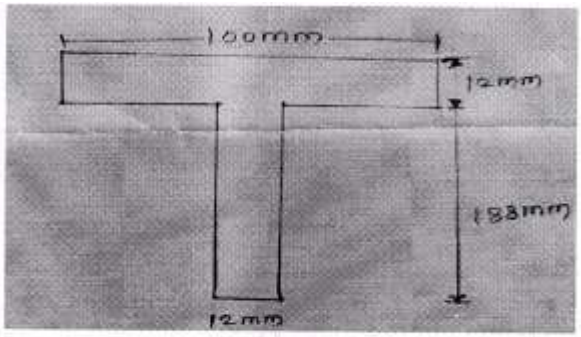

Fig-III

Q.8 A symmetrical beam of I- section is 200 mm x 400 mm in size. The thickness of flange is 20 mm and web is 15 mm. The beam carrying udl of 20 kN/m over entire length of 8 meter. Draw the stress distribution diagram over the depth of the section. **09**

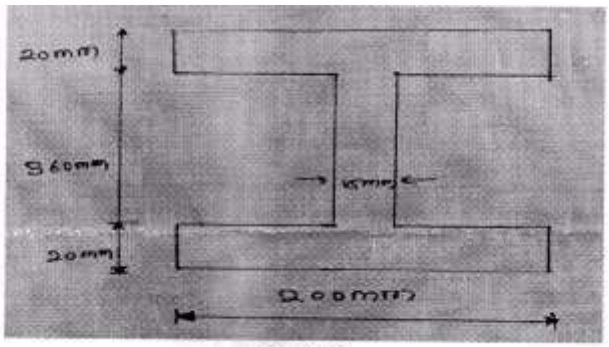

Fig-IV

Q.9 For a girder of 20 m long find the maximum positive shear force and maximum negative shear force at 7m from left end if a UDL of 60 kN/m having span 5 m, moves along it (Place load anywhere to get a value of maximum shear force). **09**

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - I (BTN01305)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each Questions carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct alternative **14**

1) Maximum Principal strain energy theory is also known as _____.
a) Rankine theory b) Tresca Theory
c) Von mises Henky theory d) Saint Venant theory

2) Where the Shear stress in a section of beam is maximum _____.
a) Top fiber
b) Bottom Fiber
c) Depend on the section of beam
d) centroid of the section

3) The strength of beam section is determined by its _____.
a) Compressive stress b) Section modulus
c) Shear modulus d) Tensile stress

4) As per assumption of theory of bending, the beam is subjected to _____.
a) Pure bending b) Pure shear
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5) Maximum Shear stress theory satisfactory results for _____.
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6) For which structure influence line are drawn?
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7) Muller-Breslau principal in a structural analysis is used for?
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8) The ratio of shear modulus to modulus of elasticity for a Poisson's ratio of 0.4 will be _____.

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9) The Poisson's ratio cannot have that value _____.

a) 0.7 b) 0.2
c) 0.1 d) none of these

10) The value on shear stress on principal plane is _____.

a) Zero b) Maximum
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11) In case of biaxial stress, the maximum value of shear stress is _____.

a) Difference of normal stresses
b) Half the difference of normal stress
c) Sum of normal stresses
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12) Which one is correct representation of flexural formula?

a) $\frac{E}{R} = \frac{M}{F} = \frac{I}{Y}$ b) $\frac{E}{R} = \frac{Y}{I} = \frac{F}{M}$

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13) Maximum bending moment in a beam occurs when _____.

a) Deflection is zero b) Shear force is maximum
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14) A Shaft is simultaneously subjected to torque T and bending moment M. The ratio of maximum bending stress to shear stress is _____.

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c) 2M/T d) T/2M

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - I (BTN01305)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
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Section – I

Q.2 A member ABCD is subjected to point loads P1, P2, P3 and P4 as shown in Fig. I. Calculate the force P3 necessary for equilibrium if P1 = 45 kN, P2 = 365 kN, and P4 = 130 kN. Determine total elongation of the member, assuming Modulus of Elasticity to be E = 2.1 x 10^5 N/mm^2 **10**

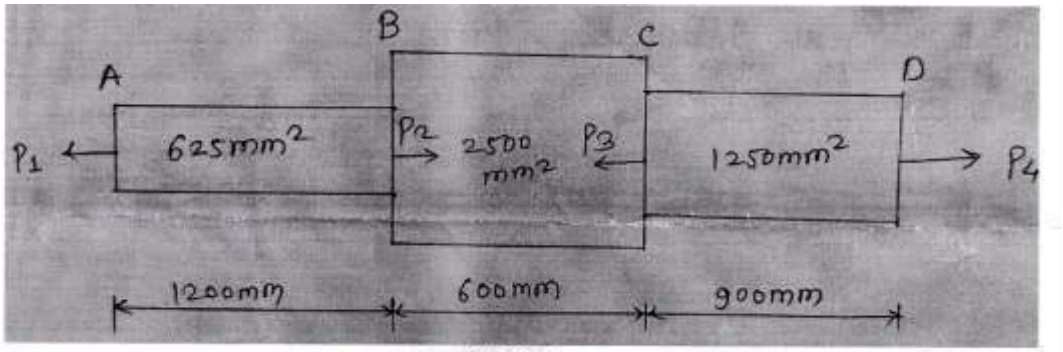

Fig No-I

Q.3 A Rectangular Block of material is subjected to a tensile stress of 110 N/mm^2 on one plane. And a tensile stress 47 N/mm^2 at the plane of right angle to the former each of the above stress is accompanied by a shear stress of 63 N/mm^2 and that associated with the former tensile stress tend to rotate the block anticlockwise. Find, **09**
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Section – II

Q.6 A beam of 10 m length simply supported at its ends. It carries a uniformly distributed load of 20 kN/m run over the length of left half of its span, together with concentrated load of 20 kN, 40 kN and 20 kN situated at 1.5 m, 2.5 m, 5 m respectively from right hand support. Draw SFD and BMD Diagram for a beam. **10**

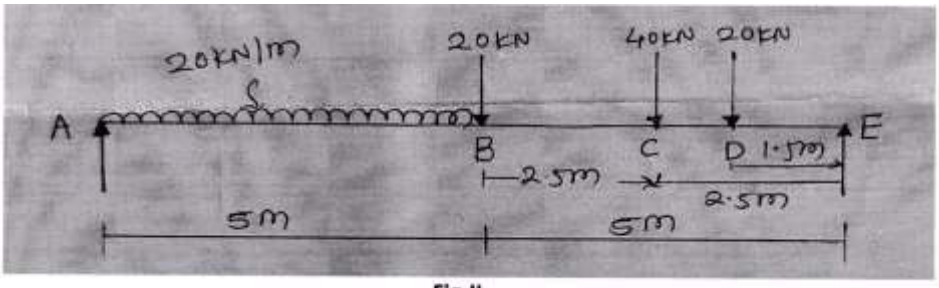

Fig-II

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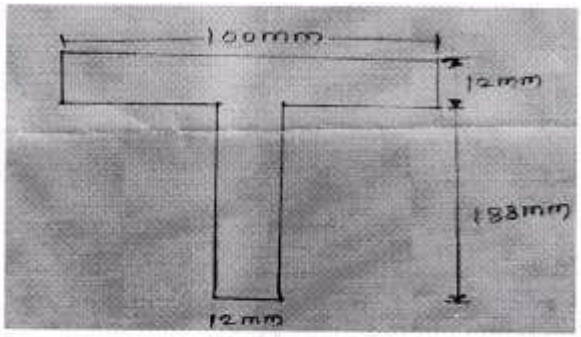

Fig-III

Q.8 A symmetrical beam of I- section is 200 mm x 400 mm in size. The thickness of flange is 20 mm and web is 15 mm. The beam carrying udl of 20 kN/m over entire length of 8 meter. Draw the stress distribution diagram over the depth of the section. **09**

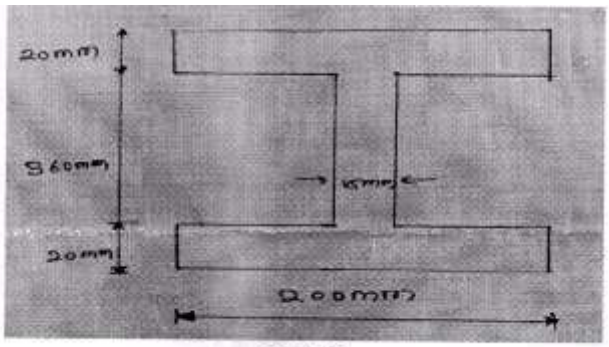

Fig-IV

Q.9 For a girder of 20 m long find the maximum positive shear force and maximum negative shear force at 7m from left end if a UDL of 60 kN/m having span 5 m, moves along it (Place load anywhere to get a value of maximum shear force). **09**

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - I (BTN01305)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct alternative **14**

1) As per assumption of theory of bending, the beam is subjected to _____.
a) Pure bending b) Pure shear
c) Pure tension d) Simple shear

2) Maximum Shear stress theory satisfactory results for _____.
a) Ductile material b) Brittle material
c) Elastic material d) None of the above

3) For which structure influence line are drawn?
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6) The Poisson's ratio cannot have that value _____.
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14) The strength of beam section is determined by its _____.
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Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - I (BTN01305)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
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Section – I

Q.2 A member ABCD is subjected to point loads P1, P2, P3 and P4 as shown in Fig. I. Calculate the force P3 necessary for equilibrium if P1 = 45 kN, P2 = 365 kN, and P4 = 130 kN. Determine total elongation of the member, assuming Modulus of Elasticity to be E = 2.1 x 10^5 N/mm^2 **10**

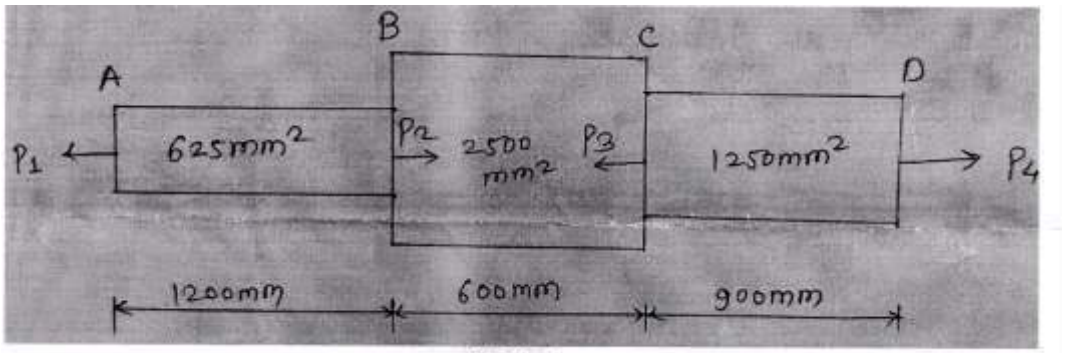

Fig No-I

Q.3 A Rectangular Block of material is subjected to a tensile stress of 110 N/mm^2 on one plane. And a tensile stress 47 N/mm^2 at the plane of right angle to the former each of the above stress is accompanied by a shear stress of 63 N/mm^2 and that associated with the former tensile stress tend to rotate the block anticlockwise. Find, **09**
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Section – II

Q.6 A beam of 10 m length simply supported at its ends. It carries a uniformly distributed load of 20 kN/m run over the length of left half of its span, together with concentrated load of 20 kN, 40 kN and 20 kN situated at 1.5 m, 2.5 m, 5 m respectively from right hand support. Draw SFD and BMD Diagram for a beam. **10**

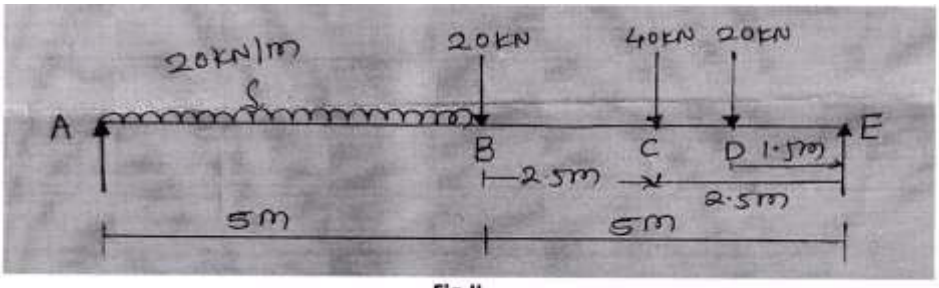

Fig-II

Q.7 A beam of T- section, 4 m long carries a uniformly distributed load w per meter run throughout its length. The beam is simply supported at its ends. The T section is 200 mm x 100 mm x 12 mm. i.e. web 188 mm x 12 mm. And flange 100 mm x 12 mm. What is the maximum value of w so that the stress in the section does not exceed 60 MPa. **09**

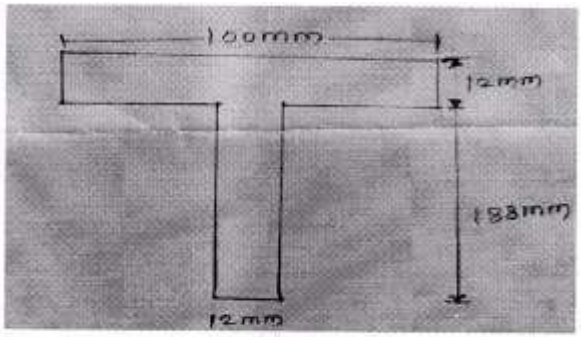

Fig-III

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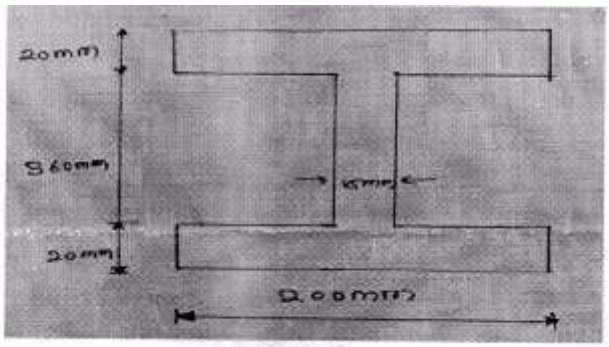

Fig-IV

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Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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Structural Mechanics - I (BTN01305)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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Seat No.	

Set **S**

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CIVIL ENGINEERING
Structural Mechanics - I (BTN01305)

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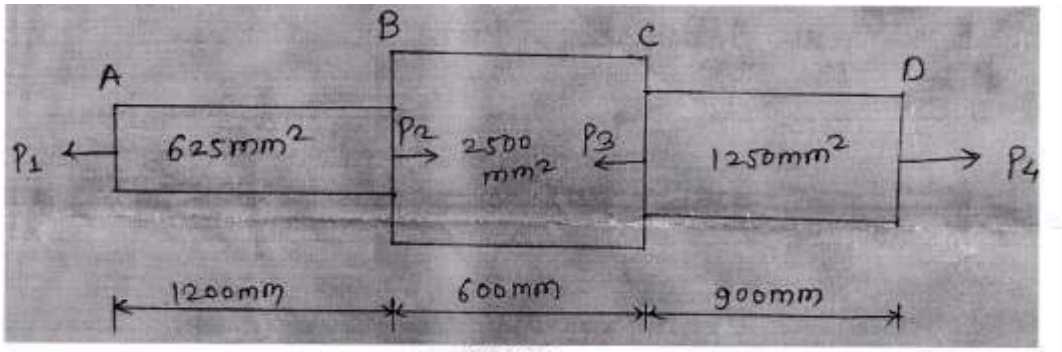

Fig No-I

Q.3 A Rectangular Block of material is subjected to a tensile stress of 110 N/mm^2 on one plane. And a tensile stress 47 N/mm^2 at the plane of right angle to the former each of the above stress is accompanied by a shear stress of 63 N/mm^2 and that associated with the former tensile stress tend to rotate the block anticlockwise. Find, **09**
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Section – II

Q.6 A beam of 10 m length simply supported at its ends. It carries a uniformly distributed load of 20 kN/m run over the length of left half of its span, together with concentrated load of 20 kN, 40 kN and 20 kN situated at 1.5 m, 2.5 m, 5 m respectively from right hand support. Draw SFD and BMD Diagram for a beam. **10**

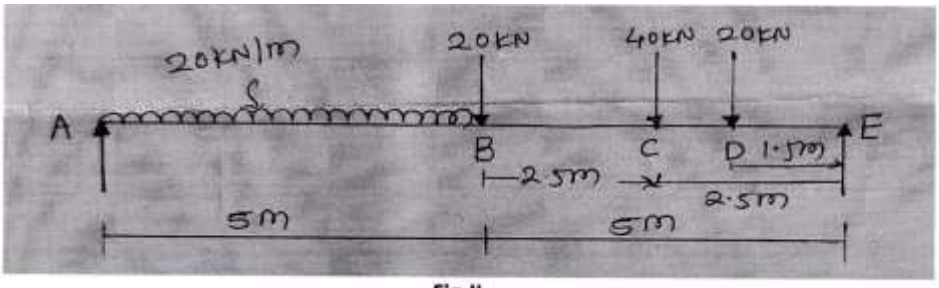

Fig-II

Q.7 A beam of T- section, 4 m long carries a uniformly distributed load w per meter run throughout its length. The beam is simply supported at its ends. The T section is 200 mm x 100 mm x 12 mm. i.e. web 188 mm x 12 mm. And flange 100 mm x 12 mm. What is the maximum value of w so that the stress in the section does not exceed 60 MPa. **09**

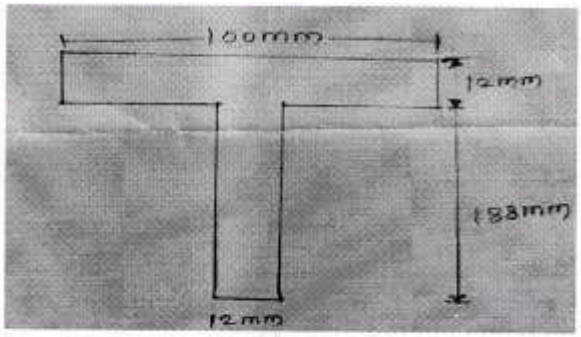

Fig-III

Q.8 A symmetrical beam of I- section is 200 mm x 400 mm in size. The thickness of flange is 20 mm and web is 15 mm. The beam carrying udl of 20 kN/m over entire length of 8 meter. Draw the stress distribution diagram over the depth of the section. **09**

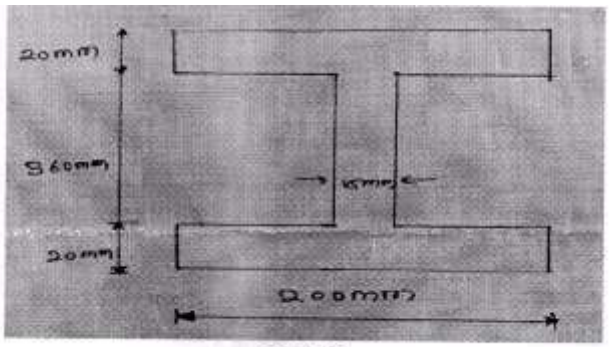

Fig-IV

Q.9 For a girder of 20 m long find the maximum positive shear force and maximum negative shear force at 7m from left end if a UDL of 60 kN/m having span 5 m, moves along it (Place load anywhere to get a value of maximum shear force). **09**

SLR-GF-722

Seat No.	

Set P

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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Building Construction & Drawing (BTN01304)

Day & Date: Friday,12-01-2024 Max. Marks: 70
Time: 03:00 PM To 07:00 PM

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4) Assume correct data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 State whether following statements are correct or incorrect. 14

1) If depth of footing is less than or equal to width of footing then it is called as shallow foundation.

2) Stile is part of door frame.

3) Landing width is equal to flight width of staircase.

4) Wall footing is provided in Load bearing structure.

5) Combined footing is provided for single column.

6) CRS is a type of stone masonry.

7) The switch boards are fixed at sill height in residential buildings.

8) Combined footing is used for two columns.

9) If a modular brick is cut along width in half size, then it is called as Queen Closer.

10) The height of kitchen should be 2.75 m from floor to lower point of ceiling.

11) For the row type of building the minimum plot size should be 50 sq.m. 125 sq.m.

12) Normally for plastering. The master of CM 1:4 is used.

13) The pointing is not necessary for rubble messonary work.

14) Turpentine is the most common thinner used oil paints.

Seat No.	

Set **P**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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Day & Date: Friday,12-01-2024 Max. Marks: 56
Time: 03:00 PM To 07:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to right indicate full marks.
3) Assume correct data wherever necessary.

Section – I

Q.2 Write the answers for followings (Any Seven) **28**

a) Explain importance of through stone in stone masonry with neat sketch.
b) Write in detail requirements of building stone.
c) Draw isometric shapes of -
i) Lean-to-roof
ii) Gable roof
iii) King Closure
iv) 3/4th Bat
d) Explain various defects in plastering.
e) Explain in brief the objective of plastering & pointing.
f) Compare strap footing with combined footing with sketches.
g) Write about field testing of bricks and cement.
h) Enlist functional requirements of building as whole and explain any two in detail.
i) Draw labelled cross-section of fixing Vitrified tiles on RCC slab.
j) Enlist different types of doors and draw neat labelled elevation of anyone.

Section – II

Q.3 a) Draw to scale of 1:10, detailed section, front elevation, and sectional elevation for farmed T.W. Double leaf door full panelled. Use following data (All dimensions are in mm). **14**
1) Clear opening = 1000 x 2100
2) Wood section for frame = 100 x 75
3) Wood section for styles and rails = 100 x 40
4) Panel - 20 mm thick plywood
5) Show various fixtures at proper location.

OR

Draw to the scale of 1:10 elevation and plan of alternate course of L shaped one brick and one and half brick thick wall in English bond also draw the isometric view of the masonry.

Q.3 b) Design and draw to scale 1:30, plan and vertical section for quarter turn RCC stair for residential building. Use following data: **14**

1) Storey height = 3100 mm
2) Width of flight = 1000 mm
3) Railing - 50 mm thick RCC pardi
4) Reinforcement details not expected
5) Write step by step calculation on sheet with pencil only.

OR

Draw to scale 1:20 cross section of a RCC slab floor with ceramic tile flooring laid on cement mortar bed with cement float. Use following data and dimension.

1) RCC slab thickness = 150 mm
2) Cement mortar bed thickness = 30 mm
3) Cement float thickness = 02 mm
4) Ceramic tile thickness = 15 mm
5) Ceramic tile size in plan = 300 x 300 mm

Seat No.	

Set Q

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 State whether following statements are correct or incorrect. 14

1) Combined footing is used for two columns.

2) If a modular brick is cut along width in half size, then it is called as Queen Closer.

3) The height of kitchen should be 2.75 m from floor to lower point of ceiling.

4) For the row type of building the minimum plot size should be 50 sq.m. 125 sq.m.

5) Normally for plastering. The master of CM 1:4 is used.

6) The pointing is not necessary for rubble messonary work.

7) Turpentine is the most common thinner used oil paints.

8) If depth of footing is less than or equal to width of footing then it is called as shallow foundation.

9) Stile is part of door frame.

10) Landing width is equal to flight width of staircase.

11) Wall footing is provided in Load bearing structure.

12) Combined footing is provided for single column.

13) CRS is a type of stone masonry.

14) The switch boards are fixed at sill height in residential buildings.

Seat No.	

Set Q

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Section – I

Q.2 Write the answers for followings (Any Seven) **28**

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c) Draw isometric shapes of -
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iv) 3/4th Bat
d) Explain various defects in plastering.
e) Explain in brief the objective of plastering & pointing.
f) Compare strap footing with combined footing with sketches.
g) Write about field testing of bricks and cement.
h) Enlist functional requirements of building as whole and explain any two in detail.
i) Draw labelled cross-section of fixing Vitrified tiles on RCC slab.
j) Enlist different types of doors and draw neat labelled elevation of anyone.

Section – II

Q.3 a) Draw to scale of 1:10, detailed section, front elevation, and sectional elevation for farmed T.W. Double leaf door full panelled. Use following data (All dimensions are in mm). **14**
1) Clear opening = 1000 x 2100
2) Wood section for frame = 100 x 75
3) Wood section for styles and rails = 100 x 40
4) Panel - 20 mm thick plywood
5) Show various fixtures at proper location.

OR

Draw to the scale of 1:10 elevation and plan of alternate course of L shaped one brick and one and half brick thick wall in English bond also draw the isometric view of the masonry.

Q.3 b) Design and draw to scale 1:30, plan and vertical section for quarter turn **14**

RCC stair for residential building. Use following data:

1) Storey height = 3100 mm
2) Width of flight = 1000 mm
3) Railing - 50 mm thick RCC pardi
4) Reinforcement details not expected
5) Write step by step calculation on sheet with pencil only.

OR

Draw to scale 1:20 cross section of a RCC slab floor with ceramic tile flooring laid on cement mortar bed with cement float. Use following data and dimension.

1) RCC slab thickness = 150 mm
2) Cement mortar bed thickness = 30 mm
3) Cement float thickness = 02 mm
4) Ceramic tile thickness = 15 mm
5) Ceramic tile size in plan = 300 x 300 mm

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 State whether following statements are correct or incorrect. 14

1) For the row type of building the minimum plot size should be 50 sq.m. 125 sq.m.

2) Normally for plastering. The master of CM 1:4 is used.

3) The pointing is not necessary for rubble messonary work.

4) Turpentine is the most common thinner used oil paints.

5) If depth of footing is less than or equal to width of footing then it is called as shallow foundation.

6) Stile is part of door frame.

7) Landing width is equal to flight width of staircase.

8) Wall footing is provided in Load bearing structure.

9) Combined footing is provided for single column.

10) CRS is a type of stone masonry.

11) The switch boards are fixed at sill height in residential buildings.

12) Combined footing is used for two columns.

13) If a modular brick is cut along width in half size, then it is called as Queen Closer.

14) The height of kitchen should be 2.75 m from floor to lower point of ceiling.

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Seat No.	

Set R

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Building Construction & Drawing (BTN01304)

Day & Date: Friday,12-01-2024 Max. Marks: 56
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Section – I

Q.2 Write the answers for followings (Any Seven) **28**

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b) Write in detail requirements of building stone.
c) Draw isometric shapes of -
i) Lean-to-roof
ii) Gable roof
iii) King Closure
iv) 3/4th Bat
d) Explain various defects in plastering.
e) Explain in brief the objective of plastering & pointing.
f) Compare strap footing with combined footing with sketches.
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Q.3 a) Draw to scale of 1:10, detailed section, front elevation, and sectional elevation for farmed T.W. Double leaf door full panelled. Use following data (All dimensions are in mm). **14**
1) Clear opening = 1000 x 2100
2) Wood section for frame = 100 x 75
3) Wood section for styles and rails = 100 x 40
4) Panel - 20 mm thick plywood
5) Show various fixtures at proper location.

OR

Draw to the scale of 1:10 elevation and plan of alternate course of L shaped one brick and one and half brick thick wall in English bond also draw the isometric view of the masonry.

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Set R

Q.3 b) Design and draw to scale 1:30, plan and vertical section for quarter turn RCC stair for residential building. Use following data: **14**
1) Storey height = 3100 mm
2) Width of flight = 1000 mm

3) Railing - 50 mm thick RCC pardi
4) Reinforcement details not expected
5) Write step by step calculation on sheet with pencil only.

OR

Draw to scale 1:20 cross section of a RCC slab floor with ceramic tile flooring laid on cement mortar bed with cement float. Use following data and dimension.

1) RCC slab thickness = 150 mm
2) Cement mortar bed thickness = 30 mm
3) Cement float thickness = 02 mm
4) Ceramic tile thickness = 15 mm
5) Ceramic tile size in plan = 300 x 300 mm

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Seat No.	

Set S

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING

Building Construction & Drawing (BTN01304)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 State whether following statements are correct or incorrect. **14**

1) CRS is a type of stone masonry.

2) The switch boards are fixed at sill height in residential buildings.

3) Combined footing is used for two columns.

4) If a modular brick is cut along width in half size, then it is called as Queen Closer.

5) The height of kitchen should be 2.75 m from floor to lower point of ceiling.

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Seat No.	

Set S

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Section – I

Q.2 Write the answers for followings (Any Seven) **28**

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3) Wood section for styles and rails = 100 x 40
4) Panel - 20 mm thick plywood
5) Show various fixtures at proper location.

OR

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SLR-GF-722

Set S

Q.3 b) Design and draw to scale 1:30, plan and vertical section for quarter turn RCC stair for residential building. Use following data: **14**
1) Storey height = 3100 mm
2) Width of flight = 1000 mm
3) Railing - 50 mm thick RCC pardi
4) Reinforcement details not expected

5) Write step by step calculation on sheet with pencil only.

OR

Draw to scale 1:20 cross section of a RCC slab floor with ceramic tile flooring laid on cement mortar bed with cement float. Use following data and dimension.

1) RCC slab thickness = 150 mm
2) Cement mortar bed thickness = 30 mm
3) Cement float thickness = 02 mm
4) Ceramic tile thickness = 15 mm
5) Ceramic tile size in plan = 300 x 300 mm

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Seat No.	

Set P

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - I (BTN01401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) _____ is constituent of Asbestos cement pipe.
a) Sand b) Lime
c) Portland cement d) Iron

2) To control the wastage of water _____ measures are taken.
a) Pipe joints b) Water taps
c) Zoning system d) All of the above

3) The purpose of aeration used in water treatment is to _____.
a) reduce corrosion to water pipes
b) Remove iron and manganese
c) Remove hydrogen sulphide
d) All of the above

4) For ideal settling basin Vs is settling velocity. If particle is having settling velocity (Vs') less than Vs, then particle will removed with _____.
a) Less than 100% b) 100%
c) 0% d) None of the above

5) Standard EDTA is used in the titration to determine _____ of the water.
a) Alkalinity b) Acidity
c) Hardness d) Chlorides

6) Zeolite is _____.
a) A naturally occurring salt b) Hydrated silica
c) Dehydrated calcium silicate d) Silicon carbide

7) In rapid sand filters the permissible head loss is _____.
a) Between 2.5 and 3.5 m b) Exactly 2.5 m
c) Less than 5 m d) All of the above

8) CO_3^{2-} in water indicates _____.
a) Acidity in water b) Alkalinity in water
c) Acidity and alkalinity in water d) None of the above

9) Freeman's formula for estimating fire demand Q= 5663$\sqrt{P}$ where "P" indicates _____.
a) Population in hundreds
b) Population in thousands
c) Population in lakhs
d) None of the above

10) _____ can follow direct routes and require shorter length of conduits.
a) Gravity conduit
b) Aqueduct
c) Tunnels
d) Pressure conduits

11) Analysis of pipe networks of distribution system is calculated by _____.
a) Discharge in pipelines
b) Equivalent pipe method
c) Computation of pressure
d) Mass Curve Method

12) For a city developed haphazardly, the layout of distribution pipes preferred to is _____.
a) Radial system
b) Ring system
c) Dead end system
d) Iron grid system

13) Most causes of alkalinity in river water is ____.
a) Carbonates
b) Bicarbonates
c) Hydroxides
d) All of the above

14) Precipitation of non-carbonate hardness is done by addition of _____.
a) Soda ash
b) Lime
c) Zeolites
d) Sodium chloride

Seat No.	

Set **P**

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Day & Date: Saturday, 23-12-2023 Max. Marks: 56
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2) In Section-II, Q. No. 6 is compulsory and solve any TWO questions from remaining questions (Q. No. 7,8 & 9).
3) Figures to right indicate full marks.
4) Make suitable assumptions, if required and state them clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2 a) Find the population and of a city in 2041 by geometric increase method. **06**

Year	Population
1981	40,000
1991	60,000
2001	85,000
2011	1,15,000
2021	2,00,000

b) Calculate the fire demand for the same city having Population of year 2041 using various formulae. (Question 02 (A)) **04**

Q.3 a) A settling tank is designed for an overflow rate of 3500 lit./m^2/hr. What percentage of particles of diameter (i) 0.04 mm and (ii) 0.02 mm will be removed in this tank at water temperature of 10°C. Take S_s = 2.65. **05**

b) Explain the methodology adopted in usage of Alum and copperas in coagulation process with the help of chemical equations. **04**

Q.4 a) Design underdrainage system for rapid sand filter for 26 MLD of water flow. **05**

b) Write short note on Ion exchange method. **04**

Q.5 a) Design cascade type circular aerator with the following data. **05**
i) Quantity of water flowing over aerator per day = 120 MLD.
ii) Loading rate = 0.03 m^2/m^3/hr.
iii) Velocity of water flow in collecting channel = 1 m/s

b) Explain any four types of sedimentation tanks in WTP. **04**

Section – II

Q.6 a) A large service reservoir supplies water to two colonies. **05**
Colony A - Population 12000
Colony B - Population 60000
Determine the diameter of supply pipe. Average daily demand is 200 lpcd.

b) Discuss intermittent water supply system. **05**

Q.7	**a)**	Explain methodology of chlorination process with the help of graph.	**05**
	b)	Explain Reverse Osmosis with a neat diagram	**04**
Q.8	**a)**	Discuss Packaged drinking water plant with a neat diagram.	**05**
	b)	Explain various methods of Membrane Filtration.	**04**

Q.9 Write short notes on: **09**

a) UV

b) Adsorption

c) Ozone Disinfection

Seat No.	

Set **Q**

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) CO_3^{2-} in water indicates _____.
a) Acidity in water b) Alkalinity in water
c) Acidity and alkalinity in water d) None of the above

2) Freeman's formula for estimating fire demand Q= $5663\sqrt{P}$ where "P" indicates _____.
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Section – I

Q.2 **a)** Find the population and of a city in 2041 by geometric increase method. **06**

Year	Population
1981	40,000
1991	60,000
2001	85,000
2011	1,15,000
2021	2,00,000

b) Calculate the fire demand for the same city having Population of year 2041 using various formulae. (Question 02 (A)) **04**

Q.3 **a)** A settling tank is designed for an overflow rate of 3500 lit./m^2/hr. What percentage of particles of diameter (i) 0.04 mm and (ii) 0.02 mm will be removed in this tank at water temperature of 10°C. Take S_s = 2.65. **05**

b) Explain the methodology adopted in usage of Alum and copperas in coagulation process with the help of chemical equations. **04**

Q.4 **a)** Design underdrainage system for rapid sand filter for 26 MLD of water flow. **05**

b) Write short note on Ion exchange method. **04**

Q.5 **a)** Design cascade type circular aerator with the following data. **05**
i) Quantity of water flowing over aerator per day = 120 MLD.
ii) Loading rate = 0.03 m^2/m^3/hr.
iii) Velocity of water flow in collecting channel = 1 m/s

b) Explain any four types of sedimentation tanks in WTP. **04**

Section – II

Q.6 **a)** A large service reservoir supplies water to two colonies. **05**
Colony A - Population 12000
Colony B - Population 60000
Determine the diameter of supply pipe. Average daily demand is 200 lpcd.

b) Discuss intermittent water supply system. **05**

Q.7	**a)**	Explain methodology of chlorination process with the help of graph.	**05**
	b)	Explain Reverse Osmosis with a neat diagram	**04**
Q.8	**a)**	Discuss Packaged drinking water plant with a neat diagram.	**05**
	b)	Explain various methods of Membrane Filtration.	**04**
Q.9	**Write short notes on:**		**09**
	a)	UV	
	b)	Adsorption	
	c)	Ozone Disinfection	

Seat No.	

Set **R**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - I (BTN01401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Analysis of pipe networks of distribution system is calculated by _____.
a) Discharge in pipelines b) Equivalent pipe method
c) Computation of pressure d) Mass Curve Method

2) For a city developed haphazardly, the layout of distribution pipes preferred to is _____.
a) Radial system b) Ring system
c) Dead end system d) Iron grid system

3) Most causes of alkalinity in river water is ____.
a) Carbonates b) Bicarbonates
c) Hydroxides d) All of the above

4) Precipitation of non-carbonate hardness is done by addition of _____.
a) Soda ash b) Lime
c) Zeolites d) Sodium chloride

5) _____ is constituent of Asbestos cement pipe.
a) Sand b) Lime
c) Portland cement d) Iron

6) To control the wastage of water _____ measures are taken.
a) Pipe joints b) Water taps
c) Zoning system d) All of the above

7) The purpose of aeration used in water treatment is to _____.
a) reduce corrosion to water pipes
b) Remove iron and manganese
c) Remove hydrogen sulphide
d) All of the above

8) For ideal settling basin Vs is settling velocity. If particle is having settling velocity (Vs') less than Vs, then particle will removed with _____.
a) Less than 100% b) 100%
c) 0% d) None of the above

9) Standard EDTA is used in the titration to determine _____ of the water.
a) Alkalinity b) Acidity
c) Hardness d) Chlorides

10) Zeolite is _____.
a) A naturally occurring salt b) Hydrated silica
c) Dehydrated calcium silicate d) Silicon carbide

11) In rapid sand filters the permissible head loss is _____.
a) Between 2.5 and 3.5 m b) Exactly 2.5 m
c) Less than 5 m d) All of the above

12) CO_3^{2-} in water indicates _____.
a) Acidity in water b) Alkalinity in water
c) Acidity and alkalinity in water d) None of the above

13) Freeman's formula for estimating fire demand Q= $5663\sqrt{P}$ where "P" indicates _____.
a) Population in hundreds b) Population in thousands
c) Population in lakhs d) None of the above

14) _____ can follow direct routes and require shorter length of conduits.
a) Gravity conduit b) Aqueduct
c) Tunnels d) Pressure conduits

Seat No.	

Set **R**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - I (BTN01401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section-I, Q. No. 2 is compulsory and solve any TWO questions from remaining questions (Q. No. 3, 4 & 5).
2) In Section-II, Q. No. 6 is compulsory and solve any TWO questions from remaining questions (Q. No. 7,8 & 9).
3) Figures to right indicate full marks.
4) Make suitable assumptions, if required and state them clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2 a) Find the population and of a city in 2041 by geometric increase method. **06**

Year	Population
1981	40,000
1991	60,000
2001	85,000
2011	1,15,000
2021	2,00,000

b) Calculate the fire demand for the same city having Population of year 2041 using various formulae. (Question 02 (A)) **04**

Q.3 a) A settling tank is designed for an overflow rate of 3500 lit./m^2/hr. What percentage of particles of diameter (i) 0.04 mm and (ii) 0.02 mm will be removed in this tank at water temperature of 10°C. Take S_s = 2.65. **05**

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b) Write short note on Ion exchange method. **04**

Q.5 a) Design cascade type circular aerator with the following data. **05**
i) Quantity of water flowing over aerator per day = 120 MLD.
ii) Loading rate = 0.03 m^2/m^3/hr.
iii) Velocity of water flow in collecting channel = 1 m/s

b) Explain any four types of sedimentation tanks in WTP. **04**

Section – II

Q.6 a) A large service reservoir supplies water to two colonies. **05**
Colony A - Population 12000
Colony B - Population 60000
Determine the diameter of supply pipe. Average daily demand is 200 lpcd.

b) Discuss intermittent water supply system. **05**

Q.7	**a)**	Explain methodology of chlorination process with the help of graph.	**05**
	b)	Explain Reverse Osmosis with a neat diagram	**04**
Q.8	**a)**	Discuss Packaged drinking water plant with a neat diagram.	**05**
	b)	Explain various methods of Membrane Filtration.	**04**
Q.9	**Write short notes on:**		**09**
	a)	UV	
	b)	Adsorption	
	c)	Ozone Disinfection	

Seat No.	

Set **S**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - I (BTN01401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

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Seat No.	

Set **S**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Engineering - I (BTN01401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section-I, Q. No. 2 is compulsory and solve any TWO questions from remaining questions (Q. No. 3, 4 & 5).
2) In Section-II, Q. No. 6 is compulsory and solve any TWO questions from remaining questions (Q. No. 7,8 & 9).
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Section – I

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Q.3 **a)** A settling tank is designed for an overflow rate of 3500 lit./m^2/hr. What percentage of particles of diameter (i) 0.04 mm and (ii) 0.02 mm will be removed in this tank at water temperature of 10°C. Take S_s = 2.65. **05**

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Section – II

Q.6 **a)** A large service reservoir supplies water to two colonies. **05**
Colony A - Population 12000
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Q.9	**Write short notes on:**		**09**
	a)	UV	
	b)	Adsorption	
	c)	Ozone Disinfection	

SLR-GF-724

Seat No.	

Set P

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Building Planning & Design (BTN01402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 35
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 15 minutes in answer book Page no 03 Each question carries one mark.
2) Answer MCQ/Objective type question on page No. 3 only. Don't forgot to mention, Q.P. set (P/Q/R/S) on Top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 15 Minutes Marks:07

Q.1 State whether following statement is correct or incorrect. 07

a) Rain water harvesting is strictly prohibited in green building.

b) Cavity wall construction is a part of green building.

c) Echo is a dull sound.

d) Low fire load is applied to domestic buildings, hotels and offices.

e) Door opening is not counted in the lighting and ventilation of the building.

f) Fire safety is the set of practices intended to reduce the destruction caused by fire.

g) ICU in hospital means Inclusive Care Unit.

Seat No.	

Set **P**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Building Planning & Design (BTN01402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 28
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Q.2 Attempt any SEVEN questions. (4x7=28) 28

a) State the factors affecting for site selection of planning of Building.

b) Explain concept of “GREEN BUILDING”.

c) Write a note on characteristics of audible sound.

d) Explain the three aspects of fire hazards.

e) Write note on different building permissions.

f) Write a note on various types of traps.

g) Describe any two acoustical defects.

h) Explain concept of low-cost housing.

i) What are the different climatic zones in India? Explain.

Seat No.	

Set **Q**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Building Planning & Design (BTN01402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 35
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f) Cavity wall construction is a part of green building.

g) Echo is a dull sound.

Seat No.	

Set **Q**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Building Planning & Design (BTN01402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 28
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Seat No.	

Set **R**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Building Planning & Design (BTN01402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 35
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 15 minutes in answer book Page no 03 Each question carries one mark.
2) Answer MCQ/Objective type question on page No. 3 only. Don't forgot to mention, Q.P. set (P/Q/R/S) on Top of page.
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MCQ/Objective Type Questions

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f) Low fire load is applied to domestic buildings, hotels and offices.

g) Door opening is not counted in the lighting and ventilation of the building.

Seat No.	

Set **R**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Building Planning & Design (BTN01402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 28
Time: 03:00 PM To 06:00 PM

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g) Describe any two acoustical defects.

h) Explain concept of low-cost housing.

i) What are the different climatic zones in India? Explain.

SLR-GF-724

Seat No.		Set	S

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Building Planning & Design (BTN01402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 35
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 15 minutes in answer book Page no 03 Each question carries one mark.
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f) ICU in hospital means Inclusive Care Unit.

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SLR-GF-724

Seat No.	

Set S

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Building Planning & Design (BTN01402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 28
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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a) State the factors affecting for site selection of planning of Building.

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d) Explain the three aspects of fire hazards.

e) Write note on different building permissions.

f) Write a note on various types of traps.

g) Describe any two acoustical defects.

h) Explain concept of low-cost housing.

i) What are the different climatic zones in India? Explain.

SLR-GF-725

Seat No.		Set	P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - II (BTN01403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary & mention it clearly before the solution.
5) Use of scientific non programmable calculator is allowed.
6) Draw the appropriate sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) For rectangular section the minimum stress is negative (tensile) when the eccentricity of load is _____.
a) Less than b/6 b) More than b/6
c) Equal to b/6 d) Equal to b/3

2) The pressure intensity of water at free surface is _____.
a) Zero b) Maximum
c) Minimum d) Uniform

3) The co-efficient of wind resistance for circular chimney is _____.
a) 1 b) 2/3
c) 1/3 d) 1/4

4) Slenderness ratio is the ratio of effective length of column and _____.
a) lateral dimension of a column
b) least radius of gyration of a column
c) maximum radius of gyration of a column
d) none of the above

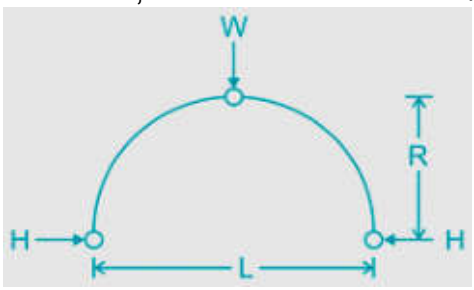
5) What is the relation between actual length and effective length while determining crippling load for a hollow rectangular cast iron column having both ends fixed?
(where $L =$ actual length and $L_e =$ effective length)
a) $L_e = L$ b) $L_e = L/2$
c) $L_e = 2L$ d) $L_e = 4L$

6) The moment area theorem with respect of bending of beams states that the area of the M/EI diagram between two sections of a beam gives _____.
a) The difference in slopes between those two sections
b) The difference in the maximum bending strains between those two sections
c) The difference in deflections between those two sections
d) The difference in the strain energies between those two sections

7) In the case of a beam simply supported at both ends, if the same load instead of being concentrated at center is _____.

a) 1/2 times
b) 1/4 times
c) 5/8 times
d) 3/8 times

8) For a three hinged parabolic arch, what will be the ratio L/R to satisfy H=W?



a) 0.50
b) 1.50
c) 2.00
d) 4.00

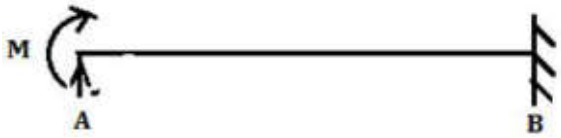
9) A three hinged parabolic arch has a span of 30 m and the central rise is 5 m. It is subjected to a point load of 40 kN at a distance of 20 m from the right hinge. Calculate the vertical component at its left support _____.

a) 35.35 kN
b) 40 kN
c) 13.13 kN
d) 26.67 kN

10) Carryover Moment is defined as _____.

a) The moment applied at one end to cause unit slope at the support
b) The additional moment applied at one end to completely resist the rotation caused due to external loading
c) The moment developed or induced at one end due to a moment at another end
d) The moment applied at one end to cause unit slope at another end

11) Carryover Moment at end B due to moment M applied at end A for the given propped cantilever beam is _____.



a) $+M$
b) $-M$
c) $+(M/2)$
d) $-(M/2)$

12) Degree of kinematic indeterminacy of a pin-jointed plane frame is given by _____.

a) $2j - r$
b) $j - 2r$
c) $3j - r$
d) $2j + r$

13) To generate the j the column of the flexibility matrix _____.

a) a unit force is applied at coordinate j and the displacements are calculated at all coordinates
b) a unit displacement is applied at co-ordinate j and the forces are calculated at all coordinates
c) a unit force is applied at coordinate j and the forces are calculated at all coordinates
d) a unit displacement is applied at co-ordinate j and the displacements are calculated at all co-ordinates

14) Moment distribution method is also known as _____.

a) Macauly's method
b) Hardy cross method
c) Mohr's theorem method
d) Kennedy's theory

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - II (BTN01403)

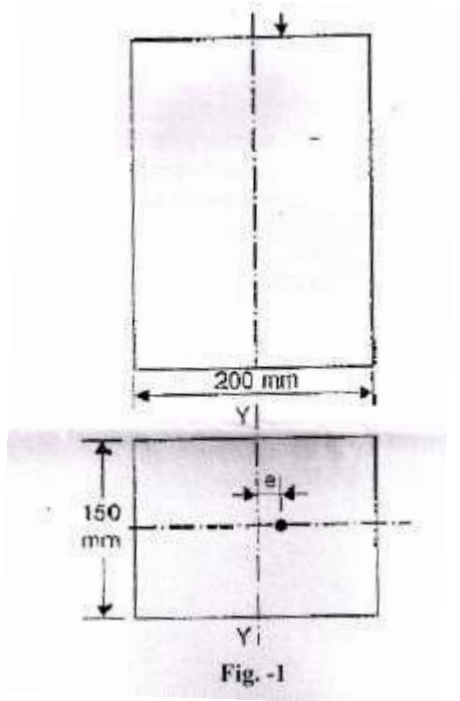
Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary & mention it clearly before the solution.
5) Use of scientific non programmable calculator is allowed.
6) Draw the appropriate sketches wherever necessary.

Section – I

Q.2 **a)** Find the kernel of circular section of diameter ‘d’. **03**

b) A rectangular column of width 200 mm and thickness 150 mm is as shown in fig.-1. The minimum stresses on the section is given zero then find the eccentricity of the point load 240 kN acting on the rectangular column. Also calculate the corresponding maximum stress on the section. **07**



Q.3 Derive the expression for crippling load when bot the ends of the column are fixed. **09**

Q.4 **a)** A simply supported beam of length 5 m carries a point load of 5 kN at a distance of 3 m from the left end. If $E = 2 \times 10^5$ N/mm^2 and $I = 10^8$ mm^4, determine the slope at the left support and deflection under the point load using conjugate beam method. **05**

b) A three hinged arch has a span of 30 m & a rise of 10 m. the arch carries anudl of 6 kN/m on the left half of its span. It also carries two concentrated loads of 16 kN & 10 kN at 5 m and 10 m from the right end as shown in fig.-2 determine the horizontal thrust. **04**

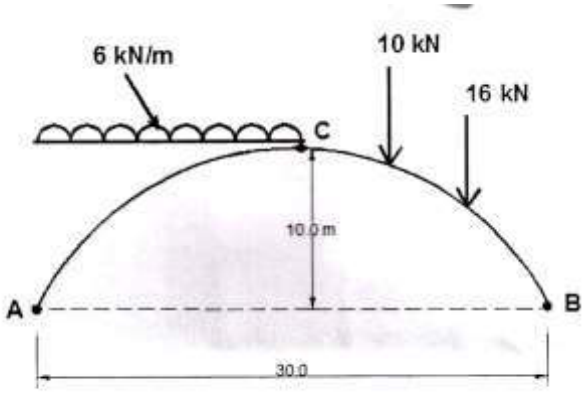


Fig. -2

Q.5 A masonry dam of rectangular cross-section 10 m high and 5 m wide has water up to the top on its one side. If the weight density of masonry is 21.582 kN/m^3. Find the maximum and minimum stress intensities at the base of the dam. **09**

Section – II

Q.6 Analyze the symmetric portal frame as shown in fig.-3 by moment distribution method. **10**

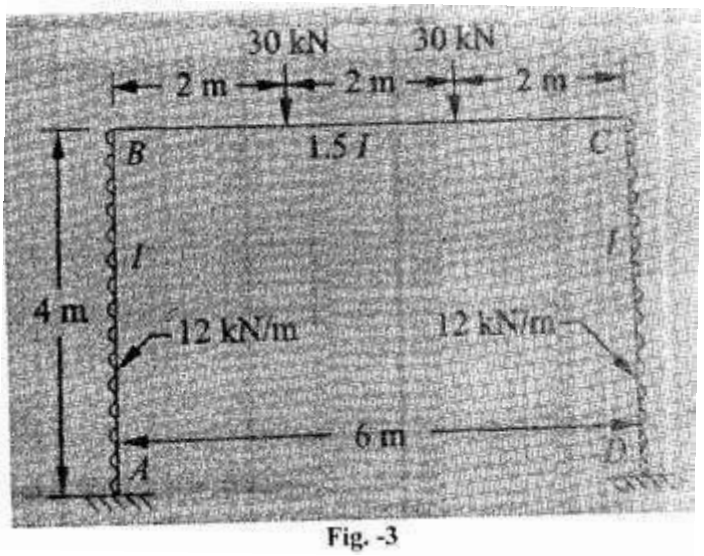


Fig. -3

Q.7 **a)** Explain the difference between the force method and displacement method. **05**

b) Write the test procedure to get the required solution by flexibility method. **04**

Q.8 Analyze the rigid jointed frame as shown in fig.-4 by moment distribution method and draw bending moment diagram. **09**

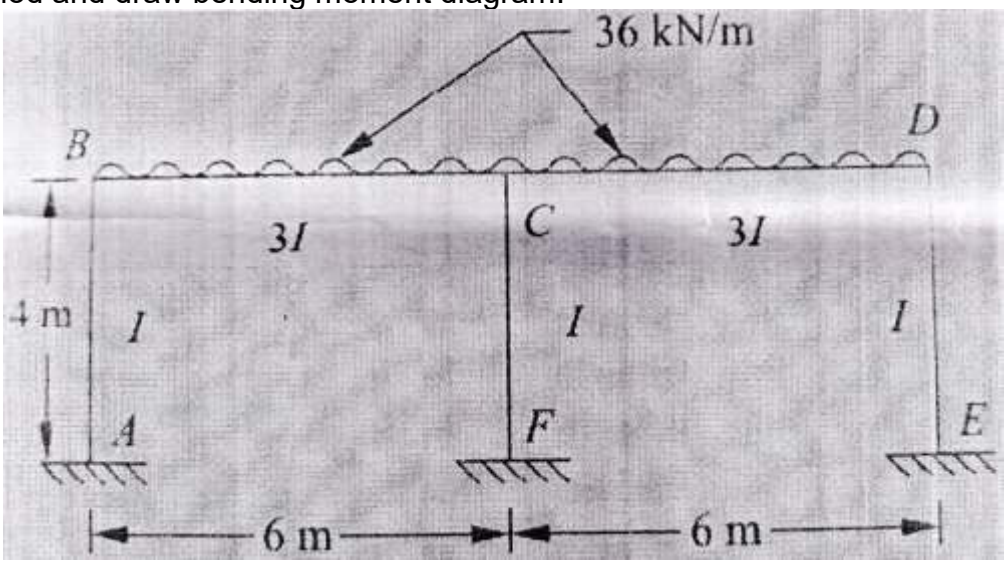


Fig. – 4

Q.9 Analyze the continuous beam as shown in fig.-5 by displacement method. **09**

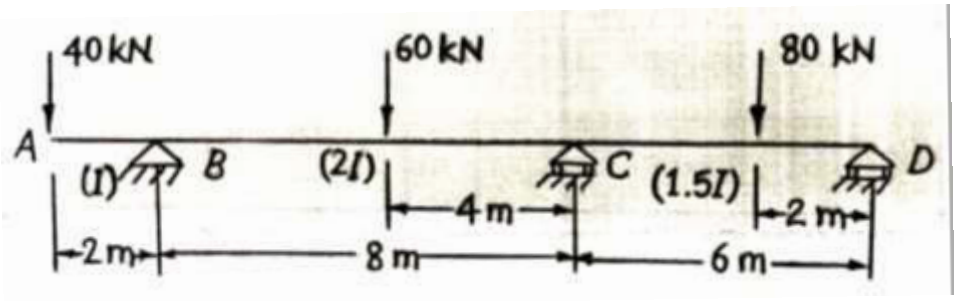


Fig. - 5

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - II (BTN01403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

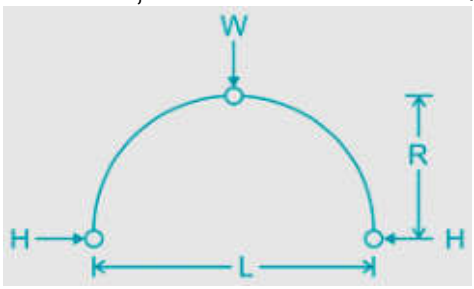
Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary & mention it clearly before the solution.
5) Use of scientific non programmable calculator is allowed.
6) Draw the appropriate sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) For a three hinged parabolic arch, what will be the ratio L/R to satisfy H=W?



a) 0.50 b) 1.50
c) 2.00 d) 4.00

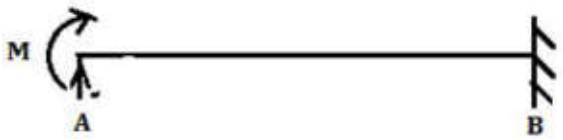
2) A three hinged parabolic arch has a span of 30 m and the central rise is 5 m. It is subjected to a point load of 40 kN at a distance of 20 m from the right hinge. Calculate the vertical component at its left support _____.

a) 35.35 kN b) 40 kN
c) 13.13 kN d) 26.67 kN

3) Carryover Moment is defined as _____.

a) The moment applied at one end to cause unit slope at the support
b) The additional moment applied at one end to completely resist the rotation caused due to external loading
c) The moment developed or induced at one end due to a moment at another end
d) The moment applied at one end to cause unit slope at another end

4) Carryover Moment at end B due to moment M applied at end A for the given propped cantilever beam is _____.



a) $+\mathrm{M}$ b) $-\mathrm{M}$
c) $+(\mathrm{M}/2)$ d) $-(\mathrm{M}/2)$

5) Degree of kinematic indeterminacy of a pin-jointed plane frame is given by _____.
a) $2\mathrm{j}-\mathrm{r}$ b) $\mathrm{j}-2\mathrm{r}$
c) $3\mathrm{j}-\mathrm{r}$ d) $2\mathrm{j}+\mathrm{r}$

6) To generate the j the column of the flexibility matrix _____.
a) a unit force is applied at coordinate j and the displacements are calculated at all coordinates
b) a unit displacement is applied at co-ordinate j and the forces are calculated at all coordinates
c) a unit force is applied at coordinate j and the forces are calculated at all coordinates
d) a unit displacement is applied at co-ordinate j and the displacements are calculated at all co-ordinates

7) Moment distribution method is also known as _____.
a) Macauly's method b) Hardy cross method
c) Mohr's theorem method d) Kennedy's theory

8) For rectangular section the minimum stress is negative (tensile) when the eccentricity of load is _____.
a) Less than b/6 b) More than b/6
c) Equal to b/6 d) Equal to b/3

9) The pressure intensity of water at free surface is _____.
a) Zero b) Maximum
c) Minimum d) Uniform

10) The co-efficient of wind resistance for circular chimney is _____.
a) 1 b) 2/3
c) 1/3 d) 1/4

11) Slenderness ratio is the ratio of effective length of column and _____.
a) lateral dimension of a column
b) least radius of gyration of a column
c) maximum radius of gyration of a column
d) none of the above

12) What is the relation between actual length and effective length while determining crippling load for a hollow rectangular cast iron column having both ends fixed?
(where $L =$ actual length and $L_e =$ effective length)
a) $L_e = L$ b) $L_e = L/2$
c) $L_e = 2L$ d) $L_e = 4L$

13) The moment area theorem with respect of bending of beams states that the area of the M/EI diagram between two sections of a beam gives _____.

a) The difference in slopes between those two sections
b) The difference in the maximum bending strains between those two sections
c) The difference in deflections between those two sections
d) The difference in the strain energies between those two sections

14) In the case of a beam simply supported at both ends, if the same load instead of being concentrated at center is _____.

a) 1/2 times
b) 1/4 times
c) 5/8 times
d) 3/8 times

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - II (BTN01403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
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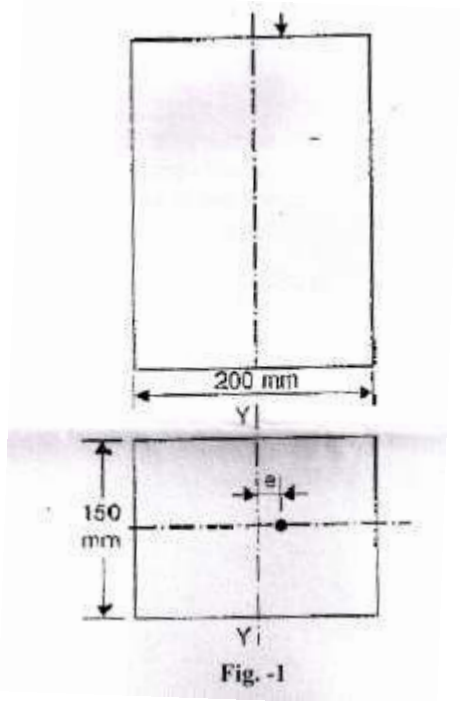
4) Assume suitable data if necessary & mention it clearly before the solution.
5) Use of scientific non programmable calculator is allowed.
6) Draw the appropriate sketches wherever necessary.

Section – I

Q.2 **a)** Find the kernel of circular section of diameter ‘d’. **03**

b) A rectangular column of width 200 mm and thickness 150 mm is as shown in fig.-1. The minimum stresses on the section is given zero then find the eccentricity of the point load 240 kN acting on the rectangular column. Also calculate the corresponding maximum stress on the section. **07**



Q.3 Derive the expression for crippling load when bot the ends of the column are fixed. **09**

Q.4 **a)** A simply supported beam of length 5 m carries a point load of 5 kN at a distance of 3 m from the left end. If $E = 2 \times 10^5$ N/mm^2 and $I = 10^8$ mm^4, determine the slope at the left support and deflection under the point load using conjugate beam method. **05**

b) A three hinged arch has a span of 30 m & a rise of 10 m. the arch carries anudl of 6 kN/m on the left half of its span. It also carries two concentrated loads of 16 kN & 10 kN at 5 m and 10 m from the right end as shown in fig.-2 determine the horizontal thrust. **04**

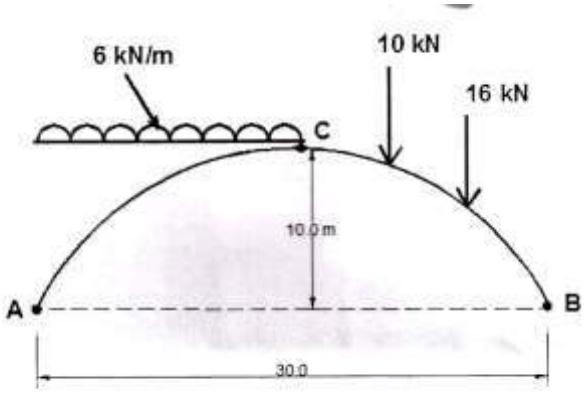


Fig. -2

Q.5 A masonry dam of rectangular cross-section 10 m high and 5 m wide has water up to the top on its one side. If the weight density of masonry is 21.582 kN/m^3. Find the maximum and minimum stress intensities at the base of the dam. **09**

Section – II

Q.6 Analyze the symmetric portal frame as shown in fig.-3 by moment distribution method. **10**

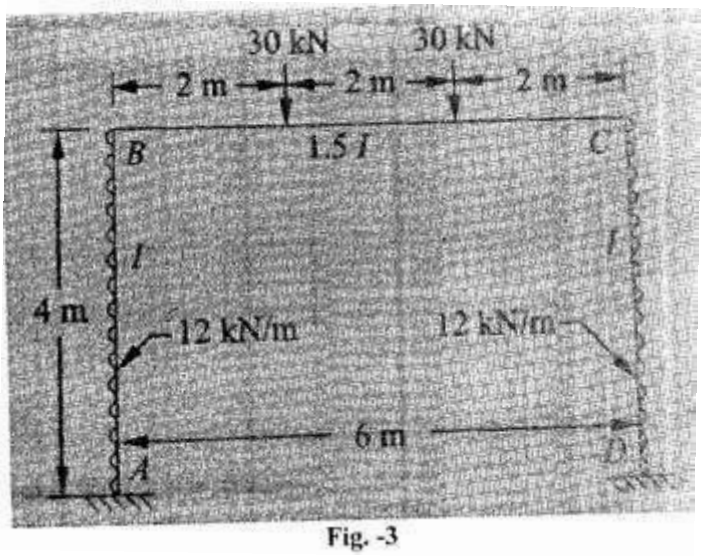


Fig. -3

Q.7 **a)** Explain the difference between the force method and displacement method. **05**

b) Write the test procedure to get the required solution by flexibility method. **04**

Q.8 Analyze the rigid jointed frame as shown in fig.-4 by moment distribution method and draw bending moment diagram. **09**

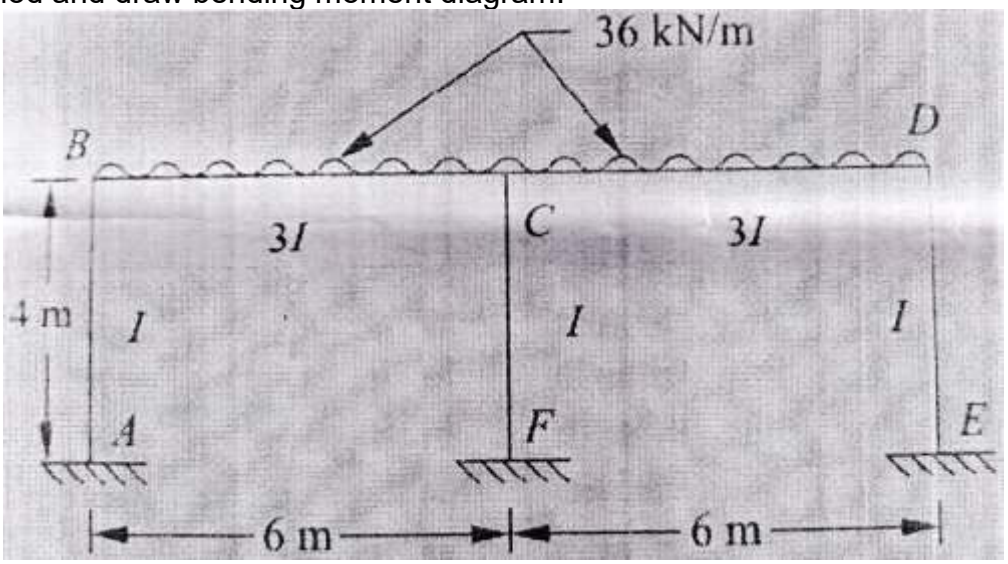


Fig. – 4

Q.9 Analyze the continuous beam as shown in fig.-5 by displacement method. **09**

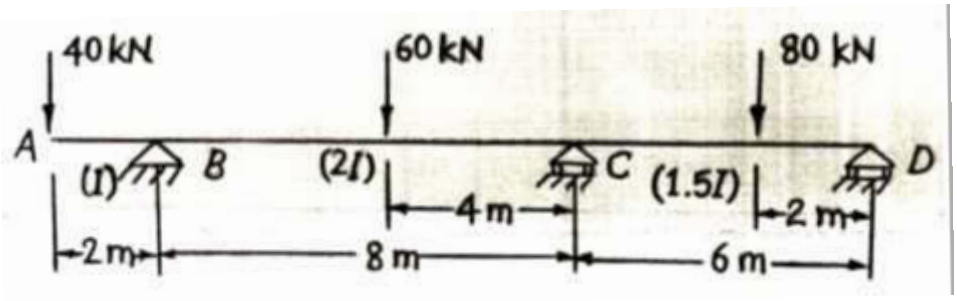


Fig. - 5

Seat No.		Set	R

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - II (BTN01403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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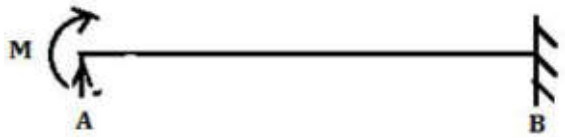
MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Carryover Moment at end B due to moment M applied at end A for the given propped cantilever beam is _____.



a) $+M$ b) $-M$
c) $+(M/2)$ d) $-(M/2)$

2) Degree of kinematic indeterminacy of a pin-jointed plane frame is given by ____.
a) $2j-r$ b) $j-2r$
c) $3j-r$ d) $2j+r$

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6) The pressure intensity of water at free surface is _____.

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c) Minimum d) Uniform

7) The co-efficient of wind resistance for circular chimney is _____.

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11) In the case of a beam simply supported at both ends, if the same load instead of being concentrated at center is _____.

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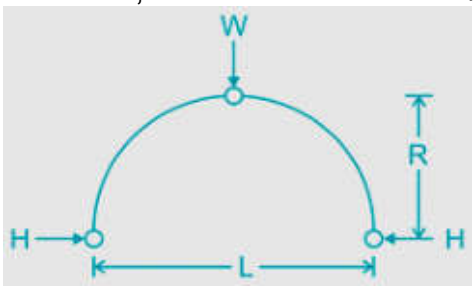
c) 5/8 times d) 3/8 times

12) For a three hinged parabolic arch, what will be the ratio L/R to satisfy H=W?



a) 0.50 b) 1.50

c) 2.00 d) 4.00

13) A three hinged parabolic arch has a span of 30 m and the central rise is 5 m. It is subjected to a point load of 40 kN at a distance of 20 m from the right hinge. Calculate the vertical component at its left support _____.

a) 35.35 kN b) 40 kN

c) 13.13 kN d) 26.67 kN

14) Carryover Moment is defined as _____.

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b) The additional moment applied at one end to completely resist the rotation caused due to external loading
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d) The moment applied at one end to cause unit slope at another end

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - II (BTN01403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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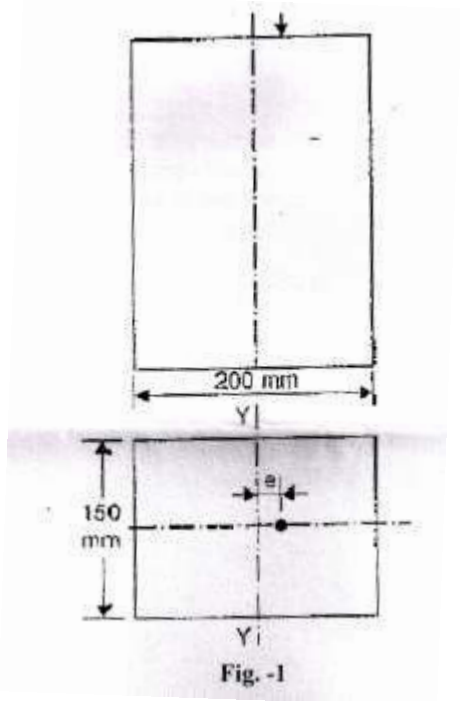
6) Draw the appropriate sketches wherever necessary.

Section – I

Q.2 **a)** Find the kernel of circular section of diameter ‘d’. **03**

b) A rectangular column of width 200 mm and thickness 150 mm is as shown in fig.-1. The minimum stresses on the section is given zero then find the eccentricity of the point load 240 kN acting on the rectangular column. Also calculate the corresponding maximum stress on the section. **07**



Q.3 Derive the expression for crippling load when bot the ends of the column are fixed. **09**

Q.4 **a)** A simply supported beam of length 5 m carries a point load of 5 kN at a distance of 3 m from the left end. If $E = 2 \times 10^5$ N/mm^2 and $I = 10^8$ mm^4, determine the slope at the left support and deflection under the point load using conjugate beam method. **05**

b) A three hinged arch has a span of 30 m & a rise of 10 m. the arch carries anudl of 6 kN/m on the left half of its span. It also carries two concentrated loads of 16 kN & 10 kN at 5 m and 10 m from the right end as shown in fig.-2 determine the horizontal thrust. **04**

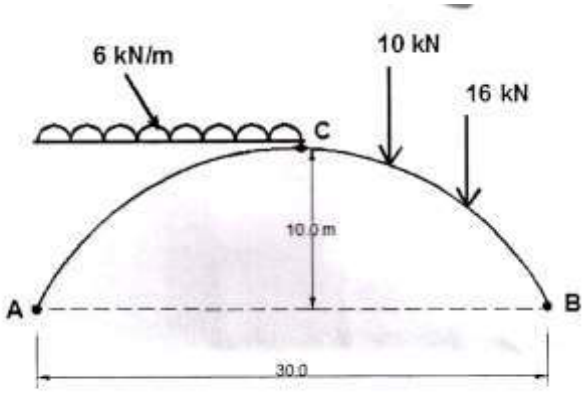


Fig. -2

Q.5 A masonry dam of rectangular cross-section 10 m high and 5 m wide has water up to the top on its one side. If the weight density of masonry is 21.582 kN/m^3. Find the maximum and minimum stress intensities at the base of the dam. **09**

Section – II

Q.6 Analyze the symmetric portal frame as shown in fig.-3 by moment distribution method. **10**

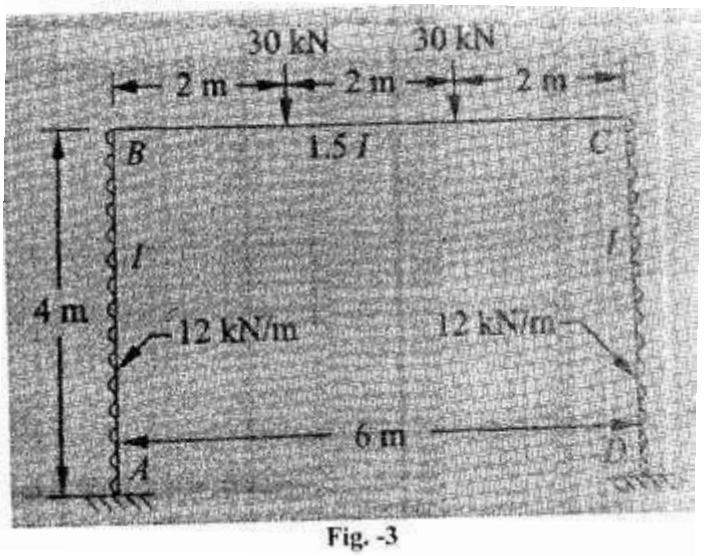


Fig. -3

Q.7 **a)** Explain the difference between the force method and displacement method. **05**

b) Write the test procedure to get the required solution by flexibility method. **04**

Q.8 Analyze the rigid jointed frame as shown in fig.-4 by moment distribution method and draw bending moment diagram. **09**

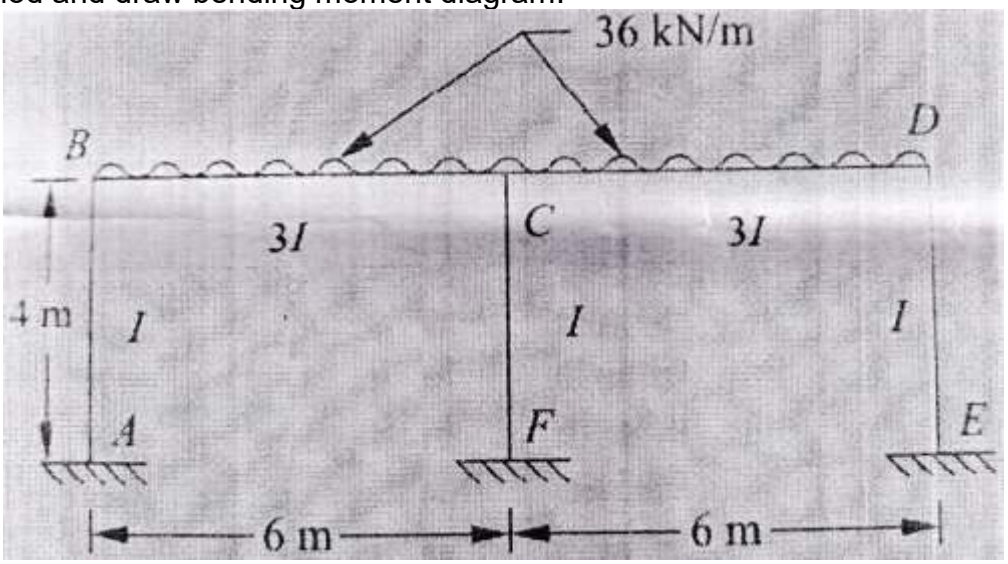


Fig. – 4

Q.9 Analyze the continuous beam as shown in fig.-5 by displacement method. **09**

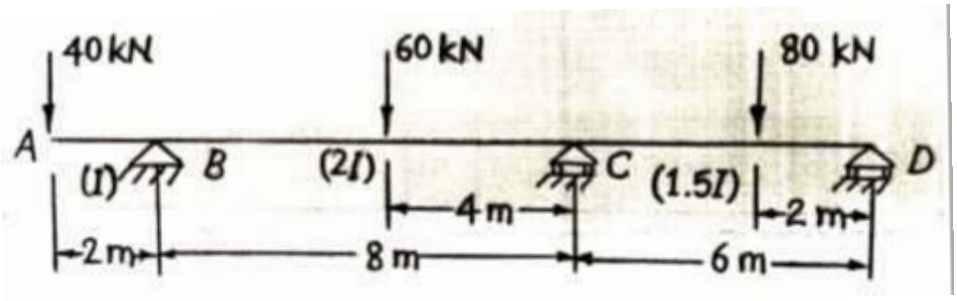


Fig. - 5

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - II (BTN01403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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5) Use of scientific non programmable calculator is allowed.
6) Draw the appropriate sketches wherever necessary.

MCQ/Objective Type Questions

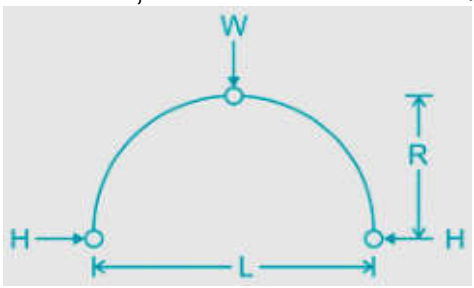
Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The moment area theorem with respect of bending of beams states that the area of the M/EI diagram between two sections of a beam gives _____.
a) The difference in slopes between those two sections
b) The difference in the maximum bending strains between those two sections
c) The difference in deflections between those two sections
d) The difference in the strain energies between those two sections

2) In the case of a beam simply supported at both ends, if the same load instead of being concentrated at center is _____.
a) 1/2 times b) 1/4 times
c) 5/8 times d) 3/8 times

3) For a three hinged parabolic arch, what will be the ratio L/R to satisfy H=W?



a) 0.50 b) 1.50
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4) A three hinged parabolic arch has a span of 30 m and the central rise is 5 m. It is subjected to a point load of 40 kN at a distance of 20 m from the right hinge. Calculate the vertical component at its left support _____.
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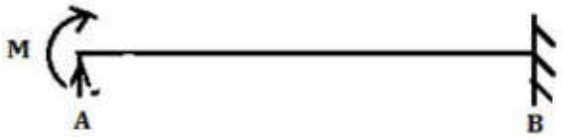
6) Carryover Moment at end B due to moment M applied at end A for the given propped cantilever beam is _____.



a) $+M$ b) $-M$
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10) For rectangular section the minimum stress is negative (tensile) when the eccentricity of load is _____.

a) Less than b/6 b) More than b/6
c) Equal to b/6 d) Equal to b/3

11) The pressure intensity of water at free surface is _____.

a) Zero b) Maximum
c) Minimum d) Uniform

12) The co-efficient of wind resistance for circular chimney is _____.

a) 1 b) 2/3
c) 1/3 d) 1/4

13) Slenderness ratio is the ratio of effective length of column and _____.

a) lateral dimension of a column
b) least radius of gyration of a column
c) maximum radius of gyration of a column
d) none of the above

14) What is the relation between actual length and effective length while determining crippling load for a hollow rectangular cast iron column having both ends fixed?
(where $L =$ actual length and $L_e =$ effective length)

a) $L_e = L$ b) $L_e = L/2$

c) $L_e = 2L$ d) $L_e = 4L$

SLR-GF-725

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Structural Mechanics - II (BTN01403)

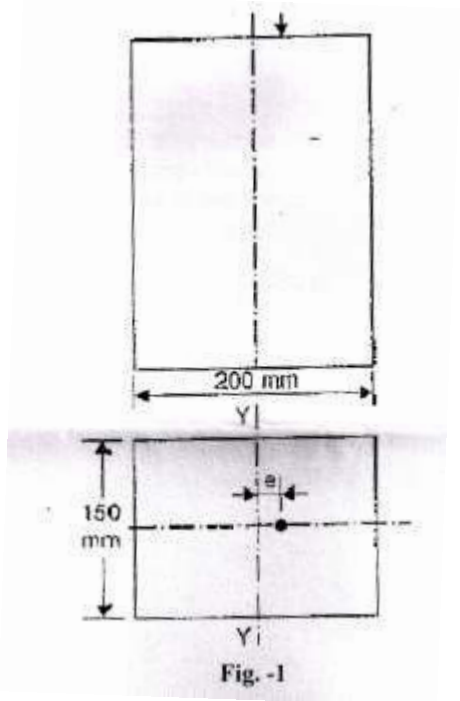
Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary & mention it clearly before the solution.
5) Use of scientific non programmable calculator is allowed.
6) Draw the appropriate sketches wherever necessary.

Section – I

Q.2 **a)** Find the kernel of circular section of diameter 'd'. **03**

b) A rectangular column of width 200 mm and thickness 150 mm is as shown in fig.-1. The minimum stresses on the section is given zero then find the eccentricity of the point load 240 kN acting on the rectangular column. Also calculate the corresponding maximum stress on the section. **07**



Q.3 Derive the expression for crippling load when bot the ends of the column are fixed. **09**

Q.4 **a)** A simply supported beam of length 5 m carries a point load of 5 kN at a distance of 3 m from the left end. If $E = 2 \times 10^5$ N/mm^2 and $I = 10^8$ mm^4, determine the slope at the left support and deflection under the point load using conjugate beam method. **05**

b) A three hinged arch has a span of 30 m & a rise of 10 m. the arch carries anudl of 6 kN/m on the left half of its span. It also carries two concentrated loads of 16 kN & 10 kN at 5 m and 10 m from the right end as shown in fig.-2 determine the horizontal thrust. **04**

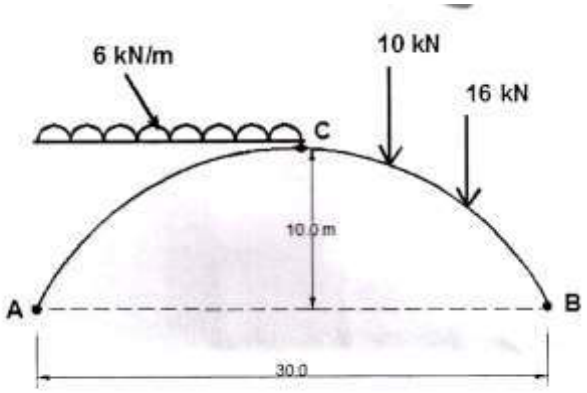


Fig. -2

Q.5 A masonry dam of rectangular cross-section 10 m high and 5 m wide has water up to the top on its one side. If the weight density of masonry is 21.582 kN/m^3. Find the maximum and minimum stress intensities at the base of the dam. **09**

Section – II

Q.6 Analyze the symmetric portal frame as shown in fig.-3 by moment distribution method. **10**

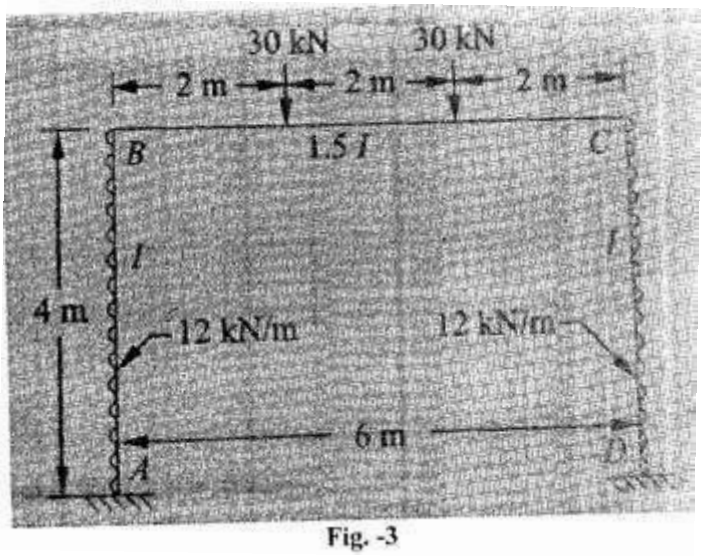


Fig. -3

Q.7 **a)** Explain the difference between the force method and displacement method. **05**

b) Write the test procedure to get the required solution by flexibility method. **04**

Q.8 Analyze the rigid jointed frame as shown in fig.-4 by moment distribution method and draw bending moment diagram. **09**

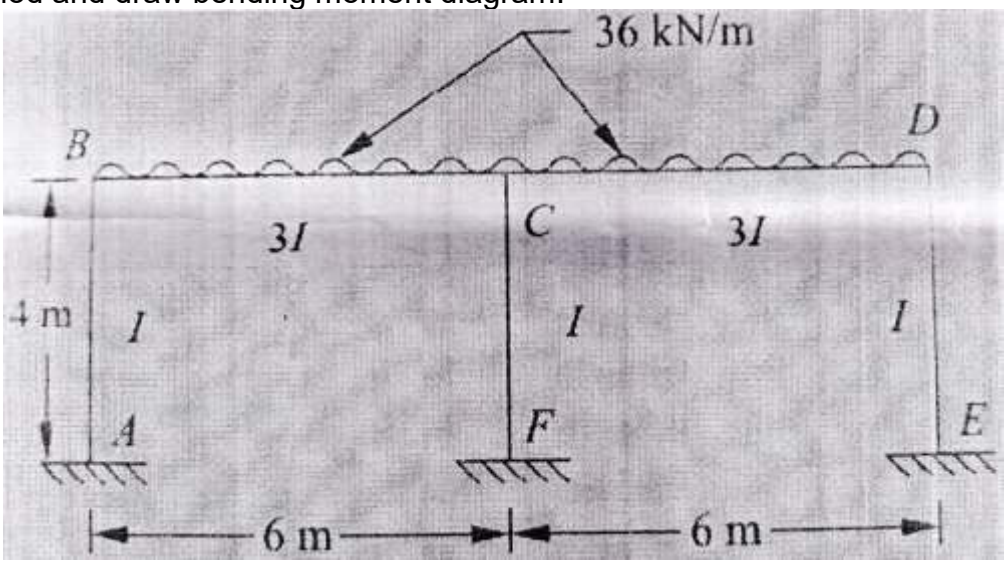


Fig. – 4

Q.9 Analyze the continuous beam as shown in fig.-5 by displacement method. **09**

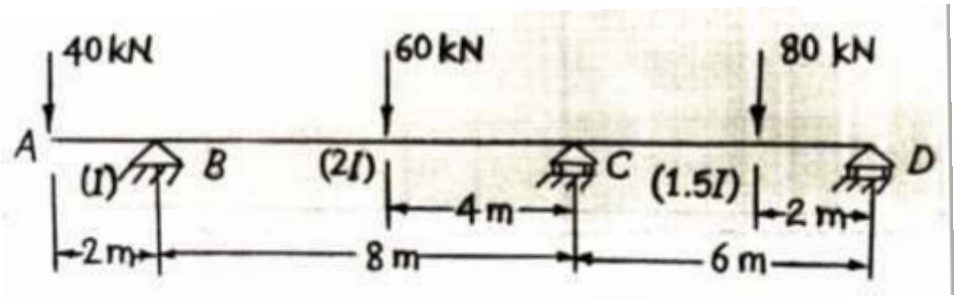


Fig. - 5

Seat No.		Set	P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Geology (BTN01405)

Day & Date: Friday, 19-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat and labeled diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The Basin shaped igneous intrusion in unfolded region is called _____.
a) lopolith b) phaccolith
c) laccolith d) sill

2) The _____ rocks are insoluble insitu products of rock weathering.
a) rudaceous b) arenaceous
c) argillaceous d) residual

3) The slow cooling of magma forms _____ texture.
a) amygdaloidal b) coarse grain
c) glassy d) columnar

4) The gaseous and vapors entrapped during the solidification of lava form _____ structure
a) Flow b) Ropy
c) Pillow d) Vesicular

5) Arenaceous sedimentary rock composed entirely of _____ grains.
a) Sand and Gravel b) Clay
c) Boulder and Coble d) Pebble

6) _____ mineral is in mica group.
a) Quartz b) Orthoclase
c) Plagioclase d) Muscovite

7) The vertical displacement of a fault is called as _____.
a) throw b) hade
c) have d) net slip

8) Sloping surface of valley upon which dam rests is known as _____.
a) heel b) abutment
c) toe d) pier

9) _____ is the ornamented stone.
a) shale b) phyllite
c) sandstone d) pink granite

10) Which of the following is oldest type of drilling _____.
a) Rotary b) Calyx
c) Diamond d) Auger

11) _____ rock having high porosity.
a) Sandstone b) Limestone
c) Granite d) Zeolitic Basalt

12) Majority of landslides due to _____.
a) Heavy rain b) Earthquake
c) Volcanic eruption d) Terrain cutting

13) For the safe and stable construction of dam the correct geological condition would be _____.
a) At crest of fold limbs dipping upstream
b) At trough of fold
c) At limb of fold
d) None of these

14) In parched aquifer groundwater water level is _____.
a) above the water table b) equal to water table
c) below the water table d) All of these

Seat No.		Set	P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Geology (BTN01405)

Day & Date: Friday, 19-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagram wherever necessary.

Section –I

Q.2 **a)** Define fault and explain any three types of fault. **06**
b) Define igneous rock and explain any two igneous structures. **06**

OR

Q.3 **a)** Explain formation process of sedimentary rock. **06**
b) Define volcano and explain in detail liquid and gaseous products of volcano. **06**

Q.4 What is Discordant igneous intrusion? explain any two discordant intrusions. **07**

OR

Q.5 Define metamorphic rock? explain in detail agents of metamorphic rock. **07**

Q.6 **Write a note on (Any Three)** **09**
a) Angular unconformity
b) Ripple mark structure
c) Mohos scale of hardness
d) Feldspar group of minerals
e) Schistose structure

Section – II

Q.7 **a)** Define landslide and explain types of landslide. **06**
b) Explain in detail geophysical investigation for dam site. **06**

OR

Q.8 **a)** Define earthquake and explain causes and effect of earthquake. **06**
b) What is Ornamented stone? Describe properties of good ornamented stone. **06**

Q.9 Define aquifer and explain types of aquifer with examples. **07**

OR

Q.10 Explain the parameters for good reservoir site with example. **07**

Q.11 **Write a note on (Any Three)** **09**
a) Focus and epicenter of Earthquake
b) Siltation Problems in reservoir
c) RQD
d) Porosity and permeability factor with example
e) A typical core log

SLR-GF-726

Seat No.		Set	Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Geology (BTN01405)

Day & Date: Friday, 19-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat and labeled diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Sloping surface of valley upon which dam rests is known as _____.
a) heel b) abutment
c) toe d) pier

2) _____ is the ornamented stone.
a) shale b) phyllite
c) sandstone d) pink granite

3) Which of the following is oldest type of drilling _____.
a) Rotary b) Calyx
c) Diamond d) Auger

4) _____ rock having high porosity.
a) Sandstone b) Limestone
c) Granite d) Zeolitic Basalt

5) Majority of landslides due to _____.
a) Heavy rain b) Earthquake
c) Volcanic eruption d) Terrain cutting

6) For the safe and stable construction of dam the correct geological condition would be _____.
a) At crest of fold limbs dipping upstream
b) At trough of fold
c) At limb of fold
d) None of these

7) In parched aquifer groundwater water level is _____.
a) above the water table b) equal to water table
c) below the water table d) All of these

8) The Basin shaped igneous intrusion in unfolded region is called _____.
a) lopolith b) phaccolith
c) laccolith d) sill

9) The _____ rocks are insoluble insitu products of rock weathering.
a) rudaceous b) arenaceous
c) argillaceous d) residual

10) The slow cooling of magma forms _____ texture.
a) amygdaloidal b) coarse grain
c) glassy d) columnar

11) The gaseous and vapors entrapped during the solidification of lava form _____ structure
a) Flow b) Ropy
c) Pillow d) Vesicular

12) Arenaceous sedimentary rock composed entirely of _____ grains.
a) Sand and Gravel b) Clay
c) Boulder and Coble d) Pebble

13) _____ mineral is in mica group.
a) Quartz b) Orthoclase
c) Plagioclase d) Muscovite

14) The vertical displacement of a fault is called as _____.
a) throw b) hade
c) have d) net slip

Seat No.	

Set | Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Geology (BTN01405)

Day & Date: Friday, 19-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagram wherever necessary.

Section –I

Q.2 **a)** Define fault and explain any three types of fault. **06**
b) Define igneous rock and explain any two igneous structures. **06**

OR

Q.3 **a)** Explain formation process of sedimentary rock. **06**
b) Define volcano and explain in detail liquid and gaseous products of volcano. **06**

Q.4 What is Discordant igneous intrusion? explain any two discordant intrusions. **07**

OR

Q.5 Define metamorphic rock? explain in detail agents of metamorphic rock. **07**

Q.6 **Write a note on (Any Three)** **09**
a) Angular unconformity
b) Ripple mark structure
c) Mohos scale of hardness
d) Feldspar group of minerals
e) Schistose structure

Section – II

Q.7 **a)** Define landslide and explain types of landslide. **06**
b) Explain in detail geophysical investigation for dam site. **06**

OR

Q.8 **a)** Define earthquake and explain causes and effect of earthquake. **06**
b) What is Ornamented stone? Describe properties of good ornamented stone. **06**

Q.9 Define aquifer and explain types of aquifer with examples. **07**

OR

Q.10 Explain the parameters for good reservoir site with example. **07**

Q.11 **Write a note on (Any Three)** **09**
a) Focus and epicenter of Earthquake
b) Siltation Problems in reservoir
c) RQD
d) Porosity and permeability factor with example
e) A typical core log

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Geology (BTN01405)

Day & Date: Friday, 19-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat and labeled diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ rock having high porosity.
a) Sandstone b) Limestone
c) Granite d) Zeolitic Basalt

2) Majority of landslides due to _____.
a) Heavy rain b) Earthquake
c) Volcanic eruption d) Terrain cutting

3) For the safe and stable construction of dam the correct geological condition would be _____.
a) At crest of fold limbs dipping upstream
b) At trough of fold
c) At limb of fold
d) None of these

4) In parched aquifer groundwater water level is _____.
a) above the water table b) equal to water table
c) below the water table d) All of these

5) The Basin shaped igneous intrusion in unfolded region is called _____.
a) lopolith b) phaccolith
c) laccolith d) sill

6) The _____ rocks are insoluble insitu products of rock weathering.
a) rudaceous b) arenaceous
c) argillaceous d) residual

7) The slow cooling of magma forms _____ texture.
a) amygdaloidal b) coarse grain
c) glassy d) columnar

8) The gaseous and vapors entrapped during the solidification of lava form _____ structure
a) Flow b) Ropy
c) Pillow d) Vesicular

9) Arenaceous sedimentary rock composed entirely of _____ grains.
a) Sand and Gravel b) Clay
c) Boulder and Coble d) Pebble

10) _____ mineral is in mica group.
a) Quartz b) Orthoclase
c) Plagioclase d) Muscovite

11) The vertical displacement of a fault is called as _____.
a) throw b) hade
c) have d) net slip

12) Sloping surface of valley upon which dam rests is known as _____.
a) heel b) abutment
c) toe d) pier

13) _____ is the ornamented stone.
a) shale b) phyllite
c) sandstone d) pink granite

14) Which of the following is oldest type of drilling _____.
a) Rotary b) Calyx
c) Diamond d) Auger

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Geology (BTN01405)

Day & Date: Friday, 19-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagram wherever necessary.

Section –I

Q.2 **a)** Define fault and explain any three types of fault. **06**
b) Define igneous rock and explain any two igneous structures. **06**

OR

Q.3 **a)** Explain formation process of sedimentary rock. **06**
b) Define volcano and explain in detail liquid and gaseous products of volcano. **06**

Q.4 What is Discordant igneous intrusion? explain any two discordant intrusions. **07**

OR

Q.5 Define metamorphic rock? explain in detail agents of metamorphic rock. **07**

Q.6 **Write a note on (Any Three)** **09**
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b) Ripple mark structure
c) Mohos scale of hardness
d) Feldspar group of minerals
e) Schistose structure

Section – II

Q.7 **a)** Define landslide and explain types of landslide. **06**
b) Explain in detail geophysical investigation for dam site. **06**

OR

Q.8 **a)** Define earthquake and explain causes and effect of earthquake. **06**
b) What is Ornamented stone? Describe properties of good ornamented stone. **06**

Q.9 Define aquifer and explain types of aquifer with examples. **07**

OR

Q.10 Explain the parameters for good reservoir site with example. **07**

Q.11 **Write a note on (Any Three)** **09**
a) Focus and epicenter of Earthquake
b) Siltation Problems in reservoir
c) RQD
d) Porosity and permeability factor with example
e) A typical core log

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Geology (BTN01405)

Day & Date: Friday, 19-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat and labeled diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ mineral is in mica group.
a) Quartz b) Orthoclase
c) Plagioclase d) Muscovite

2) The vertical displacement of a fault is called as _____.
a) throw b) hade
c) have d) net slip

3) Sloping surface of valley upon which dam rests is known as _____.
a) heel b) abutment
c) toe d) pier

4) _____ is the ornamented stone.
a) shale b) phyllite
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5) Which of the following is oldest type of drilling _____.
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8) For the safe and stable construction of dam the correct geological condition would be _____.
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c) laccolith d) sill

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a) rudaceous b) arenaceous
c) argillaceous d) residual

12) The slow cooling of magma forms _____ texture.
a) amygdaloidal b) coarse grain
c) glassy d) columnar

13) The gaseous and vapors entrapped during the solidification of lava form _____ structure
a) Flow b) Ropy
c) Pillow d) Vesicular

14) Arenaceous sedimentary rock composed entirely of _____ grains.
a) Sand and Gravel b) Clay
c) Boulder and Coble d) Pebble

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Geology (BTN01405)

Day & Date: Friday, 19-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagram wherever necessary.

Section –I

Q.2 **a)** Define fault and explain any three types of fault. **06**
b) Define igneous rock and explain any two igneous structures. **06**

OR

Q.3 **a)** Explain formation process of sedimentary rock. **06**
b) Define volcano and explain in detail liquid and gaseous products of volcano. **06**

Q.4 What is Discordant igneous intrusion? explain any two discordant intrusions. **07**

OR

Q.5 Define metamorphic rock? explain in detail agents of metamorphic rock. **07**

Q.6 **Write a note on (Any Three)** **09**
a) Angular unconformity
b) Ripple mark structure
c) Mohos scale of hardness
d) Feldspar group of minerals
e) Schistose structure

Section – II

Q.7 **a)** Define landslide and explain types of landslide. **06**
b) Explain in detail geophysical investigation for dam site. **06**

OR

Q.8 **a)** Define earthquake and explain causes and effect of earthquake. **06**
b) What is Ornamented stone? Describe properties of good ornamented stone. **06**

Q.9 Define aquifer and explain types of aquifer with examples. **07**

OR

Q.10 Explain the parameters for good reservoir site with example. **07**

Q.11 **Write a note on (Any Three)** **09**
a) Focus and epicenter of Earthquake
b) Siltation Problems in reservoir
c) RQD
d) Porosity and permeability factor with example
e) A typical core log

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Mathematics - III (BTN01404)

Day & Date: Saturday, 20-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If the differential equation $\frac{d^n y}{dx^n} + \frac{d^{n-1} y}{dx^{n-1}} + \cdots + y_n = X$ is called a linear differential equation with constant coefficients, then the R.H.S. is called _____.

a) a constant b) a function of x
c) a function of y d) a function of x and y

2) $\frac{1}{D-a}\ X$ is equal to _____.

a) $\int e^{ax} X dx$ b) $\int e^{-ax} X dx$
c) $e^{-ax} \int e^{ax} X dx$ d) $e^{ax} \int e^{-ax} X dx$

3) The complementary function of $(D^2 + 2D + 1)y = 2e^{3x}$ is _____.

a) $c_1 e^x + c_2 e^{-x}$ b) $(c_1 + c_2 x)e^x$
c) $(c_1 \cos x + c_2 \sin x)$ d) $(c_1 + c_2 x)e^{-x}$

4) The solution of $pq = 1$ is _____.

a) $z = ax + \frac{1}{a} y + c$ b) $z = ax + ay + c$
c) $z = ax + by + c$ d) $z = ax + \frac{1}{b} y + c$

5) The Solution of $2p + 3q = 1$ is _____.

a) $\varphi(3x + 2y, y + 3z) = 0$ b) $\varphi(3x - 2y, y - 3z) = 0$
c) $\varphi(3x + 2y, y - 3z) = 0$ d) $\varphi(3x - 2y, y + 3z) = 0$

6) The conditions of expansions of function in Fourier series are known as _____.

a) Harmonic b) Periodic
c) Riemann's conditions d) Dirichlet's conditions

7) Fourier Series expansion of $f(x) = x + x^2$ in the interval (-1, 1) has _____.

a) Sine terms only b) Cosine terms only
c) Both Sine & Cosine terms d) None of these

8) $L\{e^{-2t} + \sin 2t\} =$ _____.

a) $\frac{2}{s^2+2^2} + \frac{1}{s-2}$ b) $\frac{2}{s^2+2^2} + \frac{1}{s+2}$

c) $\frac{2}{s^2-2^2} + \frac{1}{s+2}$ d) $\frac{2}{s^2-2^2} + \frac{1}{s-2}$

9) $L^{-1}\left(\frac{s+s^2}{s^3}\right) =$ _____.

a) $t + t^2$ b) $t + 1$

c) $t^2 + 1$ d) t

10) $L\{e^{at}t^n\} =$_____.

a) $\frac{gamma(n)}{(s-a)^{n+1}}$ b) $\frac{gamma(n+1)}{(s-a)^{n+1}}$

c) $\frac{\sqrt{n}}{(s-a)^{n+1}}$ d) $\frac{gamma(n+1)}{(s+a)^{n+1}}$

11) The equation of the lines of regression are $x + 2y = 5$ & $2x + 3y = 8$. Then $\bar{x}$ & $\bar{y}$ are _____.

a) 1 & 3 b) 2 & 3

c) 2 & 5 d) 3 & 2

12) The value of Karl Pearson's coefficient of correlation r lies between _____.

a) -2 and -1 b) -1 and 1

c) 1 and 2 d) 2 and 3

13) In binomial probability distribution, dependents of standard deviations must include _____.

a) Probability of q b) Probability of p

c) Trials d) All of above

14) A random variable has a Poisson distribution with mean 6, then $p(x = 1)$ = _____.

a) 0.015 b) 0.055

c) 0.15 d) 0.25

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Engineering Mathematics - III (BTN01404)

Day & Date: Saturday, 20-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of calculator is allowed.

Section – I

Q.2 Attempt any three of the following questions. **09**

a) Solve $(D^3+1)y = e^{2x}$

b) Solve $(D^2-7D+12)y = \cos 3x$

c) Solve $p^2 - q^2 = z$

d) Solve $p^2x^2 = q^2y$

e) Obtain Fourier series expansion of $f(x) = \begin{cases} \pi x, & 0 < x < 1 \\ 0, & 1 < x < 2 \end{cases}$

Q.3 Attempt any three of the following questions. **09**

a) Solve $(D^2+3D+2)y = e^{e^x}$

b) Solve $px^2 + qy^2 = z^2$

c) Evaluate $x^2\frac{d^2y}{dx^2} - 3x\frac{dy}{dx} + 4y = 2x^2$

d) Obtain half range cosine series for $f(x) = \sin x\,, 0 \le x \le \pi$.

e) Obtain Fourier series $f(x) = x$ in the interval $(-\pi, \pi)$.

Q.4 Attempt any two of the following questions. **10**

a) The differential equation satisfied by a beam uniformly loaded with one end fixed and the second subjected to a tensile force P is given by EI $\frac{d^2y}{dx^2} = Py - \frac{1}{2}Wx^2$
Show that the elastic curve for the beam under conditions $y = 0$, $\frac{dy}{dx} = 0$ at $x = 0$ is given by $y = \frac{w}{Pn^2}(1 - \cosh nx) + \frac{Wx^2}{2p}$ where $n^2 = \frac{P}{EI}$

b) Solve the following partial differential equation by the method of separation variables $\frac{\partial z}{\partial x} = 4\frac{\partial z}{\partial y}$ where $z(x,0) = 8e^{-3y}$

c) Obtain Fourier series $f(x) = x^2$ in the interval $(0, 2\pi)$

Section – II

Q.5 Attempt any three of the following questions. **09**

a) Find $L\{t\sin^3 t\}$

b) Compute the coefficient of correlation between x and y from the following data.

x	2	4	5	6	8	11
y	18	12	10	8	7	5

c) Calculate the value of k if the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1-x^3) & , \quad 0 \le x \le 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

d) Calculate $L^{-1}\left\{\frac{s+2}{s^2-4s+13}\right\}$

e) Fit a straight line to the following data and estimate the value of y when $x = 73$.

x	10	20	30	40	50	60	70	80
y	1	3	5	10	6	4	2	1

Q.6 Attempt any three of the following questions. **09**

a) Calculate $L\{f'(t)\}$, given $f(t) = \frac{\sin t}{t}$

b) The following results were obtained from marks in Applied Mechanics and Engineering Mathematics in an exam.

	Marks in Applied Mechanics (x)	Marks in Engineering Mathematics (y)
Mean	47.5	39.5
S.D.	16.8	10.8

$$r = 0.95$$

c) Determine the probability that out of 3000 persons living in the area at least one would die in flood in that year, if the chance of being killed by flood during a year is 1/300 by using Poisson distribution.

d) Calculate inverse Laplace transform of $\frac{s+29}{(s+4)(s^2+9)}$

e) Calculate the approximate number of packets containing no defective, one defective, two defective blades in a consignment of 10,000 packets. If in a certain factory turning out blades, there is a small chance 1/250 for any blade to be effective. The blades are supplied in packets of 10.

Q.7 Attempt any two of the following questions. **10**

a) Solve $(D^2 - D - 2)y = 20 \sin 2t$ with $y(0) = 1$ & $y'(0) = 2$

b) Calculate the lines of regression from the following data. Also find the Co-efficient of correlation.

x	62	64	65	69	70	71	72	74
y	126	125	139	145	165	152	180	208

c) Calculate what is the number of persons of this group who have income

1) Exceeding Rs. 668
2) Exceeding Rs. 832

If the income distribution of a group of 10,000 persons was found to be normal with mean Rs. 750 and standard deviation Rs. 50.
(Given: Area under the standard normal curve between ordinates ± 1.64 is 0.8990.)

Seat No.	

Set **Q**

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) $L\{e^{-2t} + \sin 2t\} =$ _____.

a) $\frac{2}{s^2+2^2} + \frac{1}{s-2}$ b) $\frac{2}{s^2+2^2} + \frac{1}{s+2}$

c) $\frac{2}{s^2-2^2} + \frac{1}{s+2}$ d) $\frac{2}{s^2-2^2} + \frac{1}{s-2}$

2) $L^{-1}\left(\frac{s+s^2}{s^3}\right) =$ _____.

a) $t + t^2$ b) $t + 1$

c) $t^2 + 1$ d) t

3) $L\{e^{at}t^n\} =$_____.

a) $\frac{gamma(n)}{(s-a)^{n+1}}$ b) $\frac{gamma(n+1)}{(s-a)^{n+1}}$

c) $\frac{\sqrt{n}}{(s-a)^{n+1}}$ d) $\frac{gamma(n+1)}{(s+a)^{n+1}}$

4) The equation of the lines of regression are $x + 2y = 5$ & $2x + 3y = 8$. Then $\bar{x}$ & $\bar{y}$ are _____.

a) 1 & 3 b) 2 & 3

c) 2 & 5 d) 3 & 2

5) The value of Karl Pearson's coefficient of correlation r lies between _____.

a) -2 and -1 b) -1 and 1

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6) In binomial probability distribution, dependents of standard deviations must include _____.

a) Probability of q b) Probability of p

c) Trials d) All of above

7) A random variable has a Poisson distribution with mean 6, then $p(x = 1)$ = _____.

a) 0.015 b) 0.055
c) 0.15 d) 0.25

8) If the differential equation $\frac{d^n y}{dx^n} + \frac{d^{n-1} y}{dx^{n-1}} + \cdots + y_n = X$ is called a linear differential equation with constant coefficients, then the R.H.S. is called _____.

a) a constant b) a function of x
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9) $\frac{1}{D-a} X$ is equal to _____.

a) $\int e^{ax} X dx$ b) $\int e^{-ax} X dx$
c) $e^{-ax} \int e^{ax} X dx$ d) $e^{ax} \int e^{-ax} X dx$

10) The complementary function of $(D^2 + 2D + 1)y = 2e^{3x}$ is _____.

a) $c_1 e^x + c_2 e^{-x}$ b) $(c_1 + c_2 x)e^x$
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11) The solution of $pq = 1$ is _____.

a) $z = ax + \frac{1}{a} y + c$ b) $z = ax + ay + c$
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12) The Solution of $2p + 3q = 1$ is _____.

a) $\varphi(3x + 2y, y + 3z) = 0$ b) $\varphi(3x - 2y, y - 3z) = 0$
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13) The conditions of expansions of function in Fourier series are known as _____.

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) 2 & 5 d) 3 & 2

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3) In binomial probability distribution, dependents of standard deviations must include _____.
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4) A random variable has a Poisson distribution with mean 6, then $p(x = 1)$ = _____.
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c) Solve $p^2 - q^2 = z$

d) Solve $p^2x^2 = q^2y$

e) Obtain Fourier series expansion of $f(x) = \begin{cases} \pi x, & 0 < x < 1 \\ 0, & 1 < x < 2 \end{cases}$

Q.3 Attempt any three of the following questions. **09**

a) Solve $(D^2+3D+2)y = e^{e^x}$

b) Solve $px^2 + qy^2 = z^2$

c) Evaluate $x^2\frac{d^2y}{dx^2} - 3x\frac{dy}{dx} + 4y = 2x^2$

d) Obtain half range cosine series for $f(x) = \sin x\,, 0 \le x \le \pi$.

e) Obtain Fourier series $f(x) = x$ in the interval $(-\pi, \pi)$.

Q.4 Attempt any two of the following questions. **10**

a) The differential equation satisfied by a beam uniformly loaded with one end fixed and the second subjected to a tensile force P is given by EI $\frac{d^2y}{dx^2} = Py - \frac{1}{2}Wx^2$
Show that the elastic curve for the beam under conditions $y = 0$, $\frac{dy}{dx} = 0$ at $x = 0$ is given by $y = \frac{w}{Pn^2}(1 - \cosh nx) + \frac{Wx^2}{2p}$ where $n^2 = \frac{P}{EI}$

b) Solve the following partial differential equation by the method of separation variables $\frac{\partial z}{\partial x} = 4\frac{\partial z}{\partial y}$ where $z(x,0) = 8e^{-3y}$

c) Obtain Fourier series $f(x) = x^2$ in the interval $(0, 2\pi)$

Section – II

Q.5 Attempt any three of the following questions. **09**

a) Find $L\{t\sin^3 t\}$

b) Compute the coefficient of correlation between x and y from the following data.

x	2	4	5	6	8	11
y	18	12	10	8	7	5

c) Calculate the value of k if the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1-x^3) & , \quad 0 \le x \le 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

d) Calculate $L^{-1}\left\{\frac{s+2}{s^2-4s+13}\right\}$

e) Fit a straight line to the following data and estimate the value of y when $x = 73$.

x	10	20	30	40	50	60	70	80
y	1	3	5	10	6	4	2	1

Q.6 Attempt any three of the following questions. **09**

a) Calculate $L\{f'(t)\}$, given $f(t) = \frac{\sin t}{t}$

b) The following results were obtained from marks in Applied Mechanics and Engineering Mathematics in an exam.

	Marks in Applied Mechanics (x)	Marks in Engineering Mathematics (y)
Mean	47.5	39.5
S.D.	16.8	10.8

$$r = 0.95$$

c) Determine the probability that out of 3000 persons living in the area at least one would die in flood in that year, if the chance of being killed by flood during a year is 1/300 by using Poisson distribution.

d) Calculate inverse Laplace transform of $\frac{s+29}{(s+4)(s^2+9)}$

e) Calculate the approximate number of packets containing no defective, one defective, two defective blades in a consignment of 10,000 packets. If in a certain factory turning out blades, there is a small chance 1/250 for any blade to be effective. The blades are supplied in packets of 10.

Q.7 Attempt any two of the following questions. **10**

a) Solve $(D^2 - D - 2)y = 20 \sin 2t$ with $y(0) = 1$ & $y'(0) = 2$

b) Calculate the lines of regression from the following data. Also find the Co-efficient of correlation.

x	62	64	65	69	70	71	72	74
y	126	125	139	145	165	152	180	208

c) Calculate what is the number of persons of this group who have income

1) Exceeding Rs. 668
2) Exceeding Rs. 832

If the income distribution of a group of 10,000 persons was found to be normal with mean Rs. 750 and standard deviation Rs. 50.
(Given: Area under the standard normal curve between ordinates ± 1.64 is 0.8990.)

Seat No.		Set	P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Laws and Impact Assessment (BTN01407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which conference was conducted by the UN under which various experts had discussions and provided policies regarding protecting the environment?
a) Stockholm Conference
b) United Nations Conference
c) Special session of UN General Assembly
d) Sustainability Development conference

2) According to FCA 1980 "The law allows diversion of forest land only for _____ purpose.
i) Drinking Water Projects
ii) Irrigation Project
iii) Railway Line
iv) Mining
a) i and ii b) only i
c) i, ii & iii d) i, ii, iii & iv

3) First Forest Act in India was _____.
a) Indian Forest Act, 1865 b) Indian Forest Act, 1965
c) Indian Forest Act, 2002 d) Indian Forest Act, 1859

4) Which article provides the right to any person for their life and personal liberty?
a) Article 48A b) Article 21
c) Article 14 d) Article 51

5) Forest Conservation Act is not followed in which of the following states?
a) Punjab b) Jammu & Kashmir
c) Delhi d) All of these

6) _____ states that "parliament has power to make any law for the whole or any part of the country for implementing any treaty, agreement or convention with any other country.
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7) In which year the Wildlife Protection Act was implemented in India?
a) 1970 b) 1971
c) 1972 d) 1973

8) Which of the following article promotes international peace and security?
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11) _____ provides for the presentation and control of water pollution and monitoring or restoring of wholesomeness water.
a) Water Act 1974 b) Water cess Act 1977
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12) Environment act _____ gives power to this act by which the country shall endeavor to protect and improve the environment and to safeguard the forests and wildlife.
a) Article 48 A b) Article 51 A
c) Article 41 A d) Article 58 A

13) Power of _____ to make rule with the simultaneously with the constitution of the central board.
a) State government b) Central government
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Seat No.		Set	P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Laws and Impact Assessment (BTN01407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
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Section – I

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Section – II

Q.6	**a)**	Examine salient feature of EIA methodologies.	**06**
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Q.7	**a)**	Enlist advantages and disadvantages of Indian Forest Act 1927.	**05**
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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Laws and Impact Assessment (BTN01407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
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Duration: 30 Minutes Marks: 14

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13) _____ states that “parliament has power to make any law for the whole or any part of the country for implementing any treaty, agreement or convention with any other country.

a) Article 253
b) Article 51
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14) In which year the Wildlife Protection Act was implemented in India?

a) 1970
b) 1971
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Seat No.	

Set Q

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Laws and Impact Assessment (BTN01407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
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Q.6	**a)**	Examine salient feature of EIA methodologies.	**06**
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Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Laws and Impact Assessment (BTN01407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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Seat No.	

Set R

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Laws and Impact Assessment (BTN01407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
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Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Laws and Impact Assessment (BTN01407)

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Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Environmental Laws and Impact Assessment (BTN01407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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Q.6	**a)**	Examine salient feature of EIA methodologies.	**06**
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Seat No.	

Set P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Applications of Information Technology and Information systems (BTN01408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Softwares used for Project management are _____.
a) Primavera b) MSP
c) CATIA d) a & b

2) Every optimization problem has three components viz, _____.
a) Objective function, guided path, distribution
b) Objective function, decision variables, guided path
c) Objective function, decision variables, constraints
d) All of the above

3) In a service industry _____ is/are the component/s of inventory.
a) information collected b) reports
c) semi finished goods d) a & b

4) Fast moving items are having _____ inventory ratio.
a) high b) low
c) zero d) none

5) Software can support project managers in all of their tasks such as _____.
a) Coordination b) Documentation
c) Control d) All of these

6) Benefits Of Computer Applications In Construction Technology are, _____.
a) Flexibility b) Efficient communication
c) Consistent estimating d) All of these

7) _____ is a civil engineering drafting software with a multitude of design, analysis and simulation tools for civil engineering design.
a) Civil 3D b) Autocad
c) Primavera d) MSP

8) Maximization problems are used for _____ computations.
a) Production b) Profit
c) Both a & b d) None

9) GIS uses the information from which of the following sources?
a) Non-spatial information system
b) Spatial information system
c) Global information system
d) Position information system

10) In _____ inventory model, it is assumed that there is no uncertainty associated with demand.
a) Deterministic
b) Probabilistic
c) Both a & b
d) None

11) Use of inventories to break-apart operations so that one operation's supply is independent of another's supply, is known as, _____.
a) Disconnect
b) Breakage
c) Decoupling
d) None

12) Principles of 3D printing include, _____.
a) Modelling
b) Printing
c) Finishing
d) All of these

13) Major goals of automated highway systems include, _____.
a) Improve safety
b) Save money and optimize investment
c) Improve accessibility and mobility
d) All of these

14) An inventory system is the set of policies and controls that monitors levels of inventory, in order to _____.
a) Maximize the inventory cost
b) Minimize the inventory cost and to guarantee a smooth operation of the organization
c) Maximize the inventory cost and to guarantee a smooth operation of the organization
d) To guarantee a smooth operation of the organization

SLR-GF-729

Seat No.		Set	P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Applications of Information Technology and Information Systems (BTN01408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
2) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Explain the Engineering applications of optimization. **06**
b) Explain in detail Production Scheduling. **04**

Q.3 **a)** Explain in detail, Probabilistic model of inventory management. **05**
b) Define, **04**
i) Objective Function
ii) Variables
iii) Constraints
iv) Holding Cost

Q.4 **a)** Explain in detail, **04**
i) Business and Information Management
ii) Computer Aided Cost Estimation
b) Explain Single-item static (EOQ) model with no shortages with graph. **05**

Q.5 **a)** Explain in detail Dynamic Programming and enlist steps of Dynamic programming. **05**
b) Explain, **04**
i) Ordering cost
ii) Setup cost

Section – II

Q.6 **a)** What is project? Explain in detail Steps involved in managing the project. **06**
b) Explain in detail Adoption 3D Printing in construction. **04**

Q.7 **a)** Explain in detail Automation techniques in Surveying. **05**
b) Explain in detail Scheduling in Project. **04**

Q.8 **a)** Explain in brief Work Breakdown Structure (WBS) & its Uses. **05**
b) What are the roles & responsibilities of the Project Manager? **04**

Q.9 **a)** Explain in detail Procedure involved in Building Information Modelling. **05**

b) Explain, **04**

i) Monitoring and Execution of Project

ii) Planning of Project

SLR-GF-729

Seat No.	

Set Q

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Applications of Information Technology and Information systems (BTN01408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Maximization problems are used for _____ computations.
a) Production b) Profit
c) Both a & b d) None

2) GIS uses the information from which of the following sources?
a) Non-spatial information system
b) Spatial information system
c) Global information system
d) Position information system

3) In _____ inventory model, it is assumed that there is no uncertainty associated with demand.
a) Deterministic b) Probabilistic
c) Both a & b d) None

4) Use of inventories to break-apart operations so that one operation's supply is independent of another's supply, is known as, _____.
a) Disconnect b) Breakage
c) Decoupling d) None

5) Principles of 3D printing include, _____.
a) Modelling b) Printing
c) Finishing d) All of these

6) Major goals of automated highway systems include, _____.
a) Improve safety
b) Save money and optimize investment
c) Improve accessibility and mobility
d) All of these

7) An inventory system is the set of policies and controls that monitors levels of inventory, in order to _____.
a) Maximize the inventory cost
b) Minimize the inventory cost and to guarantee a smooth operation of the organization
c) Maximize the inventory cost and to guarantee a smooth operation of the organization
d) To guarantee a smooth operation of the organization

8) Softwares used for Project management are _____.
a) Primavera b) MSP
c) CATIA d) a & b

9) Every optimization problem has three components viz, _____.
a) Objective function, guided path, distribution
b) Objective function, decision variables, guided path
c) Objective function, decision variables, constraints
d) All of the above

10) In a service industry _____ is/are the component/s of inventory.
a) information collected b) reports
c) semi finished goods d) a & b

11) Fast moving items are having _____ inventory ratio.
a) high b) low
c) zero d) none

12) Software can support project managers in all of their tasks such as _____.
a) Coordination b) Documentation
c) Control d) All of these

13) Benefits Of Computer Applications In Construction Technology are, _____.
a) Flexibility b) Efficient communication
c) Consistent estimating d) All of these

14) _____ is a civil engineering drafting software with a multitude of design, analysis and simulation tools for civil engineering design.
a) Civil 3D b) Autocad
c) Primavera d) MSP

SLR-GF-729

Seat No.	

Set Q

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Applications of Information Technology and Information Systems (BTN01408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
2) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Explain the Engineering applications of optimization. **06**
b) Explain in detail Production Scheduling. **04**

Q.3 **a)** Explain in detail, Probabilistic model of inventory management. **05**
b) Define, **04**
i) Objective Function
ii) Variables
iii) Constraints
iv) Holding Cost

Q.4 **a)** Explain in detail, **04**
i) Business and Information Management
ii) Computer Aided Cost Estimation
b) Explain Single-item static (EOQ) model with no shortages with graph. **05**

Q.5 **a)** Explain in detail Dynamic Programming and enlist steps of Dynamic programming. **05**
b) Explain, **04**
i) Ordering cost
ii) Setup cost

Section – II

Q.6 **a)** What is project? Explain in detail Steps involved in managing the project. **06**
b) Explain in detail Adoption 3D Printing in construction. **04**

Q.7 **a)** Explain in detail Automation techniques in Surveying. **05**
b) Explain in detail Scheduling in Project. **04**

Q.8 **a)** Explain in brief Work Breakdown Structure (WBS) & its Uses. **05**
b) What are the roles & responsibilities of the Project Manager? **04**

Q.9 **a)** Explain in detail Procedure involved in Building Information Modelling. **05**

b) Explain, **04**

i) Monitoring and Execution of Project

ii) Planning of Project

SLR-GF-729

Seat No.		Set	R

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Applications of Information Technology and Information systems (BTN01408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Use of inventories to break-apart operations so that one operation's supply is independent of another's supply, is known as, _____.
a) Disconnect b) Breakage
c) Decoupling d) None

2) Principles of 3D printing include, _____.
a) Modelling b) Printing
c) Finishing d) All of these

3) Major goals of automated highway systems include, _____.
a) Improve safety
b) Save money and optimize investment
c) Improve accessibility and mobility
d) All of these

4) An inventory system is the set of policies and controls that monitors levels of inventory, in order to _____.
a) Maximize the inventory cost
b) Minimize the inventory cost and to guarantee a smooth operation of the organization
c) Maximize the inventory cost and to guarantee a smooth operation of the organization
d) To guarantee a smooth operation of the organization

5) Softwares used for Project management are _____.
a) Primavera b) MSP
c) CATIA d) a & b

6) Every optimization problem has three components viz, _____.
a) Objective function, guided path, distribution
b) Objective function, decision variables, guided path
c) Objective function, decision variables, constraints
d) All of the above

7) In a service industry _____ is/are the component/s of inventory.
a) information collected b) reports
c) semi finished goods d) a & b

8) Fast moving items are having _____ inventory ratio.
a) high b) low
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9) Software can support project managers in all of their tasks such as _____.
a) Coordination b) Documentation
c) Control d) All of these

10) Benefits Of Computer Applications In Construction Technology are, _____.
a) Flexibility b) Efficient communication
c) Consistent estimating d) All of these

11) _____ is a civil engineering drafting software with a multitude of design, analysis and simulation tools for civil engineering design.
a) Civil 3D b) Autocad
c) Primavera d) MSP

12) Maximization problems are used for _____ computations.
a) Production b) Profit
c) Both a & b d) None

13) GIS uses the information from which of the following sources?
a) Non-spatial information system
b) Spatial information system
c) Global information system
d) Position information system

14) In _____ inventory model, it is assumed that there is no uncertainty associated with demand.
a) Deterministic b) Probabilistic
c) Both a & b d) None

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Seat No.		Set	R

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Applications of Information Technology and Information Systems (BTN01408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
2) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Explain the Engineering applications of optimization. **06**
b) Explain in detail Production Scheduling. **04**

Q.3 **a)** Explain in detail, Probabilistic model of inventory management. **05**
b) Define, **04**
i) Objective Function
ii) Variables
iii) Constraints
iv) Holding Cost

Q.4 **a)** Explain in detail, **04**
i) Business and Information Management
ii) Computer Aided Cost Estimation
b) Explain Single-item static (EOQ) model with no shortages with graph. **05**

Q.5 **a)** Explain in detail Dynamic Programming and enlist steps of Dynamic programming. **05**
b) Explain, **04**
i) Ordering cost
ii) Setup cost

Section – II

Q.6 **a)** What is project? Explain in detail Steps involved in managing the project. **06**
b) Explain in detail Adoption 3D Printing in construction. **04**

Q.7 **a)** Explain in detail Automation techniques in Surveying. **05**
b) Explain in detail Scheduling in Project. **04**

Q.8 **a)** Explain in brief Work Breakdown Structure (WBS) & its Uses. **05**
b) What are the roles & responsibilities of the Project Manager? **04**

Q.9 **a)** Explain in detail Procedure involved in Building Information Modelling. **05**

b) Explain, **04**

i) Monitoring and Execution of Project

ii) Planning of Project

Seat No.	

Set | S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Applications of Information Technology and Information systems (BTN01408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Benefits Of Computer Applications In Construction Technology are, _____.
a) Flexibility b) Efficient communication
c) Consistent estimating d) All of these

2) _____ is a civil engineering drafting software with a multitude of design, analysis and simulation tools for civil engineering design.
a) Civil 3D b) Autocad
c) Primavera d) MSP

3) Maximization problems are used for _____ computations.
a) Production b) Profit
c) Both a & b d) None

4) GIS uses the information from which of the following sources?
a) Non-spatial information system
b) Spatial information system
c) Global information system
d) Position information system

5) In _____ inventory model, it is assumed that there is no uncertainty associated with demand.
a) Deterministic b) Probabilistic
c) Both a & b d) None

6) Use of inventories to break-apart operations so that one operation's supply is independent of another's supply, is known as, _____.
a) Disconnect b) Breakage
c) Decoupling d) None

7) Principles of 3D printing include, _____.
a) Modelling b) Printing
c) Finishing d) All of these

8) Major goals of automated highway systems include, _____.
a) Improve safety
b) Save money and optimize investment
c) Improve accessibility and mobility
d) All of these

9) An inventory system is the set of policies and controls that monitors levels of inventory, in order to _____.
a) Maximize the inventory cost
b) Minimize the inventory cost and to guarantee a smooth operation of the organization
c) Maximize the inventory cost and to guarantee a smooth operation of the organization
d) To guarantee a smooth operation of the organization

10) Softwares used for Project management are _____.
a) Primavera b) MSP
c) CATIA d) a & b

11) Every optimization problem has three components viz, _____.
a) Objective function, guided path, distribution
b) Objective function, decision variables, guided path
c) Objective function, decision variables, constraints
d) All of the above

12) In a service industry _____ is/are the component/s of inventory.
a) information collected b) reports
c) semi finished goods d) a & b

13) Fast moving items are having _____ inventory ratio.
a) high b) low
c) zero d) none

14) Software can support project managers in all of their tasks such as _____.
a) Coordination b) Documentation
c) Control d) All of these

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Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Applications of Information Technology and Information Systems (BTN01408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. Question no. 6 is compulsory in section II, and solve any two questions from the remaining.
2) Figures to the right indicate full marks.

Section – I

Q.2 **a)** Explain the Engineering applications of optimization. **06**
b) Explain in detail Production Scheduling. **04**

Q.3 **a)** Explain in detail, Probabilistic model of inventory management. **05**
b) Define, **04**
i) Objective Function
ii) Variables
iii) Constraints
iv) Holding Cost

Q.4 **a)** Explain in detail, **04**
i) Business and Information Management
ii) Computer Aided Cost Estimation
b) Explain Single-item static (EOQ) model with no shortages with graph. **05**

Q.5 **a)** Explain in detail Dynamic Programming and enlist steps of Dynamic programming. **05**
b) Explain, **04**
i) Ordering cost
ii) Setup cost

Section – II

Q.6 **a)** What is project? Explain in detail Steps involved in managing the project. **06**
b) Explain in detail Adoption 3D Printing in construction. **04**

Q.7 **a)** Explain in detail Automation techniques in Surveying. **05**
b) Explain in detail Scheduling in Project. **04**

Q.8 **a)** Explain in brief Work Breakdown Structure (WBS) & its Uses. **05**
b) What are the roles & responsibilities of the Project Manager? **04**

Q.9 **a)** Explain in detail Procedure involved in Building Information Modelling. **05**

b) Explain, **04**

i) Monitoring and Execution of Project

ii) Planning of Project

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Seat No.	

Set P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design Thinking (BTN01409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Businesses can apply design thinking tools when adopting segmentation frameworks through _____.
a) Understand, define, ideate, prototype, test, learning
b) Understanding, designing and prototyping, testing and learning
c) Defining and prototyping, testing and learning
d) Empathize, define, ideate, prototype, testing and implement

2) After you Ideate, the next step is to _____.
a) Test b) Prototype
c) Define d) Empathize

3) Design thinking typically helps in _____.
a) Operational efficiency b) Data analytics
c) Financial planning d) Innovation

4) An Interview with a customer to gather data usually takes:
a) One to two hours b) Four to five hours
c) Whole day d) Many days

5) Customer data can be organized into a hierarchy based on their need(s), such as _____.
a) Primary b) Secondary
c) Tertiary d) All of Above

6) Types of Brainstorming _____.
a) Verbal Brainstorming b) Nominal Group Brainstorming
c) Electronic Brainstorming d) All of Above

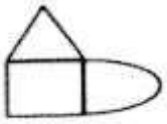
7) Method design teams use to generate ideas to solve design problem is called _____.
a) Group Discussion b) Brainstorming
c) Technics Design Problem d) None of Above

8) In the concept generation process the search externally includes,
a) Patents b) Experts
c) Literatures d) All of Above

9) Tools for service design thinking:
a) User
b) User Experience Map
c) Stakeholders' Map
d) All of Above

10) Design Service Process breaks and delays must be kept to a _____.
a) Minimum
b) Maximum
c) Equal
d) None of above

11) Figure shows the conceptual drawing of a (n) _____ architecture.



a) Slot-modular
b) Bus-modular
c) Sectional-modular
d) Integral

12) DFE stands for _____.
a) Design for Environment
b) Design for Engineering
c) Design for Efficiency
d) None of above

13) Design for Environment (DFE) is a method to _____ environmental impact of product over its life cycle.
a) Maximize
b) Minimize
c) Equal
d) None of above

14) Environmental impact that affect the product life cycle.
a) Global warming
b) Solid waste
c) Water pollution
d) All of These

SLR-GF-730

Seat No.	

Set P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design Thinking (BTN01409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Section II is compulsory.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2	**a)**	What is meant by the Design Thinking? Draw and explain the process of design thinking in detail.	**06**
	b)	Enlist the various design thinking skills. Explain in details with examples.	**04**
Q.3	**a)**	What are the different goals of customer needs identification?	**04**
	b)	Explain the Product Specification and what are the steps establishing the target specification?	**05**
Q.4	**a)**	What do you meant by the Brainstorming? Explain the different methods of brainstorming.	**04**
	b)	What do you meant by Concept Generation? Draw a five step generation method and explain in short.	**05**
Q.5	**a)**	Enlist and explain in short of various design thinking principles.	**04**
	b)	Explain the term of prototyping with various types of prototype.	**05**

Section – II

Q.6	**a)**	What is Service Design and explain the various principles of service design?	**06**
	b)	What are the different tools used in the service design and explain in short.	**04**
Q.7		**Write a note on any Three of the following.**	**09**
	a)	Financial analysis of your project.	
	b)	Product architecture and importance of product architecture.	
	c)	Different aspect of the product architecture.	
	d)	Modular Architecture.	
Q.8		**Write a note on any Three of the following**	**09**
	a)	Draw & explain in short the design for environment process.	
	b)	Environmental impact over the life cycle.	
	c)	Agile Product Development Process.	
	d)	Design for Environment.	

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design Thinking (BTN01409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

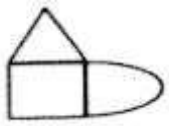
Q.1 Choose the correct option from the following. **14**

1) In the concept generation process the search externally includes,
a) Patents b) Experts
c) Literatures d) All of Above

2) Tools for service design thinking:
a) User b) User Experience Map
c) Stakeholders' Map d) All of Above

3) Design Service Process breaks and delays must be kept to a _____.
a) Minimum b) Maximum
c) Equal d) None of above

4) Figure shows the conceptual drawing of a (n) _____ architecture.



a) Slot-modular b) Bus-modular
c) Sectional-modular d) Integral

5) DFE stands for _____.
a) Design for Environment b) Design for Engineering
c) Design for Efficiency d) None of above

6) Design for Environment (DFE) is a method to _____ environmental impact of product over its life cycle.
a) Maximize b) Minimize
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7) Environmental impact that affect the product life cycle.
a) Global warming b) Solid waste
c) Water pollution d) All of These

8) Businesses can apply design thinking tools when adopting segmentation frameworks through _____.
a) Understand, define, ideate, prototype, test, learning
b) Understanding, designing and prototyping, testing and learning
c) Defining and prototyping, testing and learning
d) Empathize, define, ideate, prototype, testing and implement

9) After you Ideate, the next step is to _____.
a) Test
b) Prototype
c) Define
d) Empathize

10) Design thinking typically helps in _____.
a) Operational efficiency
b) Data analytics
c) Financial planning
d) Innovation

11) An Interview with a customer to gather data usually takes:
a) One to two hours
b) Four to five hours
c) Whole day
d) Many days

12) Customer data can be organized into a hierarchy based on their need(s), such as _____.
a) Primary
b) Secondary
c) Tertiary
d) All of Above

13) Types of Brainstorming _____.
a) Verbal Brainstorming
b) Nominal Group Brainstorming
c) Electronic Brainstorming
d) All of Above

14) Method design teams use to generate ideas to solve design problem is called _____.
a) Group Discussion
b) Brainstorming
c) Technics Design Problem
d) None of Above

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Seat No.	

Set Q

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design Thinking (BTN01409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Section II is compulsory.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** What is meant by the Design Thinking? Draw and explain the process of design thinking in detail. **06**
b) Enlist the various design thinking skills. Explain in details with examples. **04**

Q.3 **a)** What are the different goals of customer needs identification? **04**
b) Explain the Product Specification and what are the steps establishing the target specification? **05**

Q.4 **a)** What do you meant by the Brainstorming? Explain the different methods of brainstorming. **04**
b) What do you meant by Concept Generation? Draw a five step generation method and explain in short. **05**

Q.5 **a)** Enlist and explain in short of various design thinking principles. **04**
b) Explain the term of prototyping with various types of prototype. **05**

Section – II

Q.6 **a)** What is Service Design and explain the various principles of service design? **06**
b) What are the different tools used in the service design and explain in short. **04**

Q.7 **Write a note on any Three of the following.** **09**
a) Financial analysis of your project.
b) Product architecture and importance of product architecture.
c) Different aspect of the product architecture.
d) Modular Architecture.

Q.8 **Write a note on any Three of the following** **09**
a) Draw & explain in short the design for environment process.
b) Environmental impact over the life cycle.
c) Agile Product Development Process.
d) Design for Environment.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design Thinking (BTN01409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

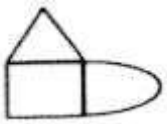
Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Figure shows the conceptual drawing of a (n) _____ architecture.



a) Slot-modular b) Bus-modular
c) Sectional-modular d) Integral

2) DFE stands for _____.
a) Design for Environment b) Design for Engineering
c) Design for Efficiency d) None of above

3) Design for Environment (DFE) is a method to _____ environmental impact of product over its life cycle.
a) Maximize b) Minimize
c) Equal d) None of above

4) Environmental impact that affect the product life cycle.
a) Global warming b) Solid waste
c) Water pollution d) All of These

5) Businesses can apply design thinking tools when adopting segmentation frameworks through _____.
a) Understand, define, ideate, prototype, test, learning
b) Understanding, designing and prototyping, testing and learning
c) Defining and prototyping, testing and learning
d) Empathize, define, ideate, prototype, testing and implement

6) After you Ideate, the next step is to _____.
a) Test b) Prototype
c) Define d) Empathize

7) Design thinking typically helps in _____.
a) Operational efficiency b) Data analytics
c) Financial planning d) Innovation

8) An Interview with a customer to gather data usually takes:
a) One to two hours b) Four to five hours
c) Whole day d) Many days

9) Customer data can be organized into a hierarchy based on their need(s), such as _____.
a) Primary b) Secondary
c) Tertiary d) All of Above

10) Types of Brainstorming _____.
a) Verbal Brainstorming b) Nominal Group Brainstorming
c) Electronic Brainstorming d) All of Above

11) Method design teams use to generate ideas to solve design problem is called _____.
a) Group Discussion b) Brainstorming
c) Technics Design Problem d) None of Above

12) In the concept generation process the search externally includes,
a) Patents b) Experts
c) Literatures d) All of Above

13) Tools for service design thinking:
a) User b) User Experience Map
c) Stakeholders' Map d) All of Above

14) Design Service Process breaks and delays must be kept to a _____.
a) Minimum b) Maximum
c) Equal d) None of above

SLR-GF-730

Seat No.	

Set R

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design Thinking (BTN01409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Section II is compulsory.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2	**a)**	What is meant by the Design Thinking? Draw and explain the process of design thinking in detail.	**06**
	b)	Enlist the various design thinking skills. Explain in details with examples.	**04**
Q.3	**a)**	What are the different goals of customer needs identification?	**04**
	b)	Explain the Product Specification and what are the steps establishing the target specification?	**05**
Q.4	**a)**	What do you meant by the Brainstorming? Explain the different methods of brainstorming.	**04**
	b)	What do you meant by Concept Generation? Draw a five step generation method and explain in short.	**05**
Q.5	**a)**	Enlist and explain in short of various design thinking principles.	**04**
	b)	Explain the term of prototyping with various types of prototype.	**05**

Section – II

Q.6	**a)**	What is Service Design and explain the various principles of service design?	**06**
	b)	What are the different tools used in the service design and explain in short.	**04**
Q.7		**Write a note on any Three of the following.**	**09**
	a)	Financial analysis of your project.	
	b)	Product architecture and importance of product architecture.	
	c)	Different aspect of the product architecture.	
	d)	Modular Architecture.	
Q.8		**Write a note on any Three of the following**	**09**
	a)	Draw & explain in short the design for environment process.	
	b)	Environmental impact over the life cycle.	
	c)	Agile Product Development Process.	
	d)	Design for Environment.	

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design Thinking (BTN01409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Types of Brainstorming _____.
a) Verbal Brainstorming b) Nominal Group Brainstorming
c) Electronic Brainstorming d) All of Above

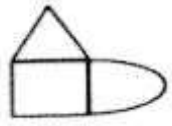
2) Method design teams use to generate ideas to solve design problem is called _____.
a) Group Discussion b) Brainstorming
c) Technics Design Problem d) None of Above

3) In the concept generation process the search externally includes,
a) Patents b) Experts
c) Literatures d) All of Above

4) Tools for service design thinking:
a) User b) User Experience Map
c) Stakeholders' Map d) All of Above

5) Design Service Process breaks and delays must be kept to a _____.
a) Minimum b) Maximum
c) Equal d) None of above

6) Figure shows the conceptual drawing of a (n) _____ architecture.



a) Slot-modular b) Bus-modular
c) Sectional-modular d) Integral

7) DFE stands for _____.
a) Design for Environment b) Design for Engineering
c) Design for Efficiency d) None of above

8) Design for Environment (DFE) is a method to _____ environmental impact of product over its life cycle.
a) Maximize b) Minimize
c) Equal d) None of above

9) Environmental impact that affect the product life cycle.
a) Global warming b) Solid waste
c) Water pollution d) All of These

10) Businesses can apply design thinking tools when adopting segmentation frameworks through _____.
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b) Understanding, designing and prototyping, testing and learning
c) Defining and prototyping, testing and learning
d) Empathize, define, ideate, prototype, testing and implement

11) After you Ideate, the next step is to _____.
a) Test b) Prototype
c) Define d) Empathize

12) Design thinking typically helps in _____.
a) Operational efficiency b) Data analytics
c) Financial planning d) Innovation

13) An Interview with a customer to gather data usually takes:
a) One to two hours b) Four to five hours
c) Whole day d) Many days

14) Customer data can be organized into a hierarchy based on their need(s), such as _____.
a) Primary b) Secondary
c) Tertiary d) All of Above

SLR-GF-730

Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Design Thinking (BTN01409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Section II is compulsory.
3) Figures to the right indicate full marks.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 **a)** What is meant by the Design Thinking? Draw and explain the process of design thinking in detail. **06**
b) Enlist the various design thinking skills. Explain in details with examples. **04**

Q.3 **a)** What are the different goals of customer needs identification? **04**
b) Explain the Product Specification and what are the steps establishing the target specification? **05**

Q.4 **a)** What do you meant by the Brainstorming? Explain the different methods of brainstorming. **04**
b) What do you meant by Concept Generation? Draw a five step generation method and explain in short. **05**

Q.5 **a)** Enlist and explain in short of various design thinking principles. **04**
b) Explain the term of prototyping with various types of prototype. **05**

Section – II

Q.6 **a)** What is Service Design and explain the various principles of service design? **06**
b) What are the different tools used in the service design and explain in short. **04**

Q.7 **Write a note on any Three of the following.** **09**
a) Financial analysis of your project.
b) Product architecture and importance of product architecture.
c) Different aspect of the product architecture.
d) Modular Architecture.

Q.8 **Write a note on any Three of the following** **09**
a) Draw & explain in short the design for environment process.
b) Environmental impact over the life cycle.
c) Agile Product Development Process.
d) Design for Environment.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Management (BTN01410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Hazards and Disasters are mainly classified as _____.
a) Physical and chemical b) Natural and human induced
c) Physical and Human d) Social and cultural

2) A hazard is a situation where there is _____.
a) Threat of natural calamity
b) Threat to property and lives from calamities
c) Threat for consequences of disaster
d) All of the above

3) What are the consequences of disaster on a society?
a) Loss of life b) Damage to property
c) Environmental Damages d) All of the above

4) The primary result of earthquakes is _____.
a) Building and bridge collapsed
b) Rapture of water and gas pipelines
c) Change in course of river and creation of new islands
d) All of the above

5) What are the major consequences of Tropical cyclones?
a) Fierce wind b) Heavy rain
c) Storm surge d) All of the above

6) The role of which agency is important in disaster prevention.
a) Media b) Police
c) Government officials d) Public

7) What type of disaster is most prominent in India?
a) Flood b) Draught
c) Cyclone d) Earthquake

8) Volcanic eruption are closely associated with _____.
a) Mountain building and fracturing
b) Deforestation
c) Landslides
d) Heat budget

9) Warning about cyclonic disaster is convened through _____.
a) Newspaper b) Radio network
c) Television d) All of the above

10) Structural and Non-structural measures are elements of high category of Risk Reduction measures _____.
a) Socio-economic measures b) Physical measures
c) Environmental measures d) Post disaster measures

11) Disaster management is aimed at _____.
a) Resettling people in the closest unaffected urban area
b) Collection of valuable data for future management objectives
c) Strengthening sewage and drinking water treatment facilities to resist the impact of a future disaster
d) Restoring a communitys services, facilities and residences to pre-disaster levels

12) The most essential item that the disaster-stricken populations must be provided with is _____.
a) Shelter material b) Drinking water
c) Fuel d) All of the above

13) Which area in the world witness's highest seismic earthquake activity in the world?
a) Mid-continental belt b) Cir-cum Pacific belt
c) Mid-Atlantic belt d) All of the above

14) Which are the major controlling systems for reduction of volcanic disaster?
a) Prediction for early warning of eruption
b) Timely evolution and relief work
c) Both a and b
d) None of the above

SLR-GF-731

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Management (BTN01410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any TWO FULL Question from each section.
2) Solve any two questions from Section I- Q.2, Q.3 or Q.4.
3) Solve any two questions from Section II- Q.5, Q.6 or Q.7.
4) Figures to the right indicates full marks.

Section – I

Q.2 **a)** Define the terms: - **07**
1) Hazard
2) Risk
3) Vulnerability
4) Disaster

b) Explain importance and scope of disaster management. **07**

Q.3 **a)** Explain meaning of natural disaster and their types. **07**
b) Explain hydrological disaster with example. **07**

Q.4 **a)** Explain manmade disaster with example. **07**
b) Explain types of accidents and their impact. **07**

Section – II

Q.5 **a)** Explain factors affecting damage in detail. **07**
b) Explain the role of information and information system in the process of disaster management. **07**

Q.6 **a)** Explain the role of communications and types of communication in process of disaster management. **07**
b) Explain early warning system with example. **07**

Q.7 **a)** Explain the role of Remote Sensing and GIS in early warning system. **07**
b) Explain factors affecting mitigation measures. **07**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Management (BTN01410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Volcanic eruption are closely associated with _____.
a) Mountain building and fracturing
b) Deforestation
c) Landslides
d) Heat budget

2) Warning about cyclonic disaster is convened through _____.
a) Newspaper b) Radio network
c) Television d) All of the above

3) Structural and Non-structural measures are elements of high category of Risk Reduction measures _____.
a) Socio-economic measures b) Physical measures
c) Environmental measures d) Post disaster measures

4) Disaster management is aimed at _____.
a) Resettling people in the closest unaffected urban area
b) Collection of valuable data for future management objectives
c) Strengthening sewage and drinking water treatment facilities to resist the impact of a future disaster
d) Restoring a communitys services, facilities and residences to pre-disaster levels

5) The most essential item that the disaster-stricken populations must be provided with is _____.
a) Shelter material b) Drinking water
c) Fuel d) All of the above

6) Which area in the world witness's highest seismic earthquake activity in the world?
a) Mid-continental belt b) Cir-cum Pacific belt
c) Mid-Atlantic belt d) All of the above

7) Which are the major controlling systems for reduction of volcanic disaster?
a) Prediction for early warning of eruption
b) Timely evolution and relief work
c) Both a and b
d) None of the above

8) Hazards and Disasters are mainly classified as _____.
a) Physical and chemical
b) Natural and human induced
c) Physical and Human
d) Social and cultural

9) A hazard is a situation where there is _____.
a) Threat of natural calamity
b) Threat to property and lives from calamities
c) Threat for consequences of disaster
d) All of the above

10) What are the consequences of disaster on a society?
a) Loss of life
b) Damage to property
c) Environmental Damages
d) All of the above

11) The primary result of earthquakes is _____.
a) Building and bridge collapsed
b) Rapture of water and gas pipelines
c) Change in course of river and creation of new islands
d) All of the above

12) What are the major consequences of Tropical cyclones?
a) Fierce wind
b) Heavy rain
c) Storm surge
d) All of the above

13) The role of which agency is important in disaster prevention.
a) Media
b) Police
c) Government officials
d) Public

14) What type of disaster is most prominent in India?
a) Flood
b) Draught
c) Cyclone
d) Earthquake

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Seat No.	

Set Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Management (BTN01410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any TWO FULL Question from each section.
2) Solve any two questions from Section I- Q.2, Q.3 or Q.4.
3) Solve any two questions from Section II- Q.5, Q.6 or Q.7.
4) Figures to the right indicates full marks.

Section – I

Q.2 **a)** Define the terms: - **07**
1) Hazard
2) Risk
3) Vulnerability
4) Disaster

b) Explain importance and scope of disaster management. **07**

Q.3 **a)** Explain meaning of natural disaster and their types. **07**
b) Explain hydrological disaster with example. **07**

Q.4 **a)** Explain manmade disaster with example. **07**
b) Explain types of accidents and their impact. **07**

Section – II

Q.5 **a)** Explain factors affecting damage in detail. **07**
b) Explain the role of information and information system in the process of disaster management. **07**

Q.6 **a)** Explain the role of communications and types of communication in process of disaster management. **07**
b) Explain early warning system with example. **07**

Q.7 **a)** Explain the role of Remote Sensing and GIS in early warning system. **07**
b) Explain factors affecting mitigation measures. **07**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Management (BTN01410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) Disaster management is aimed at _____.
a) Resettling people in the closest unaffected urban area
b) Collection of valuable data for future management objectives
c) Strengthening sewage and drinking water treatment facilities to resist the impact of a future disaster
d) Restoring a communitys services, facilities and residences to pre-disaster levels

2) The most essential item that the disaster-stricken populations must be provided with is _____.
a) Shelter material b) Drinking water
c) Fuel d) All of the above

3) Which area in the world witness's highest seismic earthquake activity in the world?
a) Mid-continental belt b) Cir-cum Pacific belt
c) Mid-Atlantic belt d) All of the above

4) Which are the major controlling systems for reduction of volcanic disaster?
a) Prediction for early warning of eruption
b) Timely evolution and relief work
c) Both a and b
d) None of the above

5) Hazards and Disasters are mainly classified as _____.
a) Physical and chemical b) Natural and human induced
c) Physical and Human d) Social and cultural

6) A hazard is a situation where there is _____.
a) Threat of natural calamity
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7) What are the consequences of disaster on a society?
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8) The primary result of earthquakes is _____.
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9) What are the major consequences of Tropical cyclones?
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10) The role of which agency is important in disaster prevention.
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13) Warning about cyclonic disaster is convened through _____.
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c) Television d) All of the above

14) Structural and Non-structural measures are elements of high category of Risk Reduction measures _____.
a) Socio-economic measures b) Physical measures
c) Environmental measures d) Post disaster measures

SLR-GF-731

Seat No.	

Set R

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Management (BTN01410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any TWO FULL Question from each section.
2) Solve any two questions from Section I- Q.2, Q.3 or Q.4.
3) Solve any two questions from Section II- Q.5, Q.6 or Q.7.
4) Figures to the right indicates full marks.

Section – I

Q.2 **a)** Define the terms: - **07**
1) Hazard
2) Risk
3) Vulnerability
4) Disaster

b) Explain importance and scope of disaster management. **07**

Q.3 **a)** Explain meaning of natural disaster and their types. **07**
b) Explain hydrological disaster with example. **07**

Q.4 **a)** Explain manmade disaster with example. **07**
b) Explain types of accidents and their impact. **07**

Section – II

Q.5 **a)** Explain factors affecting damage in detail. **07**
b) Explain the role of information and information system in the process of disaster management. **07**

Q.6 **a)** Explain the role of communications and types of communication in process of disaster management. **07**
b) Explain early warning system with example. **07**

Q.7 **a)** Explain the role of Remote Sensing and GIS in early warning system. **07**
b) Explain factors affecting mitigation measures. **07**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Management (BTN01410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No.1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

1) The role of which agency is important in disaster prevention.
a) Media b) Police
c) Government officials d) Public

2) What type of disaster is most prominent in India?
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5) Structural and Non-structural measures are elements of high category of Risk Reduction measures _____.
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c) Environmental measures d) Post disaster measures

6) Disaster management is aimed at _____.
a) Resettling people in the closest unaffected urban area
b) Collection of valuable data for future management objectives
c) Strengthening sewage and drinking water treatment facilities to resist the impact of a future disaster
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8) Which area in the world witness's highest seismic earthquake activity in the world?

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c) Mid-Atlantic belt
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a) Prediction for early warning of eruption
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c) Physical and Human
d) Social and cultural

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c) Threat for consequences of disaster
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12) What are the consequences of disaster on a society?

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c) Environmental Damages
d) All of the above

13) The primary result of earthquakes is _____.

a) Building and bridge collapsed
b) Rapture of water and gas pipelines
c) Change in course of river and creation of new islands
d) All of the above

14) What are the major consequences of Tropical cyclones?

a) Fierce wind
b) Heavy rain
c) Storm surge
d) All of the above

SLR-GF-731

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
CIVIL ENGINEERING
Disaster Management (BTN01410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any TWO FULL Question from each section.
2) Solve any two questions from Section I- Q.2, Q.3 or Q.4.
3) Solve any two questions from Section II- Q.5, Q.6 or Q.7.
4) Figures to the right indicates full marks.

Section – I

Q.2 **a)** Define the terms: - **07**
1) Hazard
2) Risk
3) Vulnerability
4) Disaster

b) Explain importance and scope of disaster management. **07**

Q.3 **a)** Explain meaning of natural disaster and their types. **07**
b) Explain hydrological disaster with example. **07**

Q.4 **a)** Explain manmade disaster with example. **07**
b) Explain types of accidents and their impact. **07**

Section – II

Q.5 **a)** Explain factors affecting damage in detail. **07**
b) Explain the role of information and information system in the process of disaster management. **07**

Q.6 **a)** Explain the role of communications and types of communication in process of disaster management. **07**
b) Explain early warning system with example. **07**

Q.7 **a)** Explain the role of Remote Sensing and GIS in early warning system. **07**
b) Explain factors affecting mitigation measures. **07**

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Applied Thermodynamics (BTN02301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4 Assume suitable data if requires and state it clearly.
5) Neat diagrams must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) For defining process at least ____ are required.
a) Two states b) Three states
c) Four states d) One state

2) The term coefficient of performance is related with _____.
a) Heat pump b) Heat Engine
c) Steam Engine d) Gas Turbine

3) Area under the curve on T - S chart indicates _____.
a) Net heat transfer b) Net work transfer
c) Cycle efficiency d) None of the above

4) Second law of thermodynamics defines _____.
a) heat b) work
c) entropy d) internal energy

5) The major heat loss in boiler is due to _____.
a) Moisture in fuel b) Dry flue gases
c) steam formation d) Unburnt fuel

6) The ratio of heat actually used in producing the steam to the heat liberated in the furnace is called _____.
a) Equivalent evaporation b) Evaporative capacity
c) Boiler efficiency d) Factor of evaporation

7) The Rankine cycle as compared to Carnot cycle has _____ work ratio.
a) high b) low
c) equal d) half

8) The flow of steam is supersonic _____.
a) at entrance of nozzle
b) at throat of the nozzle
c) in convergent part of the nozzle
d) in divergent part of nozzle

9) In a shell and tube surface condenser_____.
a) steam and cooling water mix to give the condensate
b) cooling water passes through the tubes and steam surrounds them
c) steam passes the cooling tubes and cooling water surrounds them
d) all of the above varying with situation

10) A condenser in steam power plant _____.
a) increases expansion ratio of steam
b) reduces back pressure of steam
c) reduces temperature of steam
d) all of the above

11) The ratio of actual vacuum to the ideal vacuum in condenser is called ____.
a) condenser efficiency b) vacuum efficiency
c) nozzle efficiency d) evaporator efficiency

12) In case of reaction steam turbine ____.
a) there is enthalpy drop both in fixed and moving blades
b) there is enthalpy drop only in fixed blades
c) there is enthalpy drop only in moving blades
d) none of these

13) With increase in clearance volume, the ideal work of compressing 1 kg of air _____.
a) Increases b) decreases
c) remains same d) first increases and then decreases

14) In single stage single acting reciprocating compressor without clearance volume, the work done is minimum during _____.
a) isothermal compression b) isentropic compression
c) polytropic compression d) None of the above

Seat No.		Set	P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Applied Thermodynamics (BTN02301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Neat diagrams must be drawn wherever necessary.
4) Assume suitable data if required and state it clearly.
5) Use of Scientific calculator is allowed.
6) Use of Steam tables in allowed.

Section – I

Q.2 Attempt the following questions.

a) State and explain Kelvin-Planck and Clausius statement of second law of thermodynamics. **04**

b) Calculate the standard enthalpy change at $298.15\ \mathrm{K}$ for the reaction **05**
$4\mathrm{NH_3(g)} + 5\mathrm{O_2(g)} \rightarrow 4\mathrm{NO(g)} + 6\mathrm{H_2O(g)}$
Given that standard enthalpies of formation for as
$\mathrm{NH_3(g)} = -46.055\ \mathrm{KJ/mole}$
$\mathrm{NO(g)} = 90.435\ \mathrm{KJ/mole}$
$\mathrm{H_2O\ (g)} = -24.997\ \mathrm{KJ/mol}$
$\mathrm{O_2(g)} = 0\ \mathrm{KJ/mol}$

c) Ice melts at $0°C$ with latent heat of fusion of $334.92\ kJ/kg$. At atmospheric Pressure water boils at $100°C$ with latent heat of vaporization $2254\ kJ/kg$. Calculate the entropy change of fusion and vaporization processes. **05**

Q.3 Attempt the following questions.

a) Draw the T-S diagram for Rankine cycle when steam entering the turbine is. **04**
i) Dry and saturated steam
ii) Superheated steam

b) A hot copper block of mass $30\ kg$ having temperature of $500°C$ is dropped in $200\ kg$ of oil at $20°C$. If $\mathrm{Cp_{\ oil}} = 2.5\ \mathrm{kJ/kgk}$ and $Cp_{\ \mathrm{copper}} = 0.5\ \mathrm{kJ/kgk}$, find the change in entropy of universe. Consider adiabatic mixing. **05**

c) The following data were obtained during the boiler trial for one hour **05**
Feed water supplied $= 690\ \mathrm{kg}$
Temperature of feed water $= 27°\mathrm{C}$
Absolute Steam pressure $= 10\ \mathrm{bar}$,
Dryness fraction of steam $= 0.95$
Coal burnt $= 92\ \mathrm{kg}$
Calorific value of coal $= 26{,}000\ \mathrm{KJ/kg}$
Ash and unburnt coal collected $= 5\ \mathrm{kg}$
Calorific value of ash and unburnt fuel $= 2500\ \mathrm{kJ/kg}$
Mass of flue gases $= 17\ \mathrm{kg/kg}$ of coal
Specific heat flue gas $= 1\ \mathrm{kJ/kg\,K}$
Boiler house temperature $= 32\ °\mathrm{C}$
Temperature of flue gas $= 327\ °\mathrm{C}$
Calculate boiler efficiency and Draw heat balance sheet on per kg of coal basis.

Q.4 Attempt the following questions

a) Write a short note on classification of Boilers. **04**

b) Explain Carnot cycle with the help of neat sketch and PV & TS diagram. Also derive the expression for efficiency of the Carnot cycle. **05**

c) In Rankine cycle dry and saturated steam is entering the turbine at 20 bar pressure. The exhaust pressure of turbine is 0.1 bar, and all processes are reversible, find: **05**

i) Cycle thermal efficiency
ii) Work ratio
iii) Specific steam Consumption

Section – II

Q.5 Attempt the following questions.

a) What is nozzle? What are its different types? **04**

b) What do you mean by compounding of steam turbines? Discuss pressure and velocity compounding of steam turbine with neat sketch. **05**

c) The steam at $300\ m/s$ is supplied to a single stage impulse turbine through a nozzle. The nozzle angle is $25°$. The mean diameter of the blade rotar is 100 cm and speed of the rotar is 2000 rpm. Find suitable blade angles if there is no axial thrust. If blade velocity coefficient is 0.9 & steam flow rate is 10 kg/s, Find power developed by the blade. **05**

Q.6 Attempt the following questions.

a) Explain the terms condenser efficiency and vacuum efficiency in connection with steam condensers. **04**

b) Differentiate between surface condenser and jet condenser **05**

c) Differentiate between impulse turbine and reaction turbine. **05**

Q.7 Attempt the following questions.

a) Derive the expression for work done per kg for polytropic compression process without considering the clearance volume. **04**

b) Derive an expression for volumetric efficiency of a reciprocating compressor with usual notations. **05**

c) Air is to be compressed in a single state reciprocating compressor from 1.013 bar and $15°C$ to 7 bar. Calculate the indicated power required for a free air delivery of $0.3\ \mathrm{m^3/min}$, when the compression process, is **05**

a) Isentropic
b) Polytropic if $n = 1.25$.
c) Isothermal

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Applied Thermodynamics (BTN02301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4 Assume suitable data if requires and state it clearly.
5) Neat diagrams must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The flow of steam is supersonic _____.
a) at entrance of nozzle
b) at throat of the nozzle
c) in convergent part of the nozzle
d) in divergent part of nozzle

2) In a shell and tube surface condenser_____.
a) steam and cooling water mix to give the condensate
b) cooling water passes through the tubes and steam surrounds them
c) steam passes the cooling tubes and cooling water surrounds them
d) all of the above varying with situation

3) A condenser in steam power plant _____.
a) increases expansion ratio of steam
b) reduces back pressure of steam
c) reduces temperature of steam
d) all of the above

4) The ratio of actual vacuum to the ideal vacuum in condenser is called ____.
a) condenser efficiency b) vacuum efficiency
c) nozzle efficiency d) evaporator efficiency

5) In case of reaction steam turbine ____.
a) there is enthalpy drop both in fixed and moving blades
b) there is enthalpy drop only in fixed blades
c) there is enthalpy drop only in moving blades
d) none of these

6) With increase in clearance volume, the ideal work of compressing 1 kg of air _____.
a) Increases b) decreases
c) remains same d) first increases and then decreases

7) In single stage single acting reciprocating compressor without clearance volume, the work done is minimum during _____.
a) isothermal compression b) isentropic compression
c) polytropic compression d) None of the above

8) For defining process at least ____ are required.
a) Two states b) Three states
c) Four states d) One state

9) The term coefficient of performance is related with _____.
a) Heat pump b) Heat Engine
c) Steam Engine d) Gas Turbine

10) Area under the curve on T - S chart indicates _____.
a) Net heat transfer b) Net work transfer
c) Cycle efficiency d) None of the above

11) Second law of thermodynamics defines _____.
a) heat b) work
c) entropy d) internal energy

12) The major heat loss in boiler is due to _____.
a) Moisture in fuel b) Dry flue gases
c) steam formation d) Unburnt fuel

13) The ratio of heat actually used in producing the steam to the heat liberated in the furnace is called _____.
a) Equivalent evaporation b) Evaporative capacity
c) Boiler efficiency d) Factor of evaporation

14) The Rankine cycle as compared to Carnot cycle has _____ work ratio.
a) high b) low
c) equal d) half

Seat No.		Set	Q

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Applied Thermodynamics (BTN02301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Neat diagrams must be drawn wherever necessary.
4) Assume suitable data if required and state it clearly.
5) Use of Scientific calculator is allowed.
6) Use of Steam tables in allowed.

Section – I

Q.2 Attempt the following questions.

a) State and explain Kelvin-Planck and Clausius statement of second law of thermodynamics. **04**

b) Calculate the standard enthalpy change at $298.15\ \mathrm{K}$ for the reaction **05**
$4\mathrm{NH_3(g)} + 5\mathrm{O_2(g)} \rightarrow 4\mathrm{NO(g)} + 6\mathrm{H_2O(g)}$
Given that standard enthalpies of formation for as
$\mathrm{NH_3(g)} = -46.055\ \mathrm{KJ/mole}$
$\mathrm{NO(g)} = 90.435\ \mathrm{KJ/mole}$
$\mathrm{H_2O\ (g)} = -24.997\ \mathrm{KJ/mol}$
$\mathrm{O_2(g)} = 0\ \mathrm{KJ/mol}$

c) Ice melts at $0°C$ with latent heat of fusion of $334.92\ kJ/kg$. At atmospheric Pressure water boils at $100°C$ with latent heat of vaporization $2254\ kJ/kg$. Calculate the entropy change of fusion and vaporization processes. **05**

Q.3 Attempt the following questions.

a) Draw the T-S diagram for Rankine cycle when steam entering the turbine is. **04**
i) Dry and saturated steam
ii) Superheated steam

b) A hot copper block of mass $30\ kg$ having temperature of $500°C$ is dropped in $200\ kg$ of oil at $20°C$. If $\mathrm{Cp_{\ oil}} = 2.5\ \mathrm{kJ/kgk}$ and $Cp_{\ \mathrm{copper}} = 0.5\ \mathrm{kJ/kgk}$, find the change in entropy of universe. Consider adiabatic mixing. **05**

c) The following data were obtained during the boiler trial for one hour **05**
Feed water supplied $= 690\ \mathrm{kg}$
Temperature of feed water $= 27°\mathrm{C}$
Absolute Steam pressure $= 10\ \mathrm{bar}$,
Dryness fraction of steam $= 0.95$
Coal burnt $= 92\ \mathrm{kg}$
Calorific value of coal $= 26{,}000\ \mathrm{KJ/kg}$
Ash and unburnt coal collected $= 5\ \mathrm{kg}$
Calorific value of ash and unburnt fuel $= 2500\ \mathrm{kJ/kg}$
Mass of flue gases $= 17\ \mathrm{kg/kg}$ of coal
Specific heat flue gas $= 1\ \mathrm{kJ/kg\,K}$
Boiler house temperature $= 32\ °\mathrm{C}$
Temperature of flue gas $= 327\ °\mathrm{C}$
Calculate boiler efficiency and Draw heat balance sheet on per kg of coal basis.

Q.4 Attempt the following questions

a) Write a short note on classification of Boilers. **04**

b) Explain Carnot cycle with the help of neat sketch and PV & TS diagram. Also derive the expression for efficiency of the Carnot cycle. **05**

c) In Rankine cycle dry and saturated steam is entering the turbine at 20 bar pressure. The exhaust pressure of turbine is 0.1 bar, and all processes are reversible, find: **05**

i) Cycle thermal efficiency
ii) Work ratio
iii) Specific steam Consumption

Section – II

Q.5 Attempt the following questions.

a) What is nozzle? What are its different types? **04**

b) What do you mean by compounding of steam turbines? Discuss pressure and velocity compounding of steam turbine with neat sketch. **05**

c) The steam at $300\ m/s$ is supplied to a single stage impulse turbine through a nozzle. The nozzle angle is $25°$. The mean diameter of the blade rotar is 100 cm and speed of the rotar is 2000 rpm. Find suitable blade angles if there is no axial thrust. If blade velocity coefficient is 0.9 & steam flow rate is 10 kg/s, Find power developed by the blade. **05**

Q.6 Attempt the following questions.

a) Explain the terms condenser efficiency and vacuum efficiency in connection with steam condensers. **04**

b) Differentiate between surface condenser and jet condenser **05**

c) Differentiate between impulse turbine and reaction turbine. **05**

Q.7 Attempt the following questions.

a) Derive the expression for work done per kg for polytropic compression process without considering the clearance volume. **04**

b) Derive an expression for volumetric efficiency of a reciprocating compressor with usual notations. **05**

c) Air is to be compressed in a single state reciprocating compressor from 1.013 bar and $15°C$ to 7 bar. Calculate the indicated power required for a free air delivery of $0.3\ \mathrm{m^3/min}$, when the compression process, is **05**

a) Isentropic
b) Polytropic if $n = 1.25$.
c) Isothermal

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Applied Thermodynamics (BTN02301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4 Assume suitable data if requires and state it clearly.
5) Neat diagrams must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The ratio of actual vacuum to the ideal vacuum in condenser is called ____.
a) condenser efficiency b) vacuum efficiency
c) nozzle efficiency d) evaporator efficiency

2) In case of reaction steam turbine ____.
a) there is enthalpy drop both in fixed and moving blades
b) there is enthalpy drop only in fixed blades
c) there is enthalpy drop only in moving blades
d) none of these

3) With increase in clearance volume, the ideal work of compressing 1 kg of air _____.
a) Increases b) decreases
c) remains same d) first increases and then decreases

4) In single stage single acting reciprocating compressor without clearance volume, the work done is minimum during _____.
a) isothermal compression b) isentropic compression
c) polytropic compression d) None of the above

5) For defining process at least ____ are required.
a) Two states b) Three states
c) Four states d) One state

6) The term coefficient of performance is related with _____.
a) Heat pump b) Heat Engine
c) Steam Engine d) Gas Turbine

7) Area under the curve on T - S chart indicates _____.
a) Net heat transfer b) Net work transfer
c) Cycle efficiency d) None of the above

8) Second law of thermodynamics defines _____.
a) heat b) work
c) entropy d) internal energy

9) The major heat loss in boiler is due to _____.
a) Moisture in fuel b) Dry flue gases
c) steam formation d) Unburnt fuel

10) The ratio of heat actually used in producing the steam to the heat liberated in the furnace is called _____.
a) Equivalent evaporation b) Evaporative capacity
c) Boiler efficiency d) Factor of evaporation

11) The Rankine cycle as compared to Carnot cycle has _____ work ratio.
a) high b) low
c) equal d) half

12) The flow of steam is supersonic _____.
a) at entrance of nozzle
b) at throat of the nozzle
c) in convergent part of the nozzle
d) in divergent part of nozzle

13) In a shell and tube surface condenser_____.
a) steam and cooling water mix to give the condensate
b) cooling water passes through the tubes and steam surrounds them
c) steam passes the cooling tubes and cooling water surrounds them
d) all of the above varying with situation

14) A condenser in steam power plant _____.
a) increases expansion ratio of steam
b) reduces back pressure of steam
c) reduces temperature of steam
d) all of the above

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Applied Thermodynamics (BTN02301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
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4) Assume suitable data if required and state it clearly.
5) Use of Scientific calculator is allowed.
6) Use of Steam tables in allowed.

Section – I

Q.2 Attempt the following questions.

a) State and explain Kelvin-Planck and Clausius statement of second law of thermodynamics. **04**

b) Calculate the standard enthalpy change at $298.15\ \mathrm{K}$ for the reaction **05**
$4\mathrm{NH_3(g)} + 5\mathrm{O_2(g)} \rightarrow 4\mathrm{NO(g)} + 6\mathrm{H_2O(g)}$
Given that standard enthalpies of formation for as
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$\mathrm{NO(g)} = 90.435\ \mathrm{KJ/mole}$
$\mathrm{H_2O\ (g)} = -24.997\ \mathrm{KJ/mol}$
$\mathrm{O_2(g)} = 0\ \mathrm{KJ/mol}$

c) Ice melts at $0°C$ with latent heat of fusion of $334.92\ kJ/kg$. At atmospheric Pressure water boils at $100°C$ with latent heat of vaporization $2254\ kJ/kg$. Calculate the entropy change of fusion and vaporization processes. **05**

Q.3 Attempt the following questions.

a) Draw the T-S diagram for Rankine cycle when steam entering the turbine is. **04**
i) Dry and saturated steam
ii) Superheated steam

b) A hot copper block of mass $30\ kg$ having temperature of $500°C$ is dropped in $200\ kg$ of oil at $20°C$. If $\mathrm{Cp_{\ oil}} = 2.5\ \mathrm{kJ/kgk}$ and $Cp_{\ \mathrm{copper}} = 0.5\ \mathrm{kJ/kgk}$, find the change in entropy of universe. Consider adiabatic mixing. **05**

c) The following data were obtained during the boiler trial for one hour **05**
Feed water supplied $= 690\ \mathrm{kg}$
Temperature of feed water $= 27°\mathrm{C}$
Absolute Steam pressure $= 10\ \mathrm{bar}$,
Dryness fraction of steam $= 0.95$
Coal burnt $= 92\ \mathrm{kg}$
Calorific value of coal $= 26{,}000\ \mathrm{KJ/kg}$
Ash and unburnt coal collected $= 5\ \mathrm{kg}$
Calorific value of ash and unburnt fuel $= 2500\ \mathrm{kJ/kg}$
Mass of flue gases $= 17\ \mathrm{kg/kg}$ of coal
Specific heat flue gas $= 1\ \mathrm{kJ/kg\ K}$
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Calculate boiler efficiency and Draw heat balance sheet on per kg of coal basis.

Q.4 Attempt the following questions

a) Write a short note on classification of Boilers. **04**

b) Explain Carnot cycle with the help of neat sketch and PV & TS diagram. Also derive the expression for efficiency of the Carnot cycle. **05**

c) In Rankine cycle dry and saturated steam is entering the turbine at 20 bar pressure. The exhaust pressure of turbine is 0.1 bar, and all processes are reversible, find: **05**

i) Cycle thermal efficiency
ii) Work ratio
iii) Specific steam Consumption

Section – II

Q.5 Attempt the following questions.

a) What is nozzle? What are its different types? **04**

b) What do you mean by compounding of steam turbines? Discuss pressure and velocity compounding of steam turbine with neat sketch. **05**

c) The steam at $300\ m/s$ is supplied to a single stage impulse turbine through a nozzle. The nozzle angle is $25°$. The mean diameter of the blade rotar is 100 cm and speed of the rotar is 2000 rpm. Find suitable blade angles if there is no axial thrust. If blade velocity coefficient is 0.9 & steam flow rate is 10 kg/s, Find power developed by the blade. **05**

Q.6 Attempt the following questions.

a) Explain the terms condenser efficiency and vacuum efficiency in connection with steam condensers. **04**

b) Differentiate between surface condenser and jet condenser **05**

c) Differentiate between impulse turbine and reaction turbine. **05**

Q.7 Attempt the following questions.

a) Derive the expression for work done per kg for polytropic compression process without considering the clearance volume. **04**

b) Derive an expression for volumetric efficiency of a reciprocating compressor with usual notations. **05**

c) Air is to be compressed in a single state reciprocating compressor from 1.013 bar and $15°C$ to 7 bar. Calculate the indicated power required for a free air delivery of $0.3\ \mathrm{m^3/min}$, when the compression process, is **05**

a) Isentropic
b) Polytropic if $n = 1.25$.
c) Isothermal

Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Applied Thermodynamics (BTN02301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4 Assume suitable data if requires and state it clearly.
5) Neat diagrams must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The ratio of heat actually used in producing the steam to the heat liberated in the furnace is called _____.
a) Equivalent evaporation b) Evaporative capacity
c) Boiler efficiency d) Factor of evaporation

2) The Rankine cycle as compared to Carnot cycle has _____ work ratio.
a) high b) low
c) equal d) half

3) The flow of steam is supersonic _____.
a) at entrance of nozzle
b) at throat of the nozzle
c) in convergent part of the nozzle
d) in divergent part of nozzle

4) In a shell and tube surface condenser_____.
a) steam and cooling water mix to give the condensate
b) cooling water passes through the tubes and steam surrounds them
c) steam passes the cooling tubes and cooling water surrounds them
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5) A condenser in steam power plant _____.
a) increases expansion ratio of steam
b) reduces back pressure of steam
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d) all of the above

6) The ratio of actual vacuum to the ideal vacuum in condenser is called ____.
a) condenser efficiency b) vacuum efficiency
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7) In case of reaction steam turbine ____.
a) there is enthalpy drop both in fixed and moving blades
b) there is enthalpy drop only in fixed blades
c) there is enthalpy drop only in moving blades
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8) With increase in clearance volume, the ideal work of compressing 1 kg of air _____.

a) Increases b) decreases
c) remains same d) first increases and then decreases

9) In single stage single acting reciprocating compressor without clearance volume, the work done is minimum during _____.

a) isothermal compression b) isentropic compression
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10) For defining process at least ____ are required.

a) Two states b) Three states
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11) The term coefficient of performance is related with _____.

a) Heat pump b) Heat Engine
c) Steam Engine d) Gas Turbine

12) Area under the curve on T - S chart indicates _____.

a) Net heat transfer b) Net work transfer
c) Cycle efficiency d) None of the above

13) Second law of thermodynamics defines _____.

a) heat b) work
c) entropy d) internal energy

14) The major heat loss in boiler is due to _____.

a) Moisture in fuel b) Dry flue gases
c) steam formation d) Unburnt fuel

SLR-GF-732

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Applied Thermodynamics (BTN02301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Neat diagrams must be drawn wherever necessary.
4) Assume suitable data if required and state it clearly.
5) Use of Scientific calculator is allowed.
6) Use of Steam tables in allowed.

Section – I

Q.2 Attempt the following questions.

a) State and explain Kelvin-Planck and Clausius statement of second law of thermodynamics. **04**

b) Calculate the standard enthalpy change at $298.15\ \mathrm{K}$ for the reaction **05**
$4\mathrm{NH_3(g)} + 5\mathrm{O_2(g)} \rightarrow 4\mathrm{NO(g)} + 6\mathrm{H_2O(g)}$
Given that standard enthalpies of formation for as
$\mathrm{NH_3(g)} = -46.055\ \mathrm{KJ/mole}$
$\mathrm{NO(g)} = 90.435\ \mathrm{KJ/mole}$
$\mathrm{H_2O\ (g)} = -24.997\ \mathrm{KJ/mol}$
$\mathrm{O_2(g)} = 0\ \mathrm{KJ/mol}$

c) Ice melts at $0°C$ with latent heat of fusion of $334.92\ kJ/kg$. At atmospheric Pressure water boils at $100°C$ with latent heat of vaporization $2254\ kJ/kg$. Calculate the entropy change of fusion and vaporization processes. **05**

Q.3 Attempt the following questions.

a) Draw the T-S diagram for Rankine cycle when steam entering the turbine is. **04**
i) Dry and saturated steam
ii) Superheated steam

b) A hot copper block of mass $30\ kg$ having temperature of $500°C$ is dropped in $200\ kg$ of oil at $20°C$. If $\mathrm{Cp_{\ oil}} = 2.5\ \mathrm{kJ/kgk}$ and $Cp_{\ \mathrm{copper}} = 0.5\ \mathrm{kJ/kgk}$, find the change in entropy of universe. Consider adiabatic mixing. **05**

c) The following data were obtained during the boiler trial for one hour **05**
Feed water supplied $= 690\ \mathrm{kg}$
Temperature of feed water $= 27°\mathrm{C}$
Absolute Steam pressure $= 10\ \mathrm{bar}$,
Dryness fraction of steam $= 0.95$
Coal burnt $= 92\ \mathrm{kg}$
Calorific value of coal $= 26{,}000\ \mathrm{KJ/kg}$
Ash and unburnt coal collected $= 5\ \mathrm{kg}$
Calorific value of ash and unburnt fuel $= 2500\ \mathrm{kJ/kg}$
Mass of flue gases $= 17\ \mathrm{kg/kg}$ of coal
Specific heat flue gas $= 1\ \mathrm{kJ/kg\,K}$
Boiler house temperature $= 32\ °\mathrm{C}$
Temperature of flue gas $= 327\ °\mathrm{C}$
Calculate boiler efficiency and Draw heat balance sheet on per kg of coal basis.

Q.4 Attempt the following questions

a) Write a short note on classification of Boilers. **04**

b) Explain Carnot cycle with the help of neat sketch and PV & TS diagram. Also derive the expression for efficiency of the Carnot cycle. **05**

c) In Rankine cycle dry and saturated steam is entering the turbine at 20 bar pressure. The exhaust pressure of turbine is 0.1 bar, and all processes are reversible, find: **05**

i) Cycle thermal efficiency
ii) Work ratio
iii) Specific steam Consumption

Section – II

Q.5 Attempt the following questions.

a) What is nozzle? What are its different types? **04**

b) What do you mean by compounding of steam turbines? Discuss pressure and velocity compounding of steam turbine with neat sketch. **05**

c) The steam at $300\ m/s$ is supplied to a single stage impulse turbine through a nozzle. The nozzle angle is $25°$. The mean diameter of the blade rotar is 100 cm and speed of the rotar is 2000 rpm. Find suitable blade angles if there is no axial thrust. If blade velocity coefficient is 0.9 & steam flow rate is 10 kg/s, Find power developed by the blade. **05**

Q.6 Attempt the following questions.

a) Explain the terms condenser efficiency and vacuum efficiency in connection with steam condensers. **04**

b) Differentiate between surface condenser and jet condenser **05**

c) Differentiate between impulse turbine and reaction turbine. **05**

Q.7 Attempt the following questions.

a) Derive the expression for work done per kg for polytropic compression process without considering the clearance volume. **04**

b) Derive an expression for volumetric efficiency of a reciprocating compressor with usual notations. **05**

c) Air is to be compressed in a single state reciprocating compressor from 1.013 bar and $15°C$ to 7 bar. Calculate the indicated power required for a free air delivery of $0.3\ \mathrm{m^3/min}$, when the compression process, is **05**

a) Isentropic
b) Polytropic if $n = 1.25$.
c) Isothermal

SLR-GF-733

Seat No.		Set	P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Mechanical Engineering
Mechanics of Materials (BTN02302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Strain energy will be stored in a body be maximum if _____.
a) Load is applied gradually
b) Load is applied suddenly without an impact
c) Load is applied with an impact
d) Load applied is cyclic

2) At a point of contra-shear, _____
a) Bending moment is maximum b) Shear force is maximum
c) Both a) and b) are correct d) Both a) and b) are wrong

3) The radius of Mohr's stress circle indicates _____
a) Maximum Normal stress b) Maximum Shear stress
c) Minimum Normal stress d) Minimum Shear Stress

4) Variation of shear stress across the depth of a section of a beam is _____
a) Linear b) Parabolic
c) Cubic d) Exponential

5) Torque transmitted by a solid shaft of diameter D when subjected to shear stress (τ) is equal to _____.
a) $\pi/16\tau D\text{^}2$ b) $\pi/32\tau D\text{^}2$
c) $\pi/32\tau D\text{^}3$ d) $\pi/16\tau D\text{^}3$

6) The property of material same in all direction is known as _____.
a) homogeneous b) elasticity
c) isotropic d) none of these

7) For a simply supported beam carrying a central point load, shape of BMD is _____.
a) a rectangle b) an isosceles triangle
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10) The unit of flexural rigidity is _____.
a) N/mm^2 b) mm^4
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11) Deflection of a beam depends upon _____.
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12) If E = Young's Modulus, K = Bulk Modulus and G = Shear Modulus, then ____
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Set **P**

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Mechanics of Materials (BTN02302)

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Section – I

Q.2 **a)** A hollow shaft having an internal diameter 0.5 of its external diameter transmits 550 kW at 130 rpm. Determine the suitable external & internal diameter of the shaft if the shear stress is not to exceed 75 N/mm^2 and the twist in a length of 4 m should not exceed 1.2 degrees. Assume maximum torque = 1.3 mean torque and Modulus of rigidity = 1.2×10^5 N/mm^2. **07**

b) A Cantilever, 10 m long is fixed at the left end. It carries a UDL of 2 kN/m on its entire span along with a point load of 25 kN at the free end. It also carries an anticlockwise couple of 30 kN-m acting at its centre. Draw S.F.D. and B.M.D. and indicate all the important points. **07**

Q.3 **a)** A steel bar of 70 mm x 70 mm in section and 200 mm long is subjected to load of 310 kN along longitudinal axis, tensile loads of 730 kN & 540 kN on lateral faces. Find the volumetric Strain, change in volume and change in length of bar. Take, E = 210 kN/mm^2, Poisson's ratio = 0.3. **07**

b) Draw S.F.D. and B.M.D. for a simply supported beam carrying an UDL of 'w' per unit run over the whole span. **07**

Q.4 **a)** A vertical bar of uniform cross-sectional area 600 mm^2 and 3 m long is fixed at the top end and is provided with the circular disc at the bottom. If the weight of 700 N falls on the disc from a height of 100 mm, determine a maximum stress set in the bar. Take E = 210 x10^3 N/mm^2. Also, determine strain energy absorbed and elongation of the bar. **05**

b) Define the following terms: **04**
i) Strain Energy
ii) Proof resilience
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c) Prove that: $E = 3K(1 - 2\pi)$ **05**

Section – II

Q.5 **a)** A beam has I - Section with top flange (180 X 20) mm, bottom flange (250 X 20) mm and the web (200 X 20) mm. It is simply supported over a span of 3 m carrying a U. D. L. of 2kN/m on the entire span. Determine the maximum intensity of bending stresses and their nature and draw the bending stress distribution diagram. **07**

b) Determine slope and deflection at free end C for the beam as shown in figure. **07**
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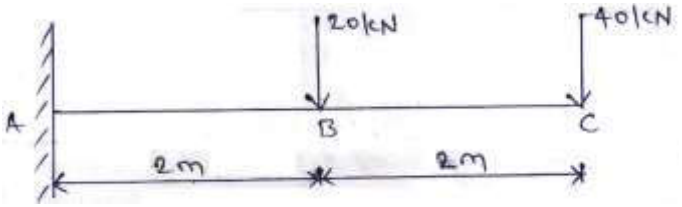

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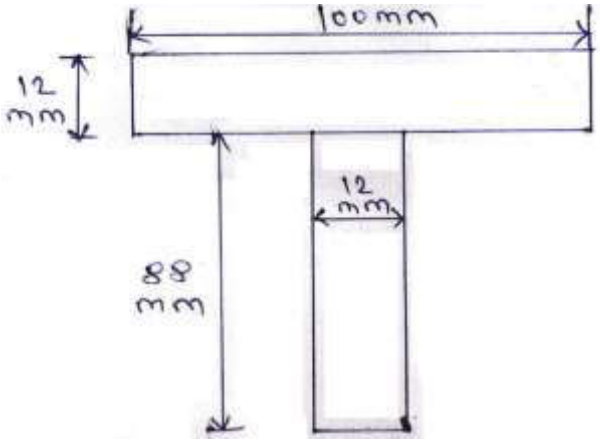

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Q.7 **a)** Define the following terms with neat sketch: **04**
i) Slope of beam
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b) At a point in a strained material, the principal stresses are 160 MPa and 70 MPa respectively. Both stresses are tensile in nature. The plane inclined at 35° with major principal plane. Find normal, tangential and resultant stress on this plane along with angle of obliquity by using Mohr's circle method only. **05**

c) Simply supported beam of span 5 m is carrying a uniformly distributed load 3 kN/m over the entire span. Find the maximum slope and deflection of the beam. Take, EI for the beam as 80 x 10^9 N-mm^2. **05**

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Mechanics of Materials (BTN02302)

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Duration: 30 Minutes Marks:14

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Seat No.	

Set **Q**

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Mechanical Engineering
Mechanics of Materials (BTN02302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
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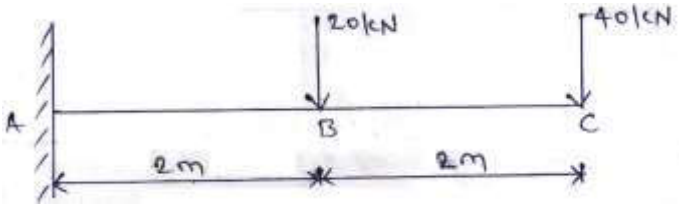

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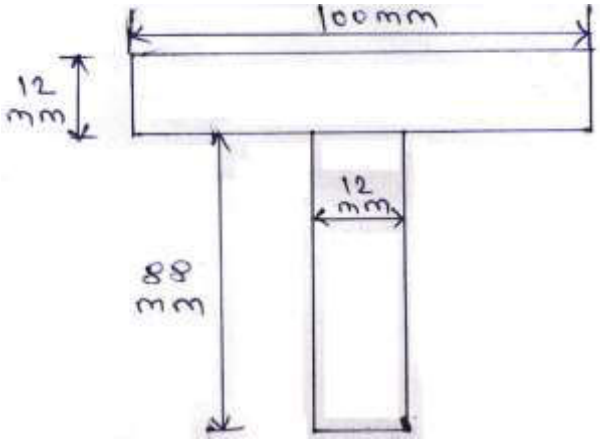

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SLR-GF-733

Seat No.		Set	R

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Mechanics of Materials (BTN02302)

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Seat No.	

Set **R**

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Mechanical Engineering
Mechanics of Materials (BTN02302)

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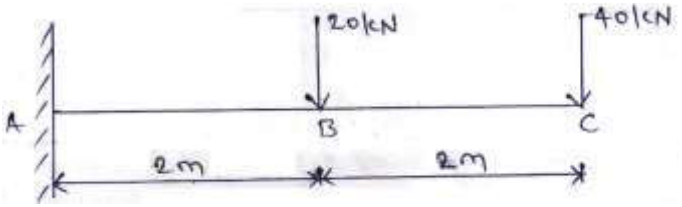

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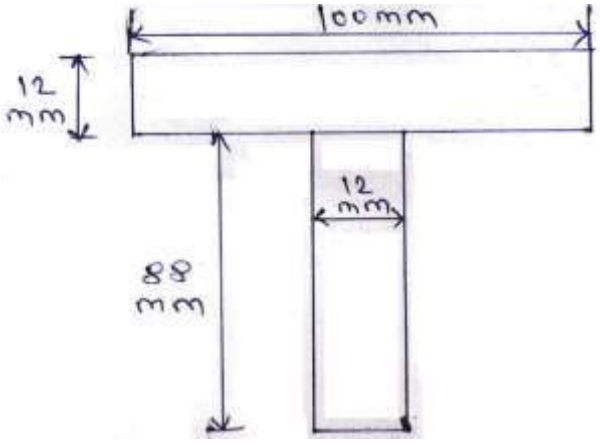

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6) Deflection of a beam depends upon _____.
a) Cross sectional area b) Young's Modulus
c) Bending Moment d) All of the above

7) If E = Young's Modulus, K = Bulk Modulus and G = Shear Modulus, then ____
a) E = 6KG/(3K + G) b) E = 3KG/(9K + G)
c) E = 3KG/(6K + G) d) E = 9KG/(3K + G)

8) For a body subjected to two perpendicular stresses $\sigma 1$ and $\sigma 2$, if radius of Mohr's circle is zero, then _____.
a) $\sigma 1 = 0$ b) $\sigma 2 = 0$
c) $\sigma 1 = -\sigma 2$ d) $\sigma 1 = \sigma 2$

9) The stress due to suddenly applied load is _____ times the gradually applied load.

a) Four b) Three
c) Two d) Five

10) Strain energy will be stored in a body be maximum if _____.

a) Load is applied gradually
b) Load is applied suddenly without an impact
c) Load is applied with an impact
d) Load applied is cyclic

11) At a point of contra-shear, _____

a) Bending moment is maximum b) Shear force is maximum
c) Both a) and b) are correct d) Both a) and b) are wrong

12) The radius of Mohr's stress circle indicates _____

a) Maximum Normal stress b) Maximum Shear stress
c) Minimum Normal stress d) Minimum Shear Stress

13) Variation of shear stress across the depth of a section of a beam is _____

a) Linear b) Parabolic
c) Cubic d) Exponential

14) Torque transmitted by a solid shaft of diameter D when subjected to shear stress (τ) is equal to _____.

a) $\pi/16\tau D\text{^}2$ b) $\pi/32\tau D\text{^}2$
c) $\pi/32\tau D\text{^}3$ d) $\pi/16\tau D\text{^}3$

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
Mechanical Engineering
Mechanics of Materials (BTN02302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.
4) Use of calculator is allowed.

Section – I

Q.2 **a)** A hollow shaft having an internal diameter 0.5 of its external diameter transmits 550 kW at 130 rpm. Determine the suitable external & internal diameter of the shaft if the shear stress is not to exceed 75 N/mm^2 and the twist in a length of 4 m should not exceed 1.2 degrees. Assume maximum torque = 1.3 mean torque and Modulus of rigidity = 1.2×10^5 N/mm^2. **07**

b) A Cantilever, 10 m long is fixed at the left end. It carries a UDL of 2 kN/m on its entire span along with a point load of 25 kN at the free end. It also carries an anticlockwise couple of 30 kN-m acting at its centre. Draw S.F.D. and B.M.D. and indicate all the important points. **07**

Q.3 **a)** A steel bar of 70 mm x 70 mm in section and 200 mm long is subjected to load of 310 kN along longitudinal axis, tensile loads of 730 kN & 540 kN on lateral faces. Find the volumetric Strain, change in volume and change in length of bar. Take, E = 210 kN/mm^2, Poisson's ratio = 0.3. **07**

b) Draw S.F.D. and B.M.D. for a simply supported beam carrying an UDL of 'w' per unit run over the whole span. **07**

Q.4 **a)** A vertical bar of uniform cross-sectional area 600 mm^2 and 3 m long is fixed at the top end and is provided with the circular disc at the bottom. If the weight of 700 N falls on the disc from a height of 100 mm, determine a maximum stress set in the bar. Take E = 210 x10^3 N/mm^2. Also, determine strain energy absorbed and elongation of the bar. **05**

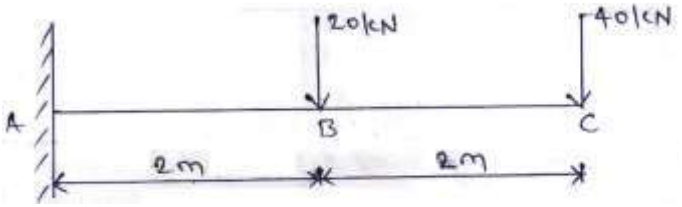
b) Define the following terms: **04**
i) Strain Energy
ii) Proof resilience
iii) Modulus of resilience

c) Prove that: $E = 3K(1 - 2\pi)$ **05**

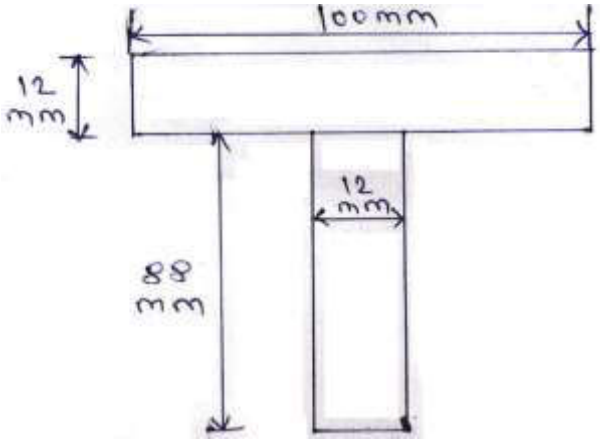
Section – II

Q.5 **a)** A beam has I - Section with top flange (180 X 20) mm, bottom flange (250 X 20) mm and the web (200 X 20) mm. It is simply supported over a span of 3 m carrying a U. D. L. of 2kN/m on the entire span. Determine the maximum intensity of bending stresses and their nature and draw the bending stress distribution diagram. **07**

b) Determine slope and deflection at free end C for the beam as shown in figure. **07**
Take $EI = 10 \times 10^4$ KN-m^2 (Use moment area method only)



Q.6 **a)** Figure shows the cross section of beam subjected to shear force 30 KN. Draw shear stress distribution diagram across the depth making values at salient points. **07**



b) The stresses at a point across two perpendicular planes are 85 MN/m^2 (tensile) and 40 MN/m^2 (tensile). Find the normal, tangential stresses, the resultant stress and its obliquity on a plane at 30° with the plane of major stress. **07**

Q.7 **a)** Define the following terms with neat sketch: **04**
i) Slope of beam
ii) Deflection of beam

b) At a point in a strained material, the principal stresses are 160 MPa and 70 MPa respectively. Both stresses are tensile in nature. The plane inclined at 35° with major principal plane. Find normal, tangential and resultant stress on this plane along with angle of obliquity by using Mohr's circle method only. **05**

c) Simply supported beam of span 5 m is carrying a uniformly distributed load 3 kN/m over the entire span. Find the maximum slope and deflection of the beam. Take, EI for the beam as 80 x 10^9 N-mm^2. **05**

Seat No.	

Set **P**

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Processes (BTN02303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 A) Objective types of questions. **14**

1) Metal patterns are used for producing: _____
   a) precise and intricate castings
   b) large castings
   c) large scale production of small castings
   d) a small number of castings

2) Radiography is a test to detect: _____
   a) surface roughness b) tensile strength
   c) hardness d) Flaws

3) Metal moulds are used in: _____
   a) green sand moulding b) dry sand moulding
   c) die casting process d) loam moulding

4) The process of removing unwanted material from casting is called: _____
   a) fettling b) cleaning
   c) finishing d) blowing

5) Spot welding comes under the which process _____.
   a) Arc welding b) Gas welding
   c) Resistance welding d) Solid welding

6) Grey cast iron is usually welded by _____
   a) Gas welding b) Resistance welding
   c) Arc welding d) TIG welding

7) The patterns used for the lost wax type investment casting are made of: ____
   a) wood b) gypsum
   c) frozen mercury d) wax

8) Which of the following metal forming processes performs squeezing out of material through a hole?
   a) Forging b) Rolling
   c) Drawing d) Extrusion

9) Which of the following manufacturing processes is mainly considered for producing the components of very high strength?
   a) Casting b) Forging
   c) Extrusion d) Rolling

10) Which one of the following metals forming processes is not a high energy rate forming process?
   a) Electro-magnetic b) Roll-forming
   c) Explosive forming d) Electro-hydraulic forming

11) Which of the following is a high-energy-rate forming process?
   a) Electrochemical machining b) Explosive forming
   c) Hydroforming d) Electron beam cutting

12) Which one of the following is not a subtractive process?
   a) Milling b) Stereo Lithography
   c) Sawing d) EDM

13) Which of the following is typically the cheapest type of 3D printer?
   a) FDM b) SLA
   c) Powder-based d) SLM

14) The die used in the electromagnetic process should be made of material with _____.
   a) high electrical conductivity b) low electrical conductivity
   c) low ductility d) high creep resistance

Seat No.	

Set **P**

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Processes (BTN02303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both Sections.
2) Figures to the right indicate full marks.
3) Neat sketches must be drawn whenever necessary.
4) Assume additional suitable data whenever necessary and mention it clearly.

Section – I

Q.2	**a)**	Explain in brief basic steps in the casting process.	**04**
	b)	What is the core? How cores are classified?	**05**
	c)	Draw a neat sketch of the gating system and explain the function of each part.	**05**
Q.3	**a)**	Explain the advantages and limitations of green moulding sand processes.	**04**
	b)	Explain in detail the submerged arc welding process.	**05**
	c)	Write a short note on the Fettling operation.	**05**
Q.4	**a)**	Differentiate clearly between Brazing and Soldering.	**04**
	b)	Explain shielded metal arc welding in detail.	**05**
	c)	With a neat sketch explaining direct arc electric arc furnace.	**05**

Section – II

Q.5	**a)**	Explain in detail three -high rolling mill, state advantages, limitations and applications.	**05**
	b)	Differentiate between hot working and cold working operations.	**05**
	c)	Give broad classification of forging processes.	**04**
Q.6	**a)**	Write a short note on explosive forming.	**05**
	b)	Write a short note on magnetic pulse forming.	**05**
	c)	Explain the advantages and limitations of Advanced Forming Processes.	**04**
Q.7	**a)**	Write a short note on Rapid prototyping (RP).	**05**
	b)	Write a short note on Fused Deposition Modeling (FDM).	**05**
	c)	Explain the advantages and limitations of Advanced Manufacturing Processes.	**04**

Seat No.	

Set **Q**

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Processes (BTN02303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 A) Objective types of questions. **14**

1) Which of the following metal forming processes performs squeezing out of material through a hole?
   a) Forging b) Rolling
   c) Drawing d) Extrusion

2) Which of the following manufacturing processes is mainly considered for producing the components of very high strength?
   a) Casting b) Forging
   c) Extrusion d) Rolling

3) Which one of the following metals forming processes is not a high energy rate forming process?
   a) Electro-magnetic b) Roll-forming
   c) Explosive forming d) Electro-hydraulic forming

4) Which of the following is a high-energy-rate forming process?
   a) Electrochemical machining b) Explosive forming
   c) Hydroforming d) Electron beam cutting

5) Which one of the following is not a subtractive process?
   a) Milling b) Stereo Lithography
   c) Sawing d) EDM

6) Which of the following is typically the cheapest type of 3D printer?
   a) FDM b) SLA
   c) Powder-based d) SLM

7) The die used in the electromagnetic process should be made of material with _____.
   a) high electrical conductivity b) low electrical conductivity
   c) low ductility d) high creep resistance

8) Metal patterns are used for producing: _____
   a) precise and intricate castings
   b) large castings
   c) large scale production of small castings
   d) a small number of castings

9) Radiography is a test to detect: _____
   a) surface roughness b) tensile strength
   c) hardness d) Flaws

10) Metal moulds are used in: _____
   a) green sand moulding b) dry sand moulding
   c) die casting process d) loam moulding

11) The process of removing unwanted material from casting is called: _____
   a) fettling b) cleaning
   c) finishing d) blowing

12) Spot welding comes under the which process _____.
   a) Arc welding b) Gas welding
   c) Resistance welding d) Solid welding

13) Grey cast iron is usually welded by _____
   a) Gas welding b) Resistance welding
   c) Arc welding d) TIG welding

14) The patterns used for the lost wax type investment casting are made of: ____
   a) wood b) gypsum
   c) frozen mercury d) wax

Seat No.	

Set **Q**

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Processes (BTN02303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both Sections.
2) Figures to the right indicate full marks.
3) Neat sketches must be drawn whenever necessary.
4) Assume additional suitable data whenever necessary and mention it clearly.

Section – I

Q.2	**a)**	Explain in brief basic steps in the casting process.	**04**
	b)	What is the core? How cores are classified?	**05**
	c)	Draw a neat sketch of the gating system and explain the function of each part.	**05**
Q.3	**a)**	Explain the advantages and limitations of green moulding sand processes.	**04**
	b)	Explain in detail the submerged arc welding process.	**05**
	c)	Write a short note on the Fettling operation.	**05**
Q.4	**a)**	Differentiate clearly between Brazing and Soldering.	**04**
	b)	Explain shielded metal arc welding in detail.	**05**
	c)	With a neat sketch explaining direct arc electric arc furnace.	**05**

Section – II

Q.5	**a)**	Explain in detail three -high rolling mill, state advantages, limitations and applications.	**05**
	b)	Differentiate between hot working and cold working operations.	**05**
	c)	Give broad classification of forging processes.	**04**
Q.6	**a)**	Write a short note on explosive forming.	**05**
	b)	Write a short note on magnetic pulse forming.	**05**
	c)	Explain the advantages and limitations of Advanced Forming Processes.	**04**
Q.7	**a)**	Write a short note on Rapid prototyping (RP).	**05**
	b)	Write a short note on Fused Deposition Modeling (FDM).	**05**
	c)	Explain the advantages and limitations of Advanced Manufacturing Processes.	**04**

Seat No.	

Set **R**

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Processes (BTN02303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 A) Objective types of questions. **14**

1) Which of the following is a high-energy-rate forming process?
   a) Electrochemical machining b) Explosive forming
   c) Hydroforming d) Electron beam cutting

2) Which one of the following is not a subtractive process?
   a) Milling b) Stereo Lithography
   c) Sawing d) EDM

3) Which of the following is typically the cheapest type of 3D printer?
   a) FDM b) SLA
   c) Powder-based d) SLM

4) The die used in the electromagnetic process should be made of material with _____.
   a) high electrical conductivity b) low electrical conductivity
   c) low ductility d) high creep resistance

5) Metal patterns are used for producing: _____
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9) Spot welding comes under the which process _____.
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   c) Drawing d) Extrusion

13) Which of the following manufacturing processes is mainly considered for producing the components of very high strength?
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14) Which one of the following metals forming processes is not a high energy rate forming process?
   a) Electro-magnetic b) Roll-forming
   c) Explosive forming d) Electro-hydraulic forming

Seat No.	

Set **R**

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Processes (BTN02303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both Sections.
2) Figures to the right indicate full marks.
3) Neat sketches must be drawn whenever necessary.
4) Assume additional suitable data whenever necessary and mention it clearly.

Section – I

Q.2	**a)**	Explain in brief basic steps in the casting process.	**04**
	b)	What is the core? How cores are classified?	**05**
	c)	Draw a neat sketch of the gating system and explain the function of each part.	**05**
Q.3	**a)**	Explain the advantages and limitations of green moulding sand processes.	**04**
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	c)	Write a short note on the Fettling operation.	**05**
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	b)	Explain shielded metal arc welding in detail.	**05**
	c)	With a neat sketch explaining direct arc electric arc furnace.	**05**

Section – II

Q.5	**a)**	Explain in detail three -high rolling mill, state advantages, limitations and applications.	**05**
	b)	Differentiate between hot working and cold working operations.	**05**
	c)	Give broad classification of forging processes.	**04**
Q.6	**a)**	Write a short note on explosive forming.	**05**
	b)	Write a short note on magnetic pulse forming.	**05**
	c)	Explain the advantages and limitations of Advanced Forming Processes.	**04**
Q.7	**a)**	Write a short note on Rapid prototyping (RP).	**05**
	b)	Write a short note on Fused Deposition Modeling (FDM).	**05**
	c)	Explain the advantages and limitations of Advanced Manufacturing Processes.	**04**

Seat No.	

Set | S

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Processes (BTN02303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 A) Objective types of questions. **14**

1) Grey cast iron is usually welded by _____
   a) Gas welding b) Resistance welding
   c) Arc welding d) TIG welding

2) The patterns used for the lost wax type investment casting are made of: ____
   a) wood b) gypsum
   c) frozen mercury d) wax

3) Which of the following metal forming processes performs squeezing out of material through a hole?
   a) Forging b) Rolling
   c) Drawing d) Extrusion

4) Which of the following manufacturing processes is mainly considered for producing the components of very high strength?
   a) Casting b) Forging
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5) Which one of the following metals forming processes is not a high energy rate forming process?
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6) Which of the following is a high-energy-rate forming process?
   a) Electrochemical machining b) Explosive forming
   c) Hydroforming d) Electron beam cutting

7) Which one of the following is not a subtractive process?
   a) Milling b) Stereo Lithography
   c) Sawing d) EDM

8) Which of the following is typically the cheapest type of 3D printer?
   a) FDM b) SLA
   c) Powder-based d) SLM

9) The die used in the electromagnetic process should be made of material with _____.
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   a) surface roughness
   b) tensile strength
   c) hardness
   d) Flaws

12) Metal moulds are used in: _____
   a) green sand moulding
   b) dry sand moulding
   c) die casting process
   d) loam moulding

13) The process of removing unwanted material from casting is called: _____
   a) fettling
   b) cleaning
   c) finishing
   d) blowing

14) Spot welding comes under the which process _____.
   a) Arc welding
   b) Gas welding
   c) Resistance welding
   d) Solid welding

SLR-GF-734

Seat No.		Set	S

S. Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Processes (BTN02303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both Sections.
2) Figures to the right indicate full marks.
3) Neat sketches must be drawn whenever necessary.
4) Assume additional suitable data whenever necessary and mention it clearly.

Section – I

Q.2	**a)**	Explain in brief basic steps in the casting process.	**04**
	b)	What is the core? How cores are classified?	**05**
	c)	Draw a neat sketch of the gating system and explain the function of each part.	**05**
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	b)	Explain in detail the submerged arc welding process.	**05**
	c)	Write a short note on the Fettling operation.	**05**
Q.4	**a)**	Differentiate clearly between Brazing and Soldering.	**04**
	b)	Explain shielded metal arc welding in detail.	**05**
	c)	With a neat sketch explaining direct arc electric arc furnace.	**05**

Section – II

Q.5	**a)**	Explain in detail three -high rolling mill, state advantages, limitations and applications.	**05**
	b)	Differentiate between hot working and cold working operations.	**05**
	c)	Give broad classification of forging processes.	**04**
Q.6	**a)**	Write a short note on explosive forming.	**05**
	b)	Write a short note on magnetic pulse forming.	**05**
	c)	Explain the advantages and limitations of Advanced Forming Processes.	**04**
Q.7	**a)**	Write a short note on Rapid prototyping (RP).	**05**
	b)	Write a short note on Fused Deposition Modeling (FDM).	**05**
	c)	Explain the advantages and limitations of Advanced Manufacturing Processes.	**04**

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Drawing & CAD (BTN02304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book).
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Assume suitable dimension if not given.
4) Figures to the right indicate full marks.
5) Use first angle Method of projection.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

Type – I: Match the pairs (Each bit one mark each)

1)

Column - A Type	Column - B Application
A) Liquids	P)
B) Packing-insulating materials	Q)
C) Metals	R)

Type – II: Correct OR Incorrect (Attempt any two) (Each bit One Mark each)

1) Pulley arms are shown as revolved sections.

2) 20:1 represents the enlarged scale.

3) is the symbol of seam weld.

Type – III: Multiple correct ans. type (Each correct bit 2 marks each)

1) _____ drawing boards are used in Engineering Institutes.

a) D1 (L1500*W1000*T25) mm b) D2 (L1000*W700*T25) mm
c) D3 (L700*W500*T15) mm d) D4 (L500*W350*T15) mm

2) Following are the parallel or feather keys _____.

a) Single Headed key b) GIB Headed key
c) PEG key d) Flat saddle key

Type – IV: Straight Objective Type/Classical MCQ (Each bit one mark each)

1) In hole basis system the lower deviation of hole _____.

a) Zero b) Varying
c) More than zero d) None of above

2) In solid flanged coupling, the flanges are joined by means of _____.

a) Hex. headed bolts b) Headless taper bolts
c) Cotter pin d) Rivets

3) This symbol represents _____.

a) External thread b) Internal thread
c) Shaft d) Position

4) Fig represents dimensioning of _____.

a) Arc b) Diameter
c) Radius d) Flat

5) The height of hexagonal nut is _____.

a) D b) 1.1D
c) 1.3D d) 1.5D

Seat No.		Set	P

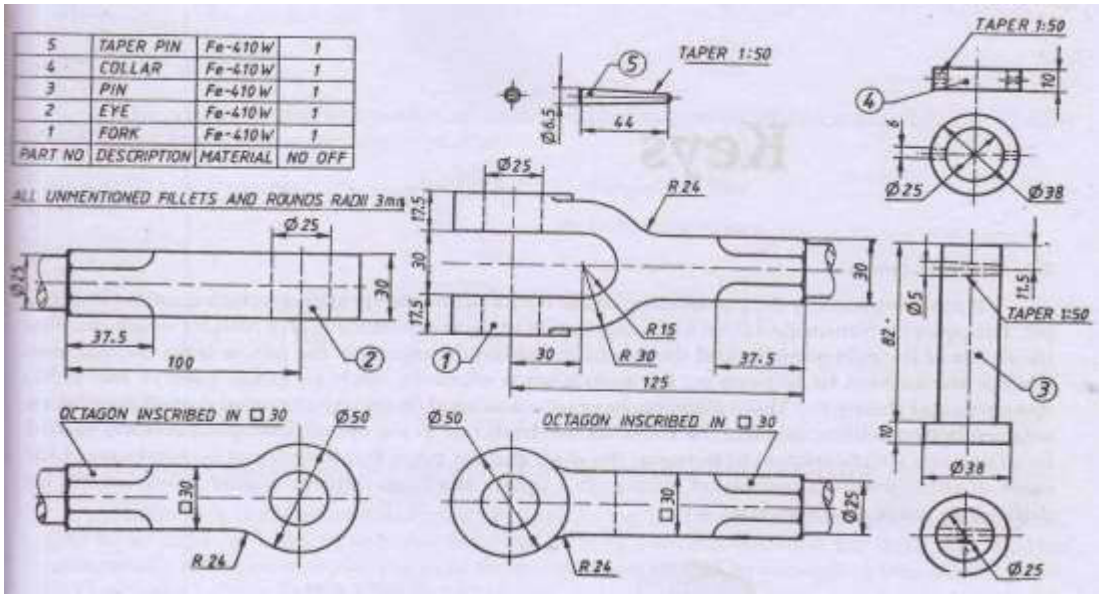
S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Drawing & CAD (BTN02304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Questions no. 2 is compulsory.
2) Out of Questions no. 3 to 5, attempt any two questions.
3) Figures to the right indicate full marks.
4) Assume suitable dimension if not given.
4) Use first angle Method of projection.

Q.2 The detail parts of a KNUCKLE JOINT is given, Assemble the parts and show the following views to 1:1 scale. Show the important dimensions on the assembly Drawing. **28**

i) Front view in section
ii) Top view
iii) Dimensioning, symbol of First angle Method, Scale, Name of the Views and part list.



Q.3 a) Draw the B.I.S. conventions for the following. (Any three) **09**

i) Lead
ii) Repeated parts
iii) Super imposed dimensioning
iv) Half section

b) Draw freehand sketching for the following. (Any one) **05**

i) Forged coupling
ii) Fast and loose pulley

Q.4 a) Draw the B.I.S Convention for Following. (Any three) **09**

i) Leaf spring with centre band and eyes.
ii) Rachet and pinion
iii) Square Butt Weld
iv) Splined shaft

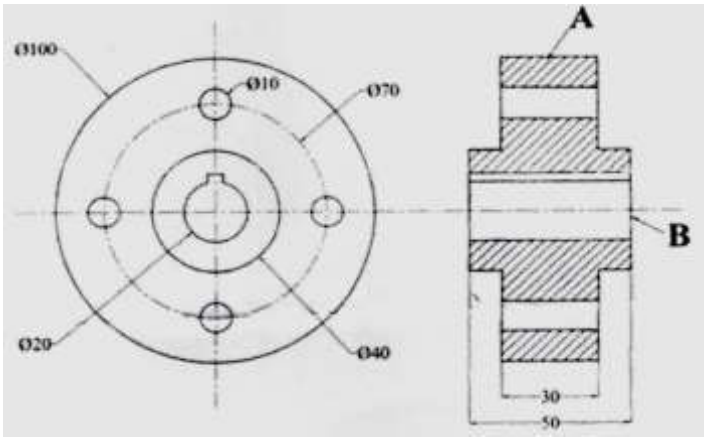
b) Draw the Freehand Sketching of (Any one) **05**

i) Riveted joint (double strapped double riveted zig-zag type)
ii) Flat belt pulley

Q.5 a) Draw representation of the hole and shaft basis system. **04**

b) Redraw figure with given dimensions and show the followings using geometrical symbols and tolerances. **10**

i) Surface 'A; is cylindrical within 0.04 mm.
ii) Axis of central hole is perpendicular to surface B within 0.03 mm.
iii) Inner surface of key way is to be milled to 25-micron finish.
iv) Position of ∅10 holes is fixed within 0.02 mm.



Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Drawing & CAD (BTN02304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book).
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Assume suitable dimension if not given.
4) Figures to the right indicate full marks.
5) Use first angle Method of projection.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

Type – I: Match the pairs (Each bit one mark each)

1)

Column - A Type	Column - B Application
A) Liquids	P)
B) Packing-insulating materials	Q)
C) Metals	R)

Type – II: Correct OR Incorrect (Attempt any two) (Each bit One Mark each)

1) Pulley arms are shown as revolved sections.

2) 20:1 represents the enlarged scale.

3) is the symbol of seam weld.

Type – III: Multiple correct ans. type (Each correct bit 2 marks each)

1) _____ drawing boards are used in Engineering Institutes.

a) D1 (L1500*W1000*T25) mm b) D2 (L1000*W700*T25) mm
c) D3 (L700*W500*T15) mm d) D4 (L500*W350*T15) mm

2) Following are the parallel or feather keys _____.

a) Single Headed key b) GIB Headed key
c) PEG key d) Flat saddle key

Type – IV: Straight Objective Type/Classical MCQ (Each bit one mark each)

1) In hole basis system the lower deviation of hole _____.

a) Zero b) Varying
c) More than zero d) None of above

2) In solid flanged coupling, the flanges are joined by means of _____.

a) Hex. headed bolts b) Headless taper bolts
c) Cotter pin d) Rivets

3) This symbol represents _____.

a) External thread b) Internal thread
c) Shaft d) Position

4) Fig represents dimensioning of _____.

a) Arc b) Diameter
c) Radius d) Flat

5) The height of hexagonal nut is _____.

a) D b) 1.1D
c) 1.3D d) 1.5D

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MECHANICAL ENGINEERING
Machine Drawing & CAD (BTN02304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Questions no. 2 is compulsory.
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Q.2 The detail parts of a KNUCKLE JOINT is given, Assemble the parts and show the following views to 1:1 scale. Show the important dimensions on the assembly Drawing. **28**

i) Front view in section
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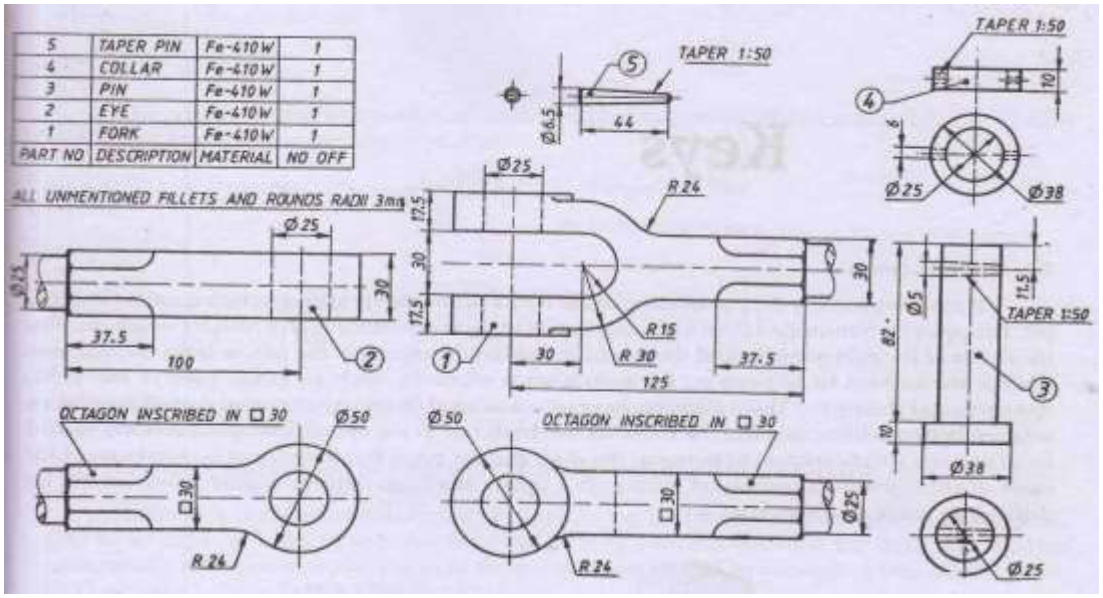

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b) Draw freehand sketching for the following. (Any one) **05**

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i) Leaf spring with centre band and eyes.
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b) Draw the Freehand Sketching of (Any one) **05**

i) Riveted joint (double strapped double riveted zig-zag type)
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Q.5 a) Draw representation of the hole and shaft basis system. **04**

b) Redraw figure with given dimensions and show the followings using geometrical symbols and tolerances. **10**

i) Surface 'A; is cylindrical within 0.04 mm.
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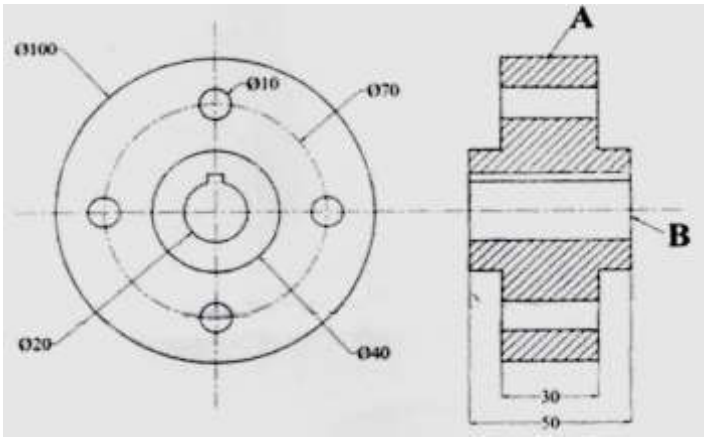

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Drawing & CAD (BTN02304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book).
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer. **14**

Type – I: Match the pairs (Each bit one mark each)

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Column - A Type	Column - B Application
A) Liquids	P)
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C) Metals	R)

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1) Pulley arms are shown as revolved sections.

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Seat No.		Set	R

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Drawing & CAD (BTN02304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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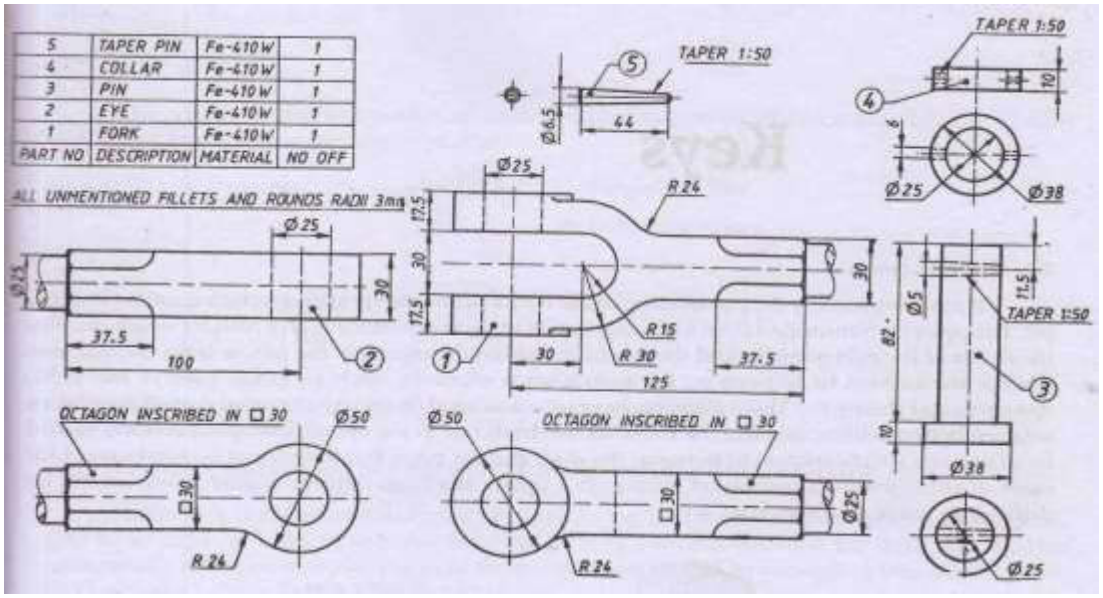

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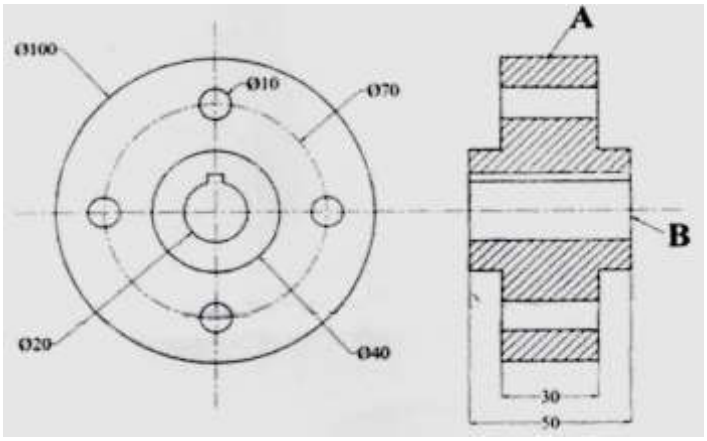

Seat No.	

Set | S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Drawing & CAD (BTN02304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book).
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Machine Drawing & CAD (BTN02304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Questions no. 2 is compulsory.
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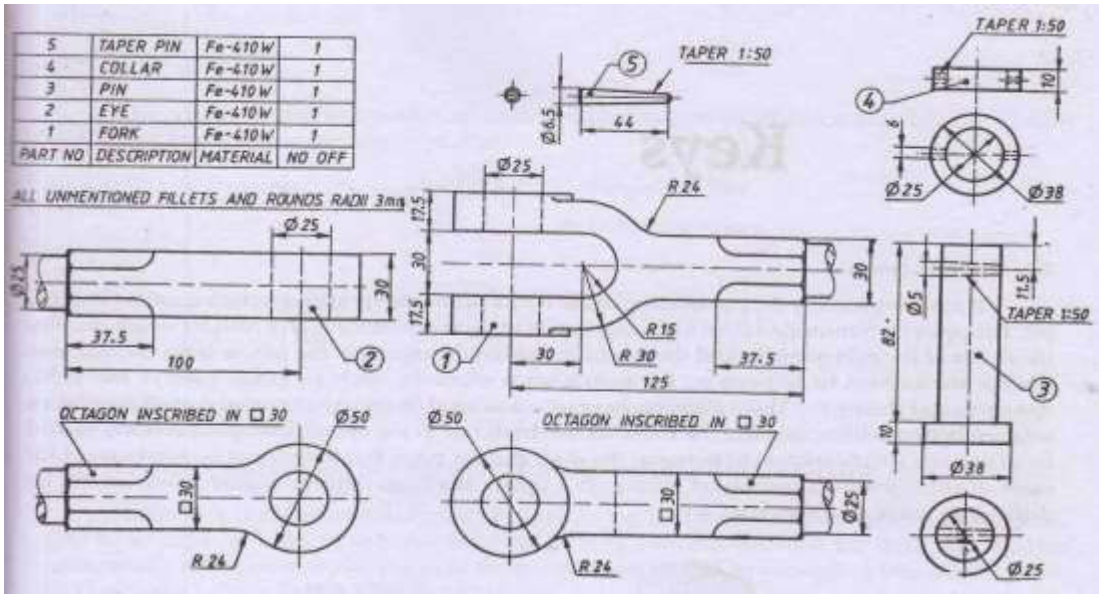

Q.3 a) **Draw the B.I.S. conventions for the following. (Any three)** **09**

i) Lead
ii) Repeated parts
iii) Super imposed dimensioning
iv) Half section

b) **Draw freehand sketching for the following. (Any one)** **05**

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ii) Fast and loose pulley

Q.4 a) Draw the B.I.S Convention for Following. (Any three) **09**

i) Leaf spring with centre band and eyes.
ii) Rachet and pinion
iii) Square Butt Weld
iv) Splined shaft

b) Draw the Freehand Sketching of (Any one) **05**

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ii) Flat belt pulley

Q.5 a) Draw representation of the hole and shaft basis system. **04**

b) Redraw figure with given dimensions and show the followings using geometrical symbols and tolerances. **10**

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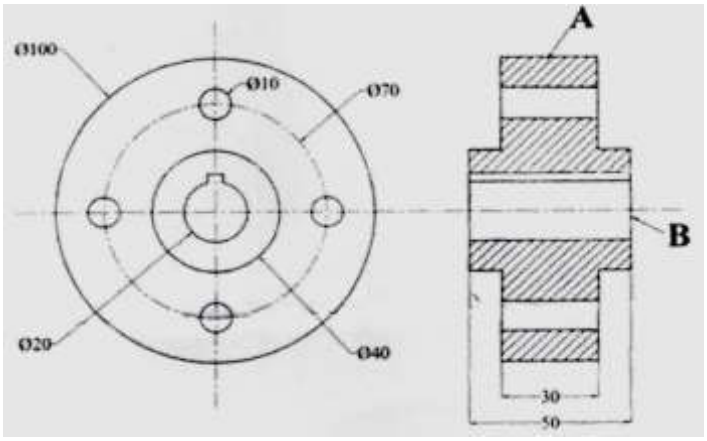

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Seat No.	

Set P

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2024
MECHANICAL ENGINEERING
Internal Combustion Engines (BTN02306)

Day & Date: Friday,12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Brake specific fuel consumption is defined as _____.
a) fuel consumption per hour
b) fuel consumption per km
c) fuel consumption per brake power
d) fuel consumption per brake power hour

2) D-MPFI System is _____.
a) port fuel injection system
b) manifold fuel injection system
c) venture fuel injection system
d) none of the above

3) In Air-fuel mixture, the mixture contains more air is called _____.
a) Rich mixture b) Chemically correct mixture
c) Lean mixture d) None of above

4) One of the major exhaust emissions from CI Engine compared to SI Engine _____.
a) Oxides of nitrogen b) Particulates
c) Unburnt hydrocarbons d) CO and CO_2

5) The period between start of injection and start of ignition is called _____.
a) Ignition period b) Mixing period
c) Injection delay d) Ignition delay

6) Increasing the compression ratio in SI engines the knocking tendency _____.
a) Increases b) Not affected
c) Decreases d) None of the above

7) If the N is the rpm, number of power strokes/min in a two-stroke engine is _____.
a) 2N b) N
c) 4N d) N/2

8) Volumetric efficiency is a measure of _____.
a) speed of the engine
b) power of the engine
c) breathing capacity of the engine
d) pressure rise in the cylinder

9) Octane number of n-heptane is _____.
a) 30 b) 60
c) 100 d) 0

10) Supercharging increases the power output of the engine by _____.
a) Increasing the charge temperature
b) Increasing the speed of engine
c) Increasing the charge pressure
d) None of these

11) Brake power is measured by _____.
a) Morse test b) Burette test
c) Dynamometers d) Motoring test

12) NOx emission is maximum in SI engine when _____.
a) Temperature is more b) Residence time is more
c) Oxygen is more d) All of the above

13) An indication of ignition quality of a diesel fuel is given by _____.
a) Preignition b) Cetane number
c) Detonation d) Octane number

14) Spark advance is usually specified in terms of _____.
a) engine speed in rev/min b) degrees of crank rotation
c) time in seconds d) none of the above

Seat No.		Set	P

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2024
MECHANICAL ENGINEERING
Internal Combustion Engines (BTN02306)

Day & Date: Friday,12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each Section.
2) Figures to the right indicate full marks.
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4) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Draw and explain Valve Timing diagrams for 2S SI engine and 4S CI Engine both operated on high speed. **05**

b) Explain why actual cycle efficiency is much lower than that of air standard cycle. Discuss any three losses in actual cycle. **05**

c) Explain selection of I C Engine for power generation and automobile application. **04**

Q.3 **a)** The venturi of simple carburetor has throat diameter of 20 mm and co-efficient of air flow is 0.85. The fuel orifice has a diameter of 1.25 mm and co-efficient of fuel flow is 0.66. The petrol surface is 5 mm below the throat. Find. **05**
i) The air fuel ratio for pressure drops of 0.07 bar when the nozzle lip is neglected
ii) The air fuel ratio when the nozzle lip is taken in to account.
Take density of air and fuel as 1.2 and 750 kg/m^3 respectively.

b) Enlist the different compensating devices used in complete carburetor and explain anyone with a neat sketch. **05**

c) What are the steady state and transient operation of engine? Explain requirement of air fuel mixture for these operations. **04**

Q.4 **a)** Explain difference in thermodynamic cycle between naturally aspirated engine and supercharged engine. **05**

b) What are the requirements of a diesel fuel injection system? With a neat sketch of CRDI system explain how does it satisfy these requirements? **05**

c) Enlist the types of injector nozzles used in engines and explain any one with neat sketch. **04**

Section – II

Q.5 **a)** Explain statement “Good CI engine fuel is bad SI engine fuel”. **05**

b) Explain stages of combustion in CI Engine. **05**

c) Explain requirement of SI engine combustion chamber and explain any one combustion chamber with neat sketch. **04**

Q.6 **a)** The following observation were made during the test on oil engine **05**
BP of engine = 31.5 kW
Fuel used = 10.5 kg/hr
C. V. of fuel = 43000 kJ/kg
Jacket circulating water = 540 kg/hr
Rise in temperature of cooling water = 56°C
Temperature of exhaust gas = 600°C
Ambient Temperature = 17°C
A:F ratio = 19:1
Cp for exhaust gas = 1 kJ/kgK
Draw heat balance sheet on minute and percentage basis

b) Explain with neat sketch three-way catalytic converter. **05**

c) Explain Morse test for measurement of friction power. **04**

Q.7 **a)** Explain the pollution norms requirements and enlist historical achievements by Government of India. **05**

b) Explain need of additives in fuels also enlist the names of additives used in SI and CI engine fuels with their benefits. **05**

c) Explain need of alternative fuels in engine. Name some of the alternative fuels. **04**

Seat No.	

Set **Q**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2024
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Internal Combustion Engines (BTN02306)

Day & Date: Friday,12-01-2024 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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Seat No.		Set	Q

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MECHANICAL ENGINEERING
Internal Combustion Engines (BTN02306)

Day & Date: Friday,12-01-2024 Max. Marks: 56
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b) Explain why actual cycle efficiency is much lower than that of air standard cycle. Discuss any three losses in actual cycle. **05**

c) Explain selection of I C Engine for power generation and automobile application. **04**

Q.3 **a)** The venturi of simple carburetor has throat diameter of 20 mm and co-efficient of air flow is 0.85. The fuel orifice has a diameter of 1.25 mm and co-efficient of fuel flow is 0.66. The petrol surface is 5 mm below the throat. Find. **05**
i) The air fuel ratio for pressure drops of 0.07 bar when the nozzle lip is neglected
ii) The air fuel ratio when the nozzle lip is taken in to account.
Take density of air and fuel as 1.2 and 750 kg/m^3 respectively.

b) Enlist the different compensating devices used in complete carburetor and explain anyone with a neat sketch. **05**

c) What are the steady state and transient operation of engine? Explain requirement of air fuel mixture for these operations. **04**

Q.4 **a)** Explain difference in thermodynamic cycle between naturally aspirated engine and supercharged engine. **05**

b) What are the requirements of a diesel fuel injection system? With a neat sketch of CRDI system explain how does it satisfy these requirements? **05**

c) Enlist the types of injector nozzles used in engines and explain any one with neat sketch. **04**

Section – II

Q.5 **a)** Explain statement “Good CI engine fuel is bad SI engine fuel”. **05**

b) Explain stages of combustion in CI Engine. **05**

c) Explain requirement of SI engine combustion chamber and explain any one combustion chamber with neat sketch. **04**

Q.6 **a)** The following observation were made during the test on oil engine **05**
BP of engine = 31.5 kW
Fuel used = 10.5 kg/hr
C. V. of fuel = 43000 kJ/kg
Jacket circulating water = 540 kg/hr
Rise in temperature of cooling water = 56°C
Temperature of exhaust gas = 600°C
Ambient Temperature = 17°C
A:F ratio = 19:1
Cp for exhaust gas = 1 kJ/kgK
Draw heat balance sheet on minute and percentage basis

b) Explain with neat sketch three-way catalytic converter. **05**

c) Explain Morse test for measurement of friction power. **04**

Q.7 **a)** Explain the pollution norms requirements and enlist historical achievements by Government of India. **05**

b) Explain need of additives in fuels also enlist the names of additives used in SI and CI engine fuels with their benefits. **05**

c) Explain need of alternative fuels in engine. Name some of the alternative fuels. **04**

Seat No.	

Set **R**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2024
MECHANICAL ENGINEERING
Internal Combustion Engines (BTN02306)

Day & Date: Friday,12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Brake power is measured by _____.
a) Morse test b) Burette test
c) Dynamometers d) Motoring test

2) NOx emission is maximum in SI engine when _____.
a) Temperature is more b) Residence time is more
c) Oxygen is more d) All of the above

3) An indication of ignition quality of a diesel fuel is given by _____.
a) Preignition b) Cetane number
c) Detonation d) Octane number

4) Spark advance is usually specified in terms of _____.
a) engine speed in rev/min b) degrees of crank rotation
c) time in seconds d) none of the above

5) Brake specific fuel consumption is defined as _____.
a) fuel consumption per hour
b) fuel consumption per km
c) fuel consumption per brake power
d) fuel consumption per brake power hour

6) D-MPFI System is _____.
a) port fuel injection system
b) manifold fuel injection system
c) venture fuel injection system
d) none of the above

7) In Air-fuel mixture, the mixture contains more air is called _____.
a) Rich mixture b) Chemically correct mixture
c) Lean mixture d) None of above

8) One of the major exhaust emissions from CI Engine compared to SI Engine _____.
a) Oxides of nitrogen b) Particulates
c) Unburnt hydrocarbons d) CO and CO_2

9) The period between start of injection and start of ignition is called _____.
a) Ignition period b) Mixing period
c) Injection delay d) Ignition delay

10) Increasing the compression ratio in SI engines the knocking tendency _____.
a) Increases b) Not affected
c) Decreases d) None of the above

11) If the N is the rpm, number of power strokes/min in a two-stroke engine is _____.
a) 2N b) N
c) 4N d) N/2

12) Volumetric efficiency is a measure of _____.
a) speed of the engine
b) power of the engine
c) breathing capacity of the engine
d) pressure rise in the cylinder

13) Octane number of n-heptane is _____.
a) 30 b) 60
c) 100 d) 0

14) Supercharging increases the power output of the engine by _____.
a) Increasing the charge temperature
b) Increasing the speed of engine
c) Increasing the charge pressure
d) None of these

Seat No.		Set	R

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2024
MECHANICAL ENGINEERING
Internal Combustion Engines (BTN02306)

Day & Date: Friday,12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each Section.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Draw and explain Valve Timing diagrams for 2S SI engine and 4S CI Engine both operated on high speed. **05**

b) Explain why actual cycle efficiency is much lower than that of air standard cycle. Discuss any three losses in actual cycle. **05**

c) Explain selection of I C Engine for power generation and automobile application. **04**

Q.3 **a)** The venturi of simple carburetor has throat diameter of 20 mm and co-efficient of air flow is 0.85. The fuel orifice has a diameter of 1.25 mm and co-efficient of fuel flow is 0.66. The petrol surface is 5 mm below the throat. Find. **05**
i) The air fuel ratio for pressure drops of 0.07 bar when the nozzle lip is neglected
ii) The air fuel ratio when the nozzle lip is taken in to account.
Take density of air and fuel as 1.2 and 750 kg/m^3 respectively.

b) Enlist the different compensating devices used in complete carburetor and explain anyone with a neat sketch. **05**

c) What are the steady state and transient operation of engine? Explain requirement of air fuel mixture for these operations. **04**

Q.4 **a)** Explain difference in thermodynamic cycle between naturally aspirated engine and supercharged engine. **05**

b) What are the requirements of a diesel fuel injection system? With a neat sketch of CRDI system explain how does it satisfy these requirements? **05**

c) Enlist the types of injector nozzles used in engines and explain any one with neat sketch. **04**

Section – II

Q.5 **a)** Explain statement “Good CI engine fuel is bad SI engine fuel”. **05**

b) Explain stages of combustion in CI Engine. **05**

c) Explain requirement of SI engine combustion chamber and explain any one combustion chamber with neat sketch. **04**

Q.6 **a)** The following observation were made during the test on oil engine **05**
BP of engine = 31.5 kW
Fuel used = 10.5 kg/hr
C. V. of fuel = 43000 kJ/kg
Jacket circulating water = 540 kg/hr
Rise in temperature of cooling water = 56°C
Temperature of exhaust gas = 600°C
Ambient Temperature = 17°C
A:F ratio = 19:1
Cp for exhaust gas = 1 kJ/kgK
Draw heat balance sheet on minute and percentage basis

b) Explain with neat sketch three-way catalytic converter. **05**

c) Explain Morse test for measurement of friction power. **04**

Q.7 **a)** Explain the pollution norms requirements and enlist historical achievements by Government of India. **05**

b) Explain need of additives in fuels also enlist the names of additives used in SI and CI engine fuels with their benefits. **05**

c) Explain need of alternative fuels in engine. Name some of the alternative fuels. **04**

Seat No.	

Set **S**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2024
MECHANICAL ENGINEERING
Internal Combustion Engines (BTN02306)

Day & Date: Friday,12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Increasing the compression ratio in SI engines the knocking tendency _____.
a) Increases b) Not affected
c) Decreases d) None of the above

2) If the N is the rpm, number of power strokes/min in a two-stroke engine is _____.
a) 2N b) N
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3) Volumetric efficiency is a measure of _____.
a) speed of the engine
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4) Octane number of n-heptane is _____.
a) 30 b) 60
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5) Supercharging increases the power output of the engine by _____.
a) Increasing the charge temperature
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c) Increasing the charge pressure
d) None of these

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c) Dynamometers d) Motoring test

7) NOx emission is maximum in SI engine when _____.
a) Temperature is more b) Residence time is more
c) Oxygen is more d) All of the above

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a) Preignition b) Cetane number
c) Detonation d) Octane number

9) Spark advance is usually specified in terms of _____.
a) engine speed in rev/min b) degrees of crank rotation
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11) D-MPFI System is _____.
a) port fuel injection system
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12) In Air-fuel mixture, the mixture contains more air is called _____.
a) Rich mixture b) Chemically correct mixture
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13) One of the major exhaust emissions from CI Engine compared to SI Engine _____.
a) Oxides of nitrogen b) Particulates
c) Unburnt hydrocarbons d) CO and CO_2

14) The period between start of injection and start of ignition is called _____.
a) Ignition period b) Mixing period
c) Injection delay d) Ignition delay

Seat No.		Set	S

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2024
MECHANICAL ENGINEERING
Internal Combustion Engines (BTN02306)

Day & Date: Friday,12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each Section.
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Section – I

Q.2 **a)** Draw and explain Valve Timing diagrams for 2S SI engine and 4S CI Engine both operated on high speed. **05**

b) Explain why actual cycle efficiency is much lower than that of air standard cycle. Discuss any three losses in actual cycle. **05**

c) Explain selection of I C Engine for power generation and automobile application. **04**

Q.3 **a)** The venturi of simple carburetor has throat diameter of 20 mm and co-efficient of air flow is 0.85. The fuel orifice has a diameter of 1.25 mm and co-efficient of fuel flow is 0.66. The petrol surface is 5 mm below the throat. Find. **05**
i) The air fuel ratio for pressure drops of 0.07 bar when the nozzle lip is neglected
ii) The air fuel ratio when the nozzle lip is taken in to account.
Take density of air and fuel as 1.2 and 750 kg/m^3 respectively.

b) Enlist the different compensating devices used in complete carburetor and explain anyone with a neat sketch. **05**

c) What are the steady state and transient operation of engine? Explain requirement of air fuel mixture for these operations. **04**

Q.4 **a)** Explain difference in thermodynamic cycle between naturally aspirated engine and supercharged engine. **05**

b) What are the requirements of a diesel fuel injection system? With a neat sketch of CRDI system explain how does it satisfy these requirements? **05**

c) Enlist the types of injector nozzles used in engines and explain any one with neat sketch. **04**

Section – II

Q.5 **a)** Explain statement “Good CI engine fuel is bad SI engine fuel”. **05**

b) Explain stages of combustion in CI Engine. **05**

c) Explain requirement of SI engine combustion chamber and explain any one combustion chamber with neat sketch. **04**

Q.6 **a)** The following observation were made during the test on oil engine **05**
BP of engine = 31.5 kW
Fuel used = 10.5 kg/hr
C. V. of fuel = 43000 kJ/kg
Jacket circulating water = 540 kg/hr
Rise in temperature of cooling water = 56°C
Temperature of exhaust gas = 600°C
Ambient Temperature = 17°C
A:F ratio = 19:1
Cp for exhaust gas = 1 kJ/kgK
Draw heat balance sheet on minute and percentage basis

b) Explain with neat sketch three-way catalytic converter. **05**

c) Explain Morse test for measurement of friction power. **04**

Q.7 **a)** Explain the pollution norms requirements and enlist historical achievements by Government of India. **05**

b) Explain need of additives in fuels also enlist the names of additives used in SI and CI engine fuels with their benefits. **05**

c) Explain need of alternative fuels in engine. Name some of the alternative fuels. **04**

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Composite Material (BTN02307)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) In sandwich composites, which of the following material can be used for filling purposes?
a) Wood b) Cement
c) Polymer d) All of the mentioned

2) Composites can be classified based on _____.
a) Matrix type
b) Reinforcement constituent
c) Matrix type & reinforcement constituent
d) Neither on matrix type nor on reinforcement constituent type

3) The composite constituents of both matrix and reinforcements are softer.
a) True b) False

4) Which of the following has a greater impact on the longitudinal strength of reinforced composites?
a) Fiber orientation b) Fiber strength
c) Fiber length d) Fiber diameter

5) Which of the following does not combine with fiber to give composites?
a) Metals b) Ceramics
c) Non-metals d) Polymers

6) Which of the following may alter the mechanical properties of reinforced composites?
a) Constituent properties b) Fiber length
c) Fiber orientation d) All of the mentioned

7) Hand lay-up process predominantly uses _____ fibers.
a) unidirectional b) bidirectional
c) multidirectional d) none of the above

8) The fire point of composite is high.
a) True b) False

9) Select the process, which is an open mold process _____.
a) Reaction injection molding b) Hand lay-up
c) Transfer molding d) Injection molding

10) Which of the following type of composite is not classified under the category of a number of layers?

a) Unidirectional fiber reinforced
b) Laminar
c) Sandwich panels
d) Glass-fibre reinforced

11) The matrix phase controls the environmental resistance of the composites.

a) True
b) False

12) Hand lay-up method can be easily used for manufacturing _____.

a) automotive parts
b) dashboard
c) boat hulls
d) all of the mentioned

13) Choose the CORRECT sequence during the injection molding cycle.

a) Mold close - Fill - Hold - Cool - Mold open - Part ejection
b) Mold close - Fill - Hold - Mold open - Cool - Part ejection
c) Mold open - Fill - Hold - Cool - Mold close - Part ejection
d) Mold close - Fill - Cool - Hold - Mold open - part ejection

14) What is the primary purpose of Vacuum Bagging in autoclave processing?

a) It helps in removing the air from the interfaces
b) It helps to make the size smaller
c) In autoclave processing Vacuum Bagging is not used
d) None of the mentioned

Seat No.	

Set | P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Composite Material (BTN02307)

Day & Date: Friday, 12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section - I, Q. No. 2 is compulsory and solve any TWO questions from remaining questions (Q. No. 3, 4 & 5)
2) In Section - II, Q. No. 6 is compulsory and solve any TWO questions from remaining questions (Q. No. 7,8 & 9)
3) Figures to right indicate full marks.

Section – I

Q.2 **a)** Classify composite materials and explain any one with neat sketch. **05**
b) Differentiate between Carbon-Carbon Composites & Ceramic Matrix composites. **05**

Q.3 **a)** Define Stress, Strain, Elastic Moduli, Strain Energy. **04**
b) Differentiate between Transversely Isotropic Material and Isotropic Material **05**

Q.4 **a)** Explain Hooke's Law for a Two-Dimensional Unidirectional Lamina. **05**
b) Explain Engineering Constants of an Angle Lamina. **04**

Q.5 **Write short note on any three** **09**
a) Polymer Matrix Composites
b) Metal Matrix Composites
c) Monoclinic Material
d) Orthotropic material
e) Relationship of Compliance and Stiffness Matrix to Engineering Elastic Constants of a Lamina

Section – II

Q.6 **a)** Explain filament winding techniques with neat sketch. **05**
b) Briefly explain Types of defects. (Any 5) **05**

Q.7 **a)** Define Volume and Mass Fractions, Density, and Void Content. **05**
b) Explain the effect of Void Content on composite material. **04**

Q.8 **a)** Explain Longitudinal Young's Modulus, Transverse Young's Modulus. **05**
b) Explain Poisson's Ratio. **04**

Q.9 **Write short note on any three** **09**
a) Evaluation of the Four Elastic Moduli
b) Longitudinal Young's Modulus
c) In-Plane Shear Modulus
d) Thermo forming
e) Hand lay-up techniques

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Composite Material (BTN02307)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The fire point of composite is high.
a) True b) False

2) Select the process, which is an open mold process _____.
a) Reaction injection molding b) Hand lay-up
c) Transfer molding d) Injection molding

3) Which of the following type of composite is not classified under the category of a number of layers?
a) Unidirectional fiber reinforced b) Laminar
c) Sandwich panels d) Glass-fibre reinforced

4) The matrix phase controls the environmental resistance of the composites.
a) True b) False

5) Hand lay-up method can be easily used for manufacturing _____.
a) automotive parts b) dashboard
c) boat hulls d) all of the mentioned

6) Choose the CORRECT sequence during the injection molding cycle.
a) Mold close - Fill - Hold - Cool - Mold open - Part ejection
b) Mold close - Fill - Hold - Mold open - Cool - Part ejection
c) Mold open - Fill - Hold - Cool - Mold close - Part ejection
d) Mold close - Fill - Cool - Hold - Mold open - part ejection

7) What is the primary purpose of Vacuum Bagging in autoclave processing?
a) It helps in removing the air from the interfaces
b) It helps to make the size smaller
c) In autoclave processing Vacuum Bagging is not used
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8) In sandwich composites, which of the following material can be used for filling purposes?
a) Wood b) Cement
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9) Composites can be classified based on _____.
a) Matrix type
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c) Matrix type & reinforcement constituent
d) Neither on matrix type nor on reinforcement constituent type

10) The composite constituents of both matrix and reinforcements are softer.
a) True b) False

11) Which of the following has a greater impact on the longitudinal strength of reinforced composites?
a) Fiber orientation b) Fiber strength
c) Fiber length d) Fiber diameter

12) Which of the following does not combine with fiber to give composites?
a) Metals b) Ceramics
c) Non-metals d) Polymers

13) Which of the following may alter the mechanical properties of reinforced composites?
a) Constituent properties b) Fiber length
c) Fiber orientation d) All of the mentioned

14) Hand lay-up process predominantly uses _____ fibers.
a) unidirectional b) bidirectional
c) multidirectional d) none of the above

Seat No.	

Set | Q

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Composite Material (BTN02307)

Day & Date: Friday, 12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section - I, Q. No. 2 is compulsory and solve any TWO questions from remaining questions (Q. No. 3, 4 & 5)
2) In Section - II, Q. No. 6 is compulsory and solve any TWO questions from remaining questions (Q. No. 7,8 & 9)
3) Figures to right indicate full marks.

Section – I

Q.2 **a)** Classify composite materials and explain any one with neat sketch. **05**
b) Differentiate between Carbon-Carbon Composites & Ceramic Matrix composites. **05**

Q.3 **a)** Define Stress, Strain, Elastic Moduli, Strain Energy. **04**
b) Differentiate between Transversely Isotropic Material and Isotropic Material **05**

Q.4 **a)** Explain Hooke's Law for a Two-Dimensional Unidirectional Lamina. **05**
b) Explain Engineering Constants of an Angle Lamina. **04**

Q.5 **Write short note on any three** **09**
a) Polymer Matrix Composites
b) Metal Matrix Composites
c) Monoclinic Material
d) Orthotropic material
e) Relationship of Compliance and Stiffness Matrix to Engineering Elastic Constants of a Lamina

Section – II

Q.6 **a)** Explain filament winding techniques with neat sketch. **05**
b) Briefly explain Types of defects. (Any 5) **05**

Q.7 **a)** Define Volume and Mass Fractions, Density, and Void Content. **05**
b) Explain the effect of Void Content on composite material. **04**

Q.8 **a)** Explain Longitudinal Young's Modulus, Transverse Young's Modulus. **05**
b) Explain Poisson's Ratio. **04**

Q.9 **Write short note on any three** **09**
a) Evaluation of the Four Elastic Moduli
b) Longitudinal Young's Modulus
c) In-Plane Shear Modulus
d) Thermo forming
e) Hand lay-up techniques

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Composite Material (BTN02307)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The matrix phase controls the environmental resistance of the composites.
a) True b) False

2) Hand lay-up method can be easily used for manufacturing _____.
a) automotive parts b) dashboard
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3) Choose the CORRECT sequence during the injection molding cycle.
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10) Which of the following may alter the mechanical properties of reinforced composites?
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11) Hand lay-up process predominantly uses _____ fibers.
a) unidirectional b) bidirectional
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13) Select the process, which is an open mold process _____.
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Seat No.	

Set R

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Composite Material (BTN02307)

Day & Date: Friday, 12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section - I, Q. No. 2 is compulsory and solve any TWO questions from remaining questions (Q. No. 3, 4 & 5)
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Section – I

Q.2	**a)**	Classify composite materials and explain any one with neat sketch.	**05**
	b)	Differentiate between Carbon-Carbon Composites & Ceramic Matrix composites.	**05**
Q.3	**a)**	Define Stress, Strain, Elastic Moduli, Strain Energy.	**04**
	b)	Differentiate between Transversely Isotropic Material and Isotropic Material	**05**
Q.4	**a)**	Explain Hooke's Law for a Two-Dimensional Unidirectional Lamina.	**05**
	b)	Explain Engineering Constants of an Angle Lamina.	**04**
Q.5	**Write short note on any three**		**09**
	a)	Polymer Matrix Composites	
	b)	Metal Matrix Composites	
	c)	Monoclinic Material	
	d)	Orthotropic material	
	e)	Relationship of Compliance and Stiffness Matrix to Engineering Elastic Constants of a Lamina	

Section – II

Q.6	**a)**	Explain filament winding techniques with neat sketch.	**05**
	b)	Briefly explain Types of defects. (Any 5)	**05**
Q.7	**a)**	Define Volume and Mass Fractions, Density, and Void Content.	**05**
	b)	Explain the effect of Void Content on composite material.	**04**
Q.8	**a)**	Explain Longitudinal Young's Modulus, Transverse Young's Modulus.	**05**
	b)	Explain Poisson's Ratio.	**04**
Q.9	**Write short note on any three**		**09**
	a)	Evaluation of the Four Elastic Moduli	
	b)	Longitudinal Young's Modulus	
	c)	In-Plane Shear Modulus	
	d)	Thermo forming	
	e)	Hand lay-up techniques	

Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Composite Material (BTN02307)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of the following may alter the mechanical properties of reinforced composites?
a) Constituent properties b) Fiber length
c) Fiber orientation d) All of the mentioned

2) Hand lay-up process predominantly uses _____ fibers.
a) unidirectional b) bidirectional
c) multidirectional d) none of the above

3) The fire point of composite is high.
a) True b) False

4) Select the process, which is an open mold process _____.
a) Reaction injection molding b) Hand lay-up
c) Transfer molding d) Injection molding

5) Which of the following type of composite is not classified under the category of a number of layers?
a) Unidirectional fiber reinforced b) Laminar
c) Sandwich panels d) Glass-fibre reinforced

6) The matrix phase controls the environmental resistance of the composites.
a) True b) False

7) Hand lay-up method can be easily used for manufacturing _____.
a) automotive parts b) dashboard
c) boat hulls d) all of the mentioned

8) Choose the CORRECT sequence during the injection molding cycle.
a) Mold close - Fill - Hold - Cool - Mold open - Part ejection
b) Mold close - Fill - Hold - Mold open - Cool - Part ejection
c) Mold open - Fill - Hold - Cool - Mold close - Part ejection
d) Mold close - Fill - Cool - Hold - Mold open - part ejection

9) What is the primary purpose of Vacuum Bagging in autoclave processing?
a) It helps in removing the air from the interfaces
b) It helps to make the size smaller
c) In autoclave processing Vacuum Bagging is not used
d) None of the mentioned

10) In sandwich composites, which of the following material can be used for filling purposes?

a) Wood
b) Cement
c) Polymer
d) All of the mentioned

11) Composites can be classified based on _____.

a) Matrix type
b) Reinforcement constituent
c) Matrix type & reinforcement constituent
d) Neither on matrix type nor on reinforcement constituent type

12) The composite constituents of both matrix and reinforcements are softer.

a) True
b) False

13) Which of the following has a greater impact on the longitudinal strength of reinforced composites?

a) Fiber orientation
b) Fiber strength
c) Fiber length
d) Fiber diameter

14) Which of the following does not combine with fiber to give composites?

a) Metals
b) Ceramics
c) Non-metals
d) Polymers

SLR-GF-738

Seat No.	

Set S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Composite Material (BTN02307)

Day & Date: Friday, 12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section - I, Q. No. 2 is compulsory and solve any TWO questions from remaining questions (Q. No. 3, 4 & 5)
2) In Section - II, Q. No. 6 is compulsory and solve any TWO questions from remaining questions (Q. No. 7,8 & 9)
3) Figures to right indicate full marks.

Section – I

Q.2	**a)**	Classify composite materials and explain any one with neat sketch.	**05**
	b)	Differentiate between Carbon-Carbon Composites & Ceramic Matrix composites.	**05**
Q.3	**a)**	Define Stress, Strain, Elastic Moduli, Strain Energy.	**04**
	b)	Differentiate between Transversely Isotropic Material and Isotropic Material	**05**
Q.4	**a)**	Explain Hooke's Law for a Two-Dimensional Unidirectional Lamina.	**05**
	b)	Explain Engineering Constants of an Angle Lamina.	**04**
Q.5	**Write short note on any three**		**09**
	a)	Polymer Matrix Composites	
	b)	Metal Matrix Composites	
	c)	Monoclinic Material	
	d)	Orthotropic material	
	e)	Relationship of Compliance and Stiffness Matrix to Engineering Elastic Constants of a Lamina	

Section – II

Q.6	**a)**	Explain filament winding techniques with neat sketch.	**05**
	b)	Briefly explain Types of defects. (Any 5)	**05**
Q.7	**a)**	Define Volume and Mass Fractions, Density, and Void Content.	**05**
	b)	Explain the effect of Void Content on composite material.	**04**
Q.8	**a)**	Explain Longitudinal Young's Modulus, Transverse Young's Modulus.	**05**
	b)	Explain Poisson's Ratio.	**04**
Q.9	**Write short note on any three**		**09**
	a)	Evaluation of the Four Elastic Moduli	
	b)	Longitudinal Young's Modulus	
	c)	In-Plane Shear Modulus	
	d)	Thermo forming	
	e)	Hand lay-up techniques	

SLR-GF-739

Seat No.		Set	P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Engineering Mathematics - III (BTN02401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The value of $\frac{1}{D+a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

2) $\frac{1}{D^2+9}\sin 3x =$ _____.

a) $-\frac{x}{2}\cos 3x$ b) $\frac{x}{2}\cos 3x$

c) $-\frac{x}{6}\cos 3x$ d) $\frac{x}{6}\sin 3x$

3) The complementary function of $(D^2+2D+1)y = 2e^{3x}$ is _____.

a) $c_1e^{-x}+c_2e^{-x}$ b) $(c_1+c_2x)e^{-2x}$

c) $(c_1\cos x + c_2\sin x)$ d) $(c_1+c_2x)e^{-x}$

4) The solution of $p^3-q^3=0$ is _____.

a) $z=ax+by+c$ b) $z=ax+a^3y+c$

c) $z=ax-ay+c$ d) $z=ax+ay+c$

5) The solution of $p+q=z$ is _____.

a) $f(x+y, y+\log z)$ b) $f(xy, y\log z)$

c) $f(x-y, y-\log z)$ d) None of these

6) Which of the following is Lagrange's equation?

a) $p^2x+q^2y=z$ b) $qy=px+z$

c) $px+q^2y=z$ d) $p^2x-qy=z^2$

7) In the interval $(0, \pi)$ the constant term in the half range cosine series of $f(x) = x$ is _____.

a) π b) $\frac{\pi}{2}$

c) $\frac{\pi}{4}$ d) 0

8) $L\{e^{-t} \sin ht\} =$ _____.

a) $\frac{1}{(s+1)^2 - 1}$ b) $\frac{1}{(s-1)^2 - 1}$

c) $\frac{s+1}{(s+1)^2 - 1}$ d) $\frac{s-1}{(s-1)^2 - 1}$

9) The positive real root of the equation $x^3 - 2x - 5 = 0$ lies between _____.

a) 0 and 1 b) 1 and 2

c) 2 and 3 d) 3 and 4

10) The process of evaluating a definite integral from a set of tabulated values of $f(x)$ is called _____.

a) Interpolation b) Numerical differentiation

c) Numerical integration d) Extrapolation

11) Let $L^{-1}\left\{\frac{(s+a)}{(s+a)^2 - b^2}\right\} =$ _____.

a) $e^{-at} \cosh bt$ b) $e^{at} \cosh bt$

c) $e^{-at} \sinh bt$ d) $e^{at} \sinh bt$

12) The order of convergence of Newton-Raphson method is _____.

a) 3 b) 2

c) 1 d) 0

13) A continuous random variable has the probability density function $f(x) = kx^2$ for $0 \leq x \leq 2$, then $k =$ _____.

a) $\frac{8}{3}$ b) $\frac{3}{2}$

c) $\frac{5}{8}$ d) $\frac{3}{8}$

14) If $byx = \frac{5}{18}$, $bxy = \frac{8}{5}$ then $r =$ _____.

a) $2/5$ b) $1/2$

c) $2/3$ d) $3/2$

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Engineering Mathematics - III (BTN02401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Three of the following questions. **09**

a) Solve $(D^2 + 4D + 4)y = e^{3x}$

b) Solve $(D^2 - 6D + 9)y = e^{3x}\ (1 + x)$

c) Solve $pq = xy^2z^4$

d) Obtain the Fourier series of the function $f(x) = x^3$ in interval $(-\pi, \pi)$

e) Evaluate $px^2 + qy^2 = z^2$

Q.3 Solve any Three of the following Questions. **09**

a) Solve $(D^2 + 4)y = x \sin x$

b) Solve $(D^3 + 3D)y = \cos 2x$

c) Expand $f(x) = x - x^2$ as half range cosine series in $0 \le x \le 1$.

d) Find the Fourier series of $f(x) = 1 - x^2$ in the interval $(-1,1)$

e) Solve $(p^3 + q^3) = 27z$

Q.4 Solve any Two of the following. **10**

a) Find the Fourier series of

$$f(x) = x, \quad -1 < x < 0$$
$$= x + 2, \quad 0 < x < 1$$

b) Solve the P.D.E. $\frac{\partial u}{\partial x} - 2\frac{\partial u}{\partial t} = u$ by the method of separation of variables.

c) Solve $(D^3 + D)y = \cos t + t^2 + 3$.

Section – II

Q.5 Solve any Three of the following. **09**

a) Evaluate by using Laplace transform $\int_0^\infty \left(\frac{e^{-t} - e^{-3t}}{t}\right) dt$

b) If the mean life time and standard deviation of battery cells are 12 hrs and 3 hrs, then find the percentage of batteries will have life time
i) between 10 and 14 hrs
(Given S.N.V of z, area from $z = 0$ to $z = 0.6667$ is 0.2486, that from $z = 0$ to $z = 1$ is 0.3413)

c) Find Laplace transform of $\frac{d}{dt}\left(\frac{\sin t}{t}\right)$

d) If 3% of bulbs manufactured by a company are defective assuming Poisson distribution, find the probability that in a pack of 100 bulbs.
   i) zero
   ii) two bulbs are defective

e) Find an iterative formula to find $\sqrt{N}$ (where N is a positive number) and hence find $\sqrt{5}$.

Q.6 Solve any Three of the following questions. **09**

a) Compute $\int_0^6 \frac{1}{1+X}dx$ by using trapezoidal rule.

b) Find $L\{te^{-3t}\sin t\}$

c) Find the positive root of $x^4 - x = 10$ correct to three decimal places by Newton-Raphson method. Take $x_0 = 2$ as initial approximation (Perform three iterations).

d) Find $L\{t\sin 2t\}$

e) A random variable x has the following probability distribution,

x	1	2	3	4	6	6	7
$P(x)$	k	$2k$	$3k$	k^2	k^2+k	$2k^2$	$4k^2$

Find k.

Q.7 Solve any Two of the following questions. **10**

a) Using convolution theorem find the inverse Laplace transform of $\frac{1}{(s-3)(s+4)^2}$

b) Find the coefficient of correlation (Karl Pearson's) from the following data.

x	28	45	40	38	35	33	40	32	36	33
y	23	34	33	34	30	26	28	31	36	35

c) Evaluate $\int_0^1 e^x$ By using Simpsons $\left(\frac{1}{3}\right)^{rd}$ and $\left(\frac{3}{8}\right)^{th}$ rule.

Seat No.		Set	Q

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Engineering Mathematics - III (BTN02401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) $L\{e^{-t}\sin ht\} =$ _____.

a) $\frac{1}{(s+1)^2-1}$ b) $\frac{1}{(s-1)^2-1}$

c) $\frac{s+1}{(s+1)^2-1}$ d) $\frac{s-1}{(s-1)^2-1}$

2) The positive real root of the equation $x^3 - 2x - 5 = 0$ lies between _____.

a) 0 and 1 b) 1 and 2
c) 2 and 3 d) 3 and 4

3) The process of evaluating a definite integral from a set of tabulated values of $f(x)$ is called _____.

a) Interpolation b) Numerical differentiation
c) Numerical integration d) Extrapolation

4) Let $L^{-1}\left\{\frac{(s+a)}{(s+a)^2-b^2}\right\} =$ _____.

a) $e^{-at}\cosh bt$ b) $e^{at}\cosh bt$
c) $e^{-at}\sinh bt$ d) $e^{at}\sinh bt$

5) The order of convergence of Newton-Raphson method is _____.

a) 3 b) 2
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6) A continuous random variable has the probability density function $f(x) = kx^2$ for $0 \le x \le 2$, then $k =$ _____.

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c) $\frac{5}{8}$ d) $\frac{3}{8}$

7) If $byx = \frac{5}{18},\ bxy = \frac{8}{5}$ then $r =$ _____.

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8) The value of $\frac{1}{D+a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

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a) $z=ax+by+c$ b) $z=ax+a^3y+c$

c) $z=ax-ay+c$ d) $z=ax+ay+c$

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a) $f(x+y, y+\log z)$ b) $f(xy, y\log z)$

c) $f(x-y, y-\log z)$ d) None of these

13) Which of the following is Lagrange's equation?

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Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Engineering Mathematics - III (BTN02401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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Section – I

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b) Solve $(D^2 - 6D + 9)y = e^{3x}\ (1 + x)$

c) Solve $pq = xy^2z^4$

d) Obtain the Fourier series of the function $f(x) = x^3$ in interval $(-\pi, \pi)$

e) Evaluate $px^2 + qy^2 = z^2$

Q.3 Solve any Three of the following Questions. **09**

a) Solve $(D^2 + 4)y = x \sin x$

b) Solve $(D^3 + 3D)y = \cos 2x$

c) Expand $f(x) = x - x^2$ as half range cosine series in $0 \le x \le 1$.

d) Find the Fourier series of $f(x) = 1 - x^2$ in the interval $(-1,1)$

e) Solve $(p^3 + q^3) = 27z$

Q.4 Solve any Two of the following. **10**

a) Find the Fourier series of

$$f(x) = x, \quad -1 < x < 0$$
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b) Solve the P.D.E. $\frac{\partial u}{\partial x} - 2\frac{\partial u}{\partial t} = u$ by the method of separation of variables.

c) Solve $(D^3 + D)y = \cos t + t^2 + 3$.

Section – II

Q.5 Solve any Three of the following. **09**

a) Evaluate by using Laplace transform $\int_0^\infty \left(\frac{e^{-t} - e^{-3t}}{t}\right) dt$

b) If the mean life time and standard deviation of battery cells are 12 hrs and 3 hrs, then find the percentage of batteries will have life time
i) between 10 and 14 hrs
(Given S.N.V of z, area from $z = 0$ to $z = 0.6667$ is 0.2486, that from $z = 0$ to $z = 1$ is 0.3413)

c) Find Laplace transform of $\frac{d}{dt}\left(\frac{\sin t}{t}\right)$

d) If 3% of bulbs manufactured by a company are defective assuming Poisson distribution, find the probability that in a pack of 100 bulbs.
   i) zero
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Q.6 Solve any Three of the following questions. **09**

a) Compute $\int_0^6 \frac{1}{1+X}dx$ by using trapezoidal rule.

b) Find $L\{te^{-3t}\sin t\}$

c) Find the positive root of $x^4 - x = 10$ correct to three decimal places by Newton-Raphson method. Take $x_0 = 2$ as initial approximation (Perform three iterations).

d) Find $L\{t\sin 2t\}$

e) A random variable x has the following probability distribution,

x	1	2	3	4	6	6	7
$P(x)$	k	$2k$	$3k$	k^2	k^2+k	$2k^2$	$4k^2$

Find k.

Q.7 Solve any Two of the following questions. **10**

a) Using convolution theorem find the inverse Laplace transform of $\frac{1}{(s-3)(s+4)^2}$

b) Find the coefficient of correlation (Karl Pearson's) from the following data.

x	28	45	40	38	35	33	40	32	36	33
y	23	34	33	34	30	26	28	31	36	35

c) Evaluate $\int_0^1 e^x$ By using Simpsons $\left(\frac{1}{3}\right)^{rd}$ and $\left(\frac{3}{8}\right)^{th}$ rule.

Seat No.		Set	R

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Engineering Mathematics - III (BTN02401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Let $L^{-1}\left\{\frac{(s+a)}{(s+a)^2-b^2}\right\} =$ _____.

a) $e^{-at}\cosh bt$ b) $e^{at}\cosh bt$
c) $e^{-at}\sinh bt$ d) $e^{at}\sinh bt$

2) The order of convergence of Newton-Raphson method is _____.

a) 3 b) 2
c) 1 d) 0

3) A continuous random variable has the probability density function $f(x) = kx^2$ for $0 \le x \le 2$, then $k =$ _____.

a) $\frac{8}{3}$ b) $\frac{3}{2}$
c) $\frac{5}{8}$ d) $\frac{3}{8}$

4) If $byx = \frac{5}{18},\ bxy = \frac{8}{5}$ then $r =$ _____.

a) $2/5$ b) $1/2$
c) $2/3$ d) $3/2$

5) The value of $\frac{1}{D+a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

6) $\frac{1}{D^2+9}\sin 3x =$ _____.

a) $-\frac{x}{2}\cos 3x$ b) $\frac{x}{2}\cos 3x$

c) $-\frac{x}{6}\cos 3x$ d) $\frac{x}{6}\sin 3x$

7) The complementary function of $(D^2 + 2D + 1)y = 2e^{3x}$ is _____.

a) $c_1e^{-x} + c_2e^{-x}$ b) $(c_1 + c_2x)e^{-2x}$

c) $(c_1 \cos x + c_2 \sin x)$ d) $(c_1 + c_2x)e^{-x}$

8) The solution of $p^3 - q^3 = 0$ is _____.

a) $z = ax + by + c$ b) $z = ax + a^3y + c$

c) $z = ax - ay + c$ d) $z = ax + ay + c$

9) The solution of $p + q = z$ is _____.

a) $f(x + y, y + \log z)$ b) $f(xy, y \log z)$

c) $f(x - y, y - \log z)$ d) None of these

10) Which of the following is Lagrange's equation?

a) $p^2x + q^2y = z$ b) $qy = px + z$

c) $px + q^2y = z$ d) $p^2x - qy = z^2$

11) In the interval $(0, \pi)$ the constant term in the half range cosine series of $f(x) = x$ is _____.

a) π b) $\frac{\pi}{2}$

c) $\frac{\pi}{4}$ d) 0

12) $L\{e^{-t} \sin ht\} =$ _____.

a) $\frac{1}{(s+1)^2 - 1}$ b) $\frac{1}{(s-1)^2 - 1}$

c) $\frac{s+1}{(s+1)^2 - 1}$ d) $\frac{s-1}{(s-1)^2 - 1}$

13) The positive real root of the equation $x^3 - 2x - 5 = 0$ lies between _____.

a) 0 and 1 b) 1 and 2

c) 2 and 3 d) 3 and 4

14) The process of evaluating a definite integral from a set of tabulated values of $f(x)$ is called _____.

a) Interpolation b) Numerical differentiation

c) Numerical integration d) Extrapolation

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Engineering Mathematics - III (BTN02401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Three of the following questions. **09**

a) Solve $(D^2 + 4D + 4)y = e^{3x}$

b) Solve $(D^2 - 6D + 9)y = e^{3x}\ (1 + x)$

c) Solve $pq = xy^2z^4$

d) Obtain the Fourier series of the function $f(x) = x^3$ in interval $(-\pi, \pi)$

e) Evaluate $px^2 + qy^2 = z^2$

Q.3 Solve any Three of the following Questions. **09**

a) Solve $(D^2 + 4)y = x \sin x$

b) Solve $(D^3 + 3D)y = \cos 2x$

c) Expand $f(x) = x - x^2$ as half range cosine series in $0 \le x \le 1$.

d) Find the Fourier series of $f(x) = 1 - x^2$ in the interval $(-1,1)$

e) Solve $(p^3 + q^3) = 27z$

Q.4 Solve any Two of the following. **10**

a) Find the Fourier series of

$$f(x) = x, \quad -1 < x < 0$$
$$= x + 2, \quad 0 < x < 1$$

b) Solve the P.D.E. $\frac{\partial u}{\partial x} - 2\frac{\partial u}{\partial t} = u$ by the method of separation of variables.

c) Solve $(D^3 + D)y = \cos t + t^2 + 3$.

Section – II

Q.5 Solve any Three of the following. **09**

a) Evaluate by using Laplace transform $\int_0^\infty \left(\frac{e^{-t} - e^{-3t}}{t}\right) dt$

b) If the mean life time and standard deviation of battery cells are 12 hrs and 3 hrs, then find the percentage of batteries will have life time
i) between 10 and 14 hrs
(Given S.N.V of z, area from $z = 0$ to $z = 0.6667$ is 0.2486, that from $z = 0$ to $z = 1$ is 0.3413)

c) Find Laplace transform of $\frac{d}{dt}\left(\frac{\sin t}{t}\right)$

d) If 3% of bulbs manufactured by a company are defective assuming Poisson distribution, find the probability that in a pack of 100 bulbs.
   i) zero
   ii) two bulbs are defective

e) Find an iterative formula to find $\sqrt{N}$ (where N is a positive number) and hence find $\sqrt{5}$.

Q.6 Solve any Three of the following questions. **09**

a) Compute $\int_0^6 \frac{1}{1+X}dx$ by using trapezoidal rule.

b) Find $L\{te^{-3t}\sin t\}$

c) Find the positive root of $x^4 - x = 10$ correct to three decimal places by Newton-Raphson method. Take $x_0 = 2$ as initial approximation (Perform three iterations).

d) Find $L\{t\sin 2t\}$

e) A random variable x has the following probability distribution,

x	1	2	3	4	6	6	7
$P(x)$	k	$2k$	$3k$	k^2	k^2+k	$2k^2$	$4k^2$

Find k.

Q.7 Solve any Two of the following questions. **10**

a) Using convolution theorem find the inverse Laplace transform of $\frac{1}{(s-3)(s+4)^2}$

b) Find the coefficient of correlation (Karl Pearson's) from the following data.

x	28	45	40	38	35	33	40	32	36	33
y	23	34	33	34	30	26	28	31	36	35

c) Evaluate $\int_0^1 e^x$ By using Simpsons $\left(\frac{1}{3}\right)^{rd}$ and $\left(\frac{3}{8}\right)^{th}$ rule.

Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Engineering Mathematics - III (BTN02401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following is Lagrange's equation?
a) $p^2x + q^2y = z$ b) $qy = px + z$
c) $px + q^2y = z$ d) $p^2x - qy = z^2$

2) In the interval $(0, \pi)$ the constant term in the half range cosine series of $f(x) = x$ is _____.
a) π b) $\frac{\pi}{2}$
c) $\frac{\pi}{4}$ d) 0

3) $L\{e^{-t}\sin ht\} =$ _____.
a) $\frac{1}{(s+1)^2-1}$ b) $\frac{1}{(s-1)^2-1}$
c) $\frac{s+1}{(s+1)^2-1}$ d) $\frac{s-1}{(s-1)^2-1}$

4) The positive real root of the equation $x^3 - 2x - 5 = 0$ lies between _____.
a) 0 and 1 b) 1 and 2
c) 2 and 3 d) 3 and 4

5) The process of evaluating a definite integral from a set of tabulated values of $f(x)$ is called _____.
a) Interpolation b) Numerical differentiation
c) Numerical integration d) Extrapolation

6) Let $L^{-1}\left\{\frac{(s+a)}{(s+a)^2-b^2}\right\} =$ _____.
a) $e^{-at}\cosh bt$ b) $e^{at}\cosh bt$
c) $e^{-at}\sinh bt$ d) $e^{at}\sinh bt$

7) The order of convergence of Newton-Raphson method is _____.
a) 3 b) 2
c) 1 d) 0

8) A continuous random variable has the probability density function $f(x) = kx^2$ for $0 \leq x \leq 2$, then $k =$ _____.

a) $\frac{8}{3}$ b) $\frac{3}{2}$

c) $\frac{5}{8}$ d) $\frac{3}{8}$

9) If $byx = \frac{5}{18},\ bxy = \frac{8}{5}$ then $r =$ _____.

a) $2/5$ b) $1/2$

c) $2/3$ d) $3/2$

10) The value of $\frac{1}{D+a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

11) $\frac{1}{D^2+9}\sin 3x =$ _____.

a) $-\frac{x}{2}\cos 3x$ b) $\frac{x}{2}\cos 3x$

c) $-\frac{x}{6}\cos 3x$ d) $\frac{x}{6}\sin 3x$

12) The complementary function of $(D^2 + 2D + 1)y = 2e^{3x}$ is _____.

a) $c_1e^{-x} + c_2e^{-x}$ b) $(c_1 + c_2x)e^{-2x}$

c) $(c_1\cos x + c_2\sin x)$ d) $(c_1 + c_2x)e^{-x}$

13) The solution of $p^3 - q^3 = 0$ is _____.

a) $z = ax + by + c$ b) $z = ax + a^3y + c$

c) $z = ax - ay + c$ d) $z = ax + ay + c$

14) The solution of $p + q = z$ is _____.

a) $f(x + y, y + \log z)$ b) $f(xy, y\log z)$

c) $f(x - y, y - \log z)$ d) None of these

Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Engineering Mathematics - III (BTN02401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Three of the following questions. **09**

a) Solve $(D^2 + 4D + 4)y = e^{3x}$

b) Solve $(D^2 - 6D + 9)y = e^{3x}\ (1 + x)$

c) Solve $pq = xy^2z^4$

d) Obtain the Fourier series of the function $f(x) = x^3$ in interval $(-\pi, \pi)$

e) Evaluate $px^2 + qy^2 = z^2$

Q.3 Solve any Three of the following Questions. **09**

a) Solve $(D^2 + 4)y = x \sin x$

b) Solve $(D^3 + 3D)y = \cos 2x$

c) Expand $f(x) = x - x^2$ as half range cosine series in $0 \le x \le 1$.

d) Find the Fourier series of $f(x) = 1 - x^2$ in the interval $(-1,1)$

e) Solve $(p^3 + q^3) = 27z$

Q.4 Solve any Two of the following. **10**

a) Find the Fourier series of

$$f(x) = x, \quad -1 < x < 0$$
$$= x + 2, \quad 0 < x < 1$$

b) Solve the P.D.E. $\frac{\partial u}{\partial x} - 2\frac{\partial u}{\partial t} = u$ by the method of separation of variables.

c) Solve $(D^3 + D)y = \cos t + t^2 + 3$.

Section – II

Q.5 Solve any Three of the following. **09**

a) Evaluate by using Laplace transform $\int_0^\infty \left(\frac{e^{-t} - e^{-3t}}{t}\right) dt$

b) If the mean life time and standard deviation of battery cells are 12 hrs and 3 hrs, then find the percentage of batteries will have life time
i) between 10 and 14 hrs
(Given S.N.V of z, area from $z = 0$ to $z = 0.6667$ is 0.2486, that from $z = 0$ to $z = 1$ is 0.3413)

c) Find Laplace transform of $\frac{d}{dt}\left(\frac{\sin t}{t}\right)$

d) If 3% of bulbs manufactured by a company are defective assuming Poisson distribution, find the probability that in a pack of 100 bulbs.
   i) zero
   ii) two bulbs are defective

e) Find an iterative formula to find $\sqrt{N}$ (where N is a positive number) and hence find $\sqrt{5}$.

Q.6 Solve any Three of the following questions. **09**

a) Compute $\int_0^6 \frac{1}{1+X}dx$ by using trapezoidal rule.

b) Find $L\{te^{-3t}\sin t\}$

c) Find the positive root of $x^4 - x = 10$ correct to three decimal places by Newton-Raphson method. Take $x_0 = 2$ as initial approximation (Perform three iterations).

d) Find $L\{t\sin 2t\}$

e) A random variable x has the following probability distribution,

x	1	2	3	4	6	6	7
$P(x)$	k	$2k$	$3k$	k^2	k^2+k	$2k^2$	$4k^2$

Find k.

Q.7 Solve any Two of the following questions. **10**

a) Using convolution theorem find the inverse Laplace transform of $\frac{1}{(s-3)(s+4)^2}$

b) Find the coefficient of correlation (Karl Pearson's) from the following data.

x	28	45	40	38	35	33	40	32	36	33
y	23	34	33	34	30	26	28	31	36	35

c) Evaluate $\int_0^1 e^x$ By using Simpsons $\left(\frac{1}{3}\right)^{rd}$ and $\left(\frac{3}{8}\right)^{th}$ rule.

SLR-GF-740

Seat No.	

Set P

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Technology (BTN02402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which of the following operations are performed on a lathe machine?
a) Boring b) Parting-off
c) Reaming d) All of the above

2) A flat surface can be produced by a lathe machine, if the cutting tool moves ___.
a) parallel to the axis of rotation of workpiece
b) perpendicular to the axis of rotation of workpiece
c) at an angle of 45°
d) none of the above

3) An auxiliary slide is provided on _____.
a) Capstan lathe b) Turret lathe
c) Centre lathe d) Boring machine

4) On drilling machine, which process is known as reaming?
a) Enlargement of existing hole
b) Hole made by removal of metal along the hole circumference
c) Smoothly finishing and accurately sizing a drilled hole
d) All of the above

5) End mills have cutting teeth _____.
a) At one end b) On the sides
c) Both (a) and (b) d) None of the above

6) Dividing head is used for _____.
a) Holding the job
b) Indexing the job at required angle
c) Holding the tool
d) rotating the job

7) Grinding is the process of removing material by a _____ action.
a) Rubbing b) Cutting
c) Polishing d) Wearing

8) What is the material removal mechanism in electrochemical machining?
a) Electrolysis b) Indentation
c) Melting and vaporization d) Electro deposition

9) The grinding operation is a _____.
a) Shaping operation b) Forming operation
c) Surface finishing d) Dressing operation

10) A grinding wheel A24K7V is specified in which A stands for _____.
a) Abrasive b) Grainsize
c) Grade d) Structure

11) The main purpose of Boring operation is _____.
a) finish the drilled hole b) Enlarge pre drilled hole
c) both a & b d) None of above

12) For mass production, the external sprue gears are manufactured by _____ process.
a) Gear hobbling b) Gear broaching
c) Gear milling d) Gear casting

13) Point to point (PTP) in CNC machines is the type of _____.
a) CNC drilling b) CNC turning
c) CNC milling d) CNC grinding

14) Tapping operation can be performed in _____.
a) Drilling machine b) Lathe machine
c) Milling machine d) Boring machine

Seat No.	

Set | P

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Technology (BTN02402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2 **a)** List different operations performed on lathe machine and explain any five with neat sketch. **05**
b) Explain in detail setting over the tailstock method for taper turning. **05**

Q.3 **a)** Explain the working and construction of pillar type drilling machine. **04**
b) Explain the construction and working of slotting machine. **05**

Q.4 **a)** Explain Ultrasonic Machining (USM) with its working, advantages, limitations and applications. **05**
b) Compare between a Shaper and a Planer. **04**

Q.5 **Write short note on any three.** **09**
a) Classification of drilling machines
b) Specification of Lathe machine
c) Shaper operations
d) Need and significance of unconventional machining
e) Job holding devices used on drilling machine

Section – II

Q.6 **a)** Explain construction and working of column and knee type milling machine. **05**
b) Briefly explain UP milling and Down Milling process. **05**

Q.7 **a)** Explain the construction and working of surface grinding machine. **05**
b) Explain different boring bars and tools. **04**

Q.8 **a)** Explain advantages and limitations of broaching processes. **04**
b) Explain floor type of horizontal boring machine. **05**

Q.9 **Write short notes (Any Three)** **09**
a) Classification of CNC machine
b) Compound Indexing
c) Centerless grinding machine
d) Gear shaving
e) Classification of milling machines

Seat No.	

Set **Q**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Technology (BTN02402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What is the material removal mechanism in electrochemical machining?
a) Electrolysis b) Indentation
c) Melting and vaporization d) Electro deposition

2) The grinding operation is a _____.
a) Shaping operation b) Forming operation
c) Surface finishing d) Dressing operation

3) A grinding wheel A24K7V is specified in which A stands for _____.
a) Abrasive b) Grainsize
c) Grade d) Structure

4) The main purpose of Boring operation is _____.
a) finish the drilled hole b) Enlarge pre drilled hole
c) both a & b d) None of above

5) For mass production, the external sprue gears are manufactured by _____ process.
a) Gear hobbling b) Gear broaching
c) Gear milling d) Gear casting

6) Point to point (PTP) in CNC machines is the type of _____.
a) CNC drilling b) CNC turning
c) CNC milling d) CNC grinding

7) Tapping operation can be performed in _____.
a) Drilling machine b) Lathe machine
c) Milling machine d) Boring machine

8) Which of the following operations are performed on a lathe machine?
a) Boring b) Parting-off
c) Reaming d) All of the above

9) A flat surface can be produced by a lathe machine, if the cutting tool moves ___.
a) parallel to the axis of rotation of workpiece
b) perpendicular to the axis of rotation of workpiece
c) at an angle of 45°
d) none of the above

10) An auxiliary slide is provided on _____.
a) Capstan lathe b) Turret lathe
c) Centre lathe d) Boring machine

11) On drilling machine, which process is known as reaming?
a) Enlargement of existing hole
b) Hole made by removal of metal along the hole circumference
c) Smoothly finishing and accurately sizing a drilled hole
d) All of the above

12) End mills have cutting teeth _____.
a) At one end b) On the sides
c) Both (a) and (b) d) None of the above

13) Dividing head is used for _____.
a) Holding the job
b) Indexing the job at required angle
c) Holding the tool
d) rotating the job

14) Grinding is the process of removing material by a _____ action.
a) Rubbing b) Cutting
c) Polishing d) Wearing

Seat No.	

Set | Q

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Technology (BTN02402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2 **a)** List different operations performed on lathe machine and explain any five with neat sketch. **05**
b) Explain in detail setting over the tailstock method for taper turning. **05**

Q.3 **a)** Explain the working and construction of pillar type drilling machine. **04**
b) Explain the construction and working of slotting machine. **05**

Q.4 **a)** Explain Ultrasonic Machining (USM) with its working, advantages, limitations and applications. **05**
b) Compare between a Shaper and a Planer. **04**

Q.5 **Write short note on any three.** **09**
a) Classification of drilling machines
b) Specification of Lathe machine
c) Shaper operations
d) Need and significance of unconventional machining
e) Job holding devices used on drilling machine

Section – II

Q.6 **a)** Explain construction and working of column and knee type milling machine. **05**
b) Briefly explain UP milling and Down Milling process. **05**

Q.7 **a)** Explain the construction and working of surface grinding machine. **05**
b) Explain different boring bars and tools. **04**

Q.8 **a)** Explain advantages and limitations of broaching processes. **04**
b) Explain floor type of horizontal boring machine. **05**

Q.9 **Write short notes (Any Three)** **09**
a) Classification of CNC machine
b) Compound Indexing
c) Centerless grinding machine
d) Gear shaving
e) Classification of milling machines

Seat No.	

Set **R**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Technology (BTN02402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The main purpose of Boring operation is _____.
a) finish the drilled hole b) Enlarge pre drilled hole
c) both a & b d) None of above

2) For mass production, the external sprue gears are manufactured by _____ process.
a) Gear hobbling b) Gear broaching
c) Gear milling d) Gear casting

3) Point to point (PTP) in CNC machines is the type of _____.
a) CNC drilling b) CNC turning
c) CNC milling d) CNC grinding

4) Tapping operation can be performed in _____.
a) Drilling machine b) Lathe machine
c) Milling machine d) Boring machine

5) Which of the following operations are performed on a lathe machine?
a) Boring b) Parting-off
c) Reaming d) All of the above

6) A flat surface can be produced by a lathe machine, if the cutting tool moves ___.
a) parallel to the axis of rotation of workpiece
b) perpendicular to the axis of rotation of workpiece
c) at an angle of 45°
d) none of the above

7) An auxiliary slide is provided on _____.
a) Capstan lathe b) Turret lathe
c) Centre lathe d) Boring machine

8) On drilling machine, which process is known as reaming?
a) Enlargement of existing hole
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9) End mills have cutting teeth _____.
a) At one end b) On the sides
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10) Dividing head is used for _____.
a) Holding the job
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c) Holding the tool
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11) Grinding is the process of removing material by a _____ action.
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12) What is the material removal mechanism in electrochemical machining?
a) Electrolysis b) Indentation
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13) The grinding operation is a _____.
a) Shaping operation b) Forming operation
c) Surface finishing d) Dressing operation

14) A grinding wheel A24K7V is specified in which A stands for _____.
a) Abrasive b) Grainsize
c) Grade d) Structure

Seat No.	

Set | R

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Technology (BTN02402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
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Section – I

Q.2 **a)** List different operations performed on lathe machine and explain any five with neat sketch. **05**
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a) Classification of drilling machines
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c) Shaper operations
d) Need and significance of unconventional machining
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Section – II

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Q.8 **a)** Explain advantages and limitations of broaching processes. **04**
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a) Classification of CNC machine
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Seat No.		Set	S

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Technology (BTN02402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Dividing head is used for _____.
a) Holding the job
b) Indexing the job at required angle
c) Holding the tool
d) rotating the job

2) Grinding is the process of removing material by a _____ action.
a) Rubbing b) Cutting
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b) Hole made by removal of metal along the hole circumference
c) Smoothly finishing and accurately sizing a drilled hole
d) All of the above

14) End mills have cutting teeth _____.
a) At one end
b) On the sides
c) Both (a) and (b)
d) None of the above

Seat No.	

Set | S

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Manufacturing Technology (BTN02402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.

Section – I

Q.2 **a)** List different operations performed on lathe machine and explain any five with neat sketch. **05**
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Q.3 **a)** Explain the working and construction of pillar type drilling machine. **04**
b) Explain the construction and working of slotting machine. **05**

Q.4 **a)** Explain Ultrasonic Machining (USM) with its working, advantages, limitations and applications. **05**
b) Compare between a Shaper and a Planer. **04**

Q.5 **Write short note on any three.** **09**
a) Classification of drilling machines
b) Specification of Lathe machine
c) Shaper operations
d) Need and significance of unconventional machining
e) Job holding devices used on drilling machine

Section – II

Q.6 **a)** Explain construction and working of column and knee type milling machine. **05**
b) Briefly explain UP milling and Down Milling process. **05**

Q.7 **a)** Explain the construction and working of surface grinding machine. **05**
b) Explain different boring bars and tools. **04**

Q.8 **a)** Explain advantages and limitations of broaching processes. **04**
b) Explain floor type of horizontal boring machine. **05**

Q.9 **Write short notes (Any Three)** **09**
a) Classification of CNC machine
b) Compound Indexing
c) Centerless grinding machine
d) Gear shaving
e) Classification of milling machines

SLR-GF-741

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Fluid Mechanics & Fluid Machines (BTN02403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The point of application of the force of buoyancy on the body is known as _____.
a) Centre of buoyancy b) Metacentre
c) Centre of Gravity d) None of these

2) Bernoulli's theorem deals with the law of conservation of _____.
a) mass b) energy
c) momentum d) None of these

3) Pitot tube is used for measurement of _____.
a) Pressure b) Temperature
c) Velocity d) Discharge

4) In case of centrifugal pump, efficiency of vortex casing is _____ the efficiency of only volute casing.
a) Less than b) Equal to
c) More than d) None of these

5) Minor losses occur due to _____.
a) sudden enlargement in pipe b) bends in pipe
c) sudden contraction in pipe d) All of these

6) In steady flow of a fluid, the acceleration of any fluid particle is _____.
a) Constant b) Variable
c) Zero d) Never zero

7) Darcy - Weisbach equation is used to find loss of head due to _____.
a) Friction b) Sudden contraction
c) Sudden enlargement d) None of the above

8) Flow occurring in a pipeline when a valve is being opened is _____.
a) Steady b) Unsteady
c) Laminar d) Vortex

9) The cavitation in turbine is caused by _____.
a) High velocity b) High pressure
c) Low barometric pressure d) Low pressure

10) The type of energy available at the inlet of the Francis turbine is _____.

a) Only kinetic energy
b) Only pressure energy
c) Heat energy
d) Kinetic and pressure energy

11) Pelton wheel is _____.

a) Impulse water turbine
b) Impulse gas turbine
c) Reaction water turbine
d) Reaction gas turbine

12) Priming is done in case of _____.

a) Water turbines
b) Centrifugal pump
c) Gas turbines
d) All of these

13) Speed ratio of Pelton wheel varies from _____.

a) 0.45 to 0.5
b) 0.3 to 0.4
c) 0.6 to 0.7
d) 0.8 to 0.9

14) When a fluid is called turbulent?

a) High viscosity of fluid
b) Reynolds number is greater than 4000
c) Reynolds number is less than 2000
d) The density of the fluid is low

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Fluid Mechanics & Fluid Machines (BTN02403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 **a)** With neat sketch explain the conditions of equilibrium for submerged body. **04**
b) State the different types of fluid flow with example. **05**
c) Derive an expression for total pressure & position of center of pressure for Vertical plane surface immersed in liquid. **05**

Q.3 **a)** Define: - **04**
1) Stream Line
2) Path Line
3) Meta centre
4) Meta Centric Height

b) The velocity vector in a fluid flow is given $V = 4x^3 i - 10x^2 yj + 2tk$. Find the velocity and acceleration of a fluid particle at $(2, 1, 3)$ at time $t = 1$. **05**

c) Find the total pressure and position of centre of pressure on a triangular plate of base 2 m and height 3 m which is immersed in water in such a way that the plane of the plate makes an angle of 60° with the free surface of the water. The base of the plate is parallel to water surface and at a depth of 2.5 m from water surface. **05**

Q.4 **a)** Derive Dupuits equation. **04**

b) The difference in water surface levels in two tanks, which are connected by three pipes in series of length 300 m, 170 m and 210 m and of diameters 300 mm, 200 mm and 400 mm respectively, is 12 m. Determine the rate of flow of water if coefficient of friction are 0.005, 0.0052 and 0.0048 respectively, considering minor losses. **05**

c) The head of water over an orifice of diameter 100 mm is 10 m. The water coming out from orifice is collected in a circular tank of diameter 1.5 m. The rise of water level in this tank is 1.0 m in 25 seconds. Also the co-ordinates of a point on the jet, measured from vena-contracta are 4.3 m horizontal and 0.5 m vertical. Find the coefficient, C_d C_v, and C_c **05**

Section – II

Q.5 **a)** Explain drag & lift forces. **04**

b) A man weighing 90 kgf descends to the ground from an aeroplane with tile help of a parachute against the resistance of air. The velocity with which the parachute, which is hemispherical in shape, comes down is 20 m/s. Find the diameter of the parachute. Assume C_D = 0.5 and density of air = 1.25 kg/m^3 **05**

c) Using Buckingham π - theorem, show that the velocity through a circular orifice is given by **05**

$$V = \sqrt{2gH}\ \Phi\left[\frac{D}{H}, \frac{\mu}{\rho VH}\right]$$

where H is the head causing flow, D is the diameter of the orifice, μ is co-efficient of viscosity, ρ is the mass density and g is the acceleration due to gravity.

Q.6 **a)** State the difference between impulse & reaction turbine. **04**

b) What is the difference between single stage & multi stage pumps? Describe Multistage pump with impellers in parallel. **05**

c) Explain governing of Pelton turbine. **05**

Q.7 **a)** What is cavitation? State precautions are to be taken against it. **04**

b) A centrifugal pump is to discharge 0.118 m^3/s at a speed of 1450 r.p.m. against a head of 25 m. The impeller diameter is 250 mm, its width at outlet is 50 mm and manometric efficiency is 75%. Determine the vane angle at the outer periphery of the impeller. **05**

c) The hub diameter of a Kaplan turbine, working under a head of 12 m, is 0.35 times the diameter of the runner. The turbine is running at 100 rpm. If the vane angle of the extreme edge of the runner at outlet is 15° and flow ratio is 0.6, find: **05**

1) Diameter of the runner
2) Diameter of the boss, and
3) Discharge through the runner

The velocity of whirl at outlet is given as zero.

Seat No.		Set	Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Fluid Mechanics & Fluid Machines (BTN02403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Flow occurring in a pipeline when a valve is being opened is _____.
a) Steady b) Unsteady
c) Laminar d) Vortex

2) The cavitation in turbine is caused by _____.
a) High velocity b) High pressure
c) Low barometric pressure d) Low pressure

3) The type of energy available at the inlet of the Francis turbine is _____.
a) Only kinetic energy b) Only pressure energy
c) Heat energy d) Kinetic and pressure energy

4) Pelton wheel is _____.
a) Impulse water turbine b) Impulse gas turbine
c) Reaction water turbine d) Reaction gas turbine

5) Priming is done in case of _____.
a) Water turbines b) Centrifugal pump
c) Gas turbines d) All of these

6) Speed ratio of Pelton wheel varies from _____.
a) 0.45 to 0.5 b) 0.3 to 0.4
c) 0.6 to 0.7 d) 0.8 to 0.9

7) When a fluid is called turbulent?
a) High viscosity of fluid
b) Reynolds number is greater than 4000
c) Reynolds number is less than 2000
d) The density of the fluid is low

8) The point of application of the force of buoyancy on the body is known as _____.
a) Centre of buoyancy b) Metacentre
c) Centre of Gravity d) None of these

9) Bernoulli's theorem deals with the law of conservation of _____.
a) mass b) energy
c) momentum d) None of these

10) Pitot tube is used for measurement of _____.

a) Pressure b) Temperature
c) Velocity d) Discharge

11) In case of centrifugal pump, efficiency of vortex casing is _____ the efficiency of only volute casing.

a) Less than b) Equal to
c) More than d) None of these

12) Minor losses occur due to _____.

a) sudden enlargement in pipe b) bends in pipe
c) sudden contraction in pipe d) All of these

13) In steady flow of a fluid, the acceleration of any fluid particle is _____.

a) Constant b) Variable
c) Zero d) Never zero

14) Darcy - Weisbach equation is used to find loss of head due to _____.

a) Friction b) Sudden contraction
c) Sudden enlargement d) None of the above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Fluid Mechanics & Fluid Machines (BTN02403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 **a)** With neat sketch explain the conditions of equilibrium for submerged body. **04**
b) State the different types of fluid flow with example. **05**
c) Derive an expression for total pressure & position of center of pressure for Vertical plane surface immersed in liquid. **05**

Q.3 **a)** Define: - **04**
1) Stream Line
2) Path Line
3) Meta centre
4) Meta Centric Height

b) The velocity vector in a fluid flow is given $V = 4x^3 i - 10x^2 yj + 2tk$. Find the velocity and acceleration of a fluid particle at $(2, 1, 3)$ at time $t = 1$. **05**

c) Find the total pressure and position of centre of pressure on a triangular plate of base 2 m and height 3 m which is immersed in water in such a way that the plane of the plate makes an angle of 60° with the free surface of the water. The base of the plate is parallel to water surface and at a depth of 2.5 m from water surface. **05**

Q.4 **a)** Derive Dupuits equation. **04**

b) The difference in water surface levels in two tanks, which are connected by three pipes in series of length 300 m, 170 m and 210 m and of diameters 300 mm, 200 mm and 400 mm respectively, is 12 m. Determine the rate of flow of water if coefficient of friction are 0.005, 0.0052 and 0.0048 respectively, considering minor losses. **05**

c) The head of water over an orifice of diameter 100 mm is 10 m. The water coming out from orifice is collected in a circular tank of diameter 1.5 m. The rise of water level in this tank is 1.0 m in 25 seconds. Also the co-ordinates of a point on the jet, measured from vena-contracta are 4.3 m horizontal and 0.5 m vertical. Find the coefficient, C_d C_v, and C_c **05**

Section – II

Q.5 **a)** Explain drag & lift forces. **04**

b) A man weighing 90 kgf descends to the ground from an aeroplane with tile help of a parachute against the resistance of air. The velocity with which the parachute, which is hemispherical in shape, comes down is 20 m/s. Find the diameter of the parachute. Assume C_D = 0.5 and density of air = 1.25 kg/m^3 **05**

c) Using Buckingham π - theorem, show that the velocity through a circular orifice is given by **05**

$$V = \sqrt{2gH}\ \Phi\left[\frac{D}{H}, \frac{\mu}{\rho VH}\right]$$

where H is the head causing flow, D is the diameter of the orifice, μ is co-efficient of viscosity, ρ is the mass density and g is the acceleration due to gravity.

Q.6 **a)** State the difference between impulse & reaction turbine. **04**

b) What is the difference between single stage & multi stage pumps? Describe Multistage pump with impellers in parallel. **05**

c) Explain governing of Pelton turbine. **05**

Q.7 **a)** What is cavitation? State precautions are to be taken against it. **04**

b) A centrifugal pump is to discharge 0.118 m^3/s at a speed of 1450 r.p.m. against a head of 25 m. The impeller diameter is 250 mm, its width at outlet is 50 mm and manometric efficiency is 75%. Determine the vane angle at the outer periphery of the impeller. **05**

c) The hub diameter of a Kaplan turbine, working under a head of 12 m, is 0.35 times the diameter of the runner. The turbine is running at 100 rpm. If the vane angle of the extreme edge of the runner at outlet is 15° and flow ratio is 0.6, find: **05**

1) Diameter of the runner
2) Diameter of the boss, and
3) Discharge through the runner

The velocity of whirl at outlet is given as zero.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Fluid Mechanics & Fluid Machines (BTN02403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Pelton wheel is _____.
a) Impulse water turbine b) Impulse gas turbine
c) Reaction water turbine d) Reaction gas turbine

2) Priming is done in case of _____.
a) Water turbines b) Centrifugal pump
c) Gas turbines d) All of these

3) Speed ratio of Pelton wheel varies from _____.
a) 0.45 to 0.5 b) 0.3 to 0.4
c) 0.6 to 0.7 d) 0.8 to 0.9

4) When a fluid is called turbulent?
a) High viscosity of fluid
b) Reynolds number is greater than 4000
c) Reynolds number is less than 2000
d) The density of the fluid is low

5) The point of application of the force of buoyancy on the body is known as _____.
a) Centre of buoyancy b) Metacentre
c) Centre of Gravity d) None of these

6) Bernoulli's theorem deals with the law of conservation of _____.
a) mass b) energy
c) momentum d) None of these

7) Pitot tube is used for measurement of _____.
a) Pressure b) Temperature
c) Velocity d) Discharge

8) In case of centrifugal pump, efficiency of vortex casing is _____ the efficiency of only volute casing.
a) Less than b) Equal to
c) More than d) None of these

9) Minor losses occur due to _____.
a) sudden enlargement in pipe b) bends in pipe
c) sudden contraction in pipe d) All of these

10) In steady flow of a fluid, the acceleration of any fluid particle is _____.
a) Constant b) Variable
c) Zero d) Never zero

11) Darcy - Weisbach equation is used to find loss of head due to _____.
a) Friction b) Sudden contraction
c) Sudden enlargement d) None of the above

12) Flow occurring in a pipeline when a valve is being opened is _____.
a) Steady b) Unsteady
c) Laminar d) Vortex

13) The cavitation in turbine is caused by _____.
a) High velocity b) High pressure
c) Low barometric pressure d) Low pressure

14) The type of energy available at the inlet of the Francis turbine is _____.
a) Only kinetic energy b) Only pressure energy
c) Heat energy d) Kinetic and pressure energy

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Fluid Mechanics & Fluid Machines (BTN02403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 **a)** With neat sketch explain the conditions of equilibrium for submerged body. **04**
b) State the different types of fluid flow with example. **05**
c) Derive an expression for total pressure & position of center of pressure for Vertical plane surface immersed in liquid. **05**

Q.3 **a)** Define: - **04**
1) Stream Line
2) Path Line
3) Meta centre
4) Meta Centric Height

b) The velocity vector in a fluid flow is given $V = 4x^3 i - 10x^2 yj + 2tk$. Find the velocity and acceleration of a fluid particle at $(2, 1, 3)$ at time $t = 1$. **05**

c) Find the total pressure and position of centre of pressure on a triangular plate of base 2 m and height 3 m which is immersed in water in such a way that the plane of the plate makes an angle of 60° with the free surface of the water. The base of the plate is parallel to water surface and at a depth of 2.5 m from water surface. **05**

Q.4 **a)** Derive Dupuits equation. **04**

b) The difference in water surface levels in two tanks, which are connected by three pipes in series of length 300 m, 170 m and 210 m and of diameters 300 mm, 200 mm and 400 mm respectively, is 12 m. Determine the rate of flow of water if coefficient of friction are 0.005, 0.0052 and 0.0048 respectively, considering minor losses. **05**

c) The head of water over an orifice of diameter 100 mm is 10 m. The water coming out from orifice is collected in a circular tank of diameter 1.5 m. The rise of water level in this tank is 1.0 m in 25 seconds. Also the co-ordinates of a point on the jet, measured from vena-contracta are 4.3 m horizontal and 0.5 m vertical. Find the coefficient, C_d C_v, and C_c **05**

Section – II

Q.5 **a)** Explain drag & lift forces. **04**

b) A man weighing 90 kgf descends to the ground from an aeroplane with tile help of a parachute against the resistance of air. The velocity with which the parachute, which is hemispherical in shape, comes down is 20 m/s. Find the diameter of the parachute. Assume C_D = 0.5 and density of air = 1.25 kg/m^3 **05**

c) Using Buckingham π - theorem, show that the velocity through a circular orifice is given by **05**

$$V = \sqrt{2gH}\ \Phi\left[\frac{D}{H}, \frac{\mu}{\rho VH}\right]$$

where H is the head causing flow, D is the diameter of the orifice, μ is co-efficient of viscosity, ρ is the mass density and g is the acceleration due to gravity.

Q.6 **a)** State the difference between impulse & reaction turbine. **04**

b) What is the difference between single stage & multi stage pumps? Describe Multistage pump with impellers in parallel. **05**

c) Explain governing of Pelton turbine. **05**

Q.7 **a)** What is cavitation? State precautions are to be taken against it. **04**

b) A centrifugal pump is to discharge 0.118 m^3/s at a speed of 1450 r.p.m. against a head of 25 m. The impeller diameter is 250 mm, its width at outlet is 50 mm and manometric efficiency is 75%. Determine the vane angle at the outer periphery of the impeller. **05**

c) The hub diameter of a Kaplan turbine, working under a head of 12 m, is 0.35 times the diameter of the runner. The turbine is running at 100 rpm. If the vane angle of the extreme edge of the runner at outlet is 15° and flow ratio is 0.6, find: **05**

1) Diameter of the runner
2) Diameter of the boss, and
3) Discharge through the runner

The velocity of whirl at outlet is given as zero.

Seat No.	

Set | S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Fluid Mechanics & Fluid Machines (BTN02403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In steady flow of a fluid, the acceleration of any fluid particle is _____.
a) Constant b) Variable
c) Zero d) Never zero

2) Darcy - Weisbach equation is used to find loss of head due to _____.
a) Friction b) Sudden contraction
c) Sudden enlargement d) None of the above

3) Flow occurring in a pipeline when a valve is being opened is _____.
a) Steady b) Unsteady
c) Laminar d) Vortex

4) The cavitation in turbine is caused by _____.
a) High velocity b) High pressure
c) Low barometric pressure d) Low pressure

5) The type of energy available at the inlet of the Francis turbine is _____.
a) Only kinetic energy b) Only pressure energy
c) Heat energy d) Kinetic and pressure energy

6) Pelton wheel is _____.
a) Impulse water turbine b) Impulse gas turbine
c) Reaction water turbine d) Reaction gas turbine

7) Priming is done in case of _____.
a) Water turbines b) Centrifugal pump
c) Gas turbines d) All of these

8) Speed ratio of Pelton wheel varies from _____.
a) 0.45 to 0.5 b) 0.3 to 0.4
c) 0.6 to 0.7 d) 0.8 to 0.9

9) When a fluid is called turbulent?
a) High viscosity of fluid
b) Reynolds number is greater than 4000
c) Reynolds number is less than 2000
d) The density of the fluid is low

10) The point of application of the force of buoyancy on the body is known as _____.

a) Centre of buoyancy b) Metacentre
c) Centre of Gravity d) None of these

11) Bernoulli's theorem deals with the law of conservation of _____.

a) mass b) energy
c) momentum d) None of these

12) Pitot tube is used for measurement of _____.

a) Pressure b) Temperature
c) Velocity d) Discharge

13) In case of centrifugal pump, efficiency of vortex casing is _____ the efficiency of only volute casing.

a) Less than b) Equal to
c) More than d) None of these

14) Minor losses occur due to _____.

a) sudden enlargement in pipe b) bends in pipe
c) sudden contraction in pipe d) All of these

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Fluid Mechanics & Fluid Machines (BTN02403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 **a)** With neat sketch explain the conditions of equilibrium for submerged body. **04**
b) State the different types of fluid flow with example. **05**
c) Derive an expression for total pressure & position of center of pressure for Vertical plane surface immersed in liquid. **05**

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1) Stream Line
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3) Meta centre
4) Meta Centric Height

b) The velocity vector in a fluid flow is given $V = 4x^3 i - 10x^2 yj + 2tk$. Find the velocity and acceleration of a fluid particle at $(2, 1, 3)$ at time $t = 1$. **05**

c) Find the total pressure and position of centre of pressure on a triangular plate of base 2 m and height 3 m which is immersed in water in such a way that the plane of the plate makes an angle of 60° with the free surface of the water. The base of the plate is parallel to water surface and at a depth of 2.5 m from water surface. **05**

Q.4 **a)** Derive Dupuits equation. **04**

b) The difference in water surface levels in two tanks, which are connected by three pipes in series of length 300 m, 170 m and 210 m and of diameters 300 mm, 200 mm and 400 mm respectively, is 12 m. Determine the rate of flow of water if coefficient of friction are 0.005, 0.0052 and 0.0048 respectively, considering minor losses. **05**

c) The head of water over an orifice of diameter 100 mm is 10 m. The water coming out from orifice is collected in a circular tank of diameter 1.5 m. The rise of water level in this tank is 1.0 m in 25 seconds. Also the co-ordinates of a point on the jet, measured from vena-contracta are 4.3 m horizontal and 0.5 m vertical. Find the coefficient, C_d C_v, and C_c **05**

Section – II

Q.5 **a)** Explain drag & lift forces. **04**

b) A man weighing 90 kgf descends to the ground from an aeroplane with tile help of a parachute against the resistance of air. The velocity with which the parachute, which is hemispherical in shape, comes down is 20 m/s. Find the diameter of the parachute. Assume C_D = 0.5 and density of air = 1.25 kg/m^3 **05**

c) Using Buckingham π - theorem, show that the velocity through a circular orifice is given by **05**

$$V = \sqrt{2gH}\ \Phi\left[\frac{D}{H}, \frac{\mu}{\rho VH}\right]$$

where H is the head causing flow, D is the diameter of the orifice, μ is co-efficient of viscosity, ρ is the mass density and g is the acceleration due to gravity.

Q.6 **a)** State the difference between impulse & reaction turbine. **04**

b) What is the difference between single stage & multi stage pumps? Describe Multistage pump with impellers in parallel. **05**

c) Explain governing of Pelton turbine. **05**

Q.7 **a)** What is cavitation? State precautions are to be taken against it. **04**

b) A centrifugal pump is to discharge 0.118 m^3/s at a speed of 1450 r.p.m. against a head of 25 m. The impeller diameter is 250 mm, its width at outlet is 50 mm and manometric efficiency is 75%. Determine the vane angle at the outer periphery of the impeller. **05**

c) The hub diameter of a Kaplan turbine, working under a head of 12 m, is 0.35 times the diameter of the runner. The turbine is running at 100 rpm. If the vane angle of the extreme edge of the runner at outlet is 15° and flow ratio is 0.6, find: **05**

1) Diameter of the runner
2) Diameter of the boss, and
3) Discharge through the runner

The velocity of whirl at outlet is given as zero.

SLR-GF-742

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Kinematics & Theory of Machines (BTN02404)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Assume additional suitable data if necessary and state it clearly.
4) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The motion of a piston in the cylinder of a steam engine is an example of _____.
a) completely constrained motion
b) incompletely constrained motion
c) successfully constrained motion
d) none of these

2) A ball and a socket joint forms a _____.
a) turning pair b) rolling pair
c) sliding pair d) spherical pair

3) The relation between the number of pairs p forming a kinematic chain and the number of links l is _____.
a) $l = 2p - 2$ b) $l = 2p - 3$
c) $l = 2p - 4$ d) $l = 2p - 5$

4) The total number of instantaneous centres for a mechanism consisting of n links are _____.
a) n/2 b) n
c) (n-1)/2 d) n(n-1)/2

5) The component of the acceleration, parallel to the velocity of the particle, at the given instant is called _____.
a) radial component b) tangential component
c) corioli's component d) none of these

6) The angle between the direction of the follower motion and a normal to the pitch curve is called _____.
a) pitch angle b) prime angle
c) base angle d) pressure angle

7) The size of a cam depends upon _____.
a) Base circle b) Pitch circle
c) Prime circle d) Pitch curve

8) When the sleeve of a Porter governor moves upwards, the governor speed _____.

a) increase b) decreases
c) remains unaffected d) may increase or decrease

9) In a Hartnell governor, if a spring of greater stiffness is used, then the governor will be _____.

a) more sensitive b) less sensitive
c) isochronous d) none of these

10) The type of gears used to connect two non-parallel non-intersecting shafts are _____.

a) spur gears b) helical gears
c) spiral gears d) none of these

11) When the axes of first and last gear are co-axial, then gear train is known as _____.

a) simple gear train b) compound gear train
c) reverted gear train d) epicyclic gear train

12) The radial distance of a tooth from the pitch circle to the bottom of the tooth, is called _____.

a) dedendum b) addendum
c) clearance d) working depth

13) A disturbing mass m_1 attached to a rotating shaft may be balanced by a single mass m_2 attached in the same plane of rotation as that of m_1 such that _____.

a) $m_1.r_2 = m_2.r_1$ b) $m_1.r_1 = m_2.r_2$
c) $m_1.m_2 = r_1.r_2$ d) $m_1.r_1^2 = m_2.r_2^2$

14) For dynamic balancing of a shaft, _____.

a) the net dynamic force acting on the shaft is equal to zero
b) the net couple due to dynamic forces acting on the shaft is equal to zero
c) both a) and b)
d) none of the above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Kinematics & Theory of Machines (BTN02404)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to right indicates full marks.
3) Assume additional suitable data if necessary and state it clearly
4) Use of scientific calculator is allowed.
5) Use university drawing sheet if required.

Section – I

Q.2 **a)** Explain Kutzbach's criterion for planar mechanisms with suitable examples. **04**

b) An engine mechanism is shown in fig.(2-b). The crank CB = 100 mm and the connecting rod BA = 300 mm with centre of gravity G, 100 mm from B. In the position shown, the crankshaft has a speed of 75 rad/s and an angular acceleration of 1200 rad/s^2. **10**

Find:
1) velocity of G and angular velocity of AB.
2) acceleration of G and angular acceleration of AB.

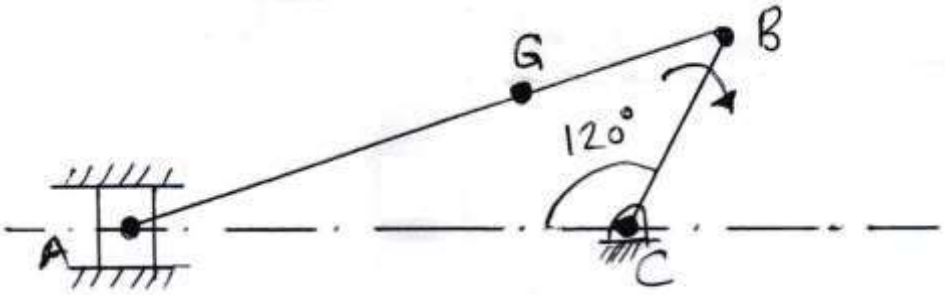

fig.(2-b)

Q.3 **a)** A cam rotating clockwise at a uniform speed of 1000 r.p.m. is required to give a roller follower the motion defined below. **08**

1) Follower to move outwards through 50 mm during 120° of cam rotation
2) Follower to dwell for next 60° of cam rotation
3) Follower to return to its starting position during next 90° of cam rotation
4) Follower to dwell for the rest of the cam rotation

The minimum radius of the cam is 50 mm and the diameter of roller is 10 mm. The line of stroke of the follower is off-set by 20 mm from the axis of the cam shaft. If the displacement of the follower takes place with uniform and equal acceleration and retardation on both the outward and return strokes, draw profile of the cam.

b) Explain with a neat sketch Crank and Slotted lever quick return mechanism. **06**

Q.4 **a)** Explain classification of cams with neat sketches. **06**

b) Differentiate between machine and mechanism. **04**

c) What do you mean by instantaneous centre of rotation? Explain the various types of instantaneous centres. **04**

Section – II

Q.5 **a)** Two shafts A and B are co-axial. A gear C (50 teeth) is rigidly mounted on shaft A. A compound gear D-E gears with C and an internal gear G. D has 20 teeth and gears with C and E has 35 teeth and gears with an internal gear G. The gear G is fixed and is concentric with the shaft axis. The compound gear D-E is mounted on a pin which projects from an arm keyed to the shaft B. Arrangement is as shown in fig.(5-a). Find the number of teeth on internal gear G assuming that all gears have the same module. If the shaft A rotates at 110 r.p.m., find the speed of shaft B. **08**

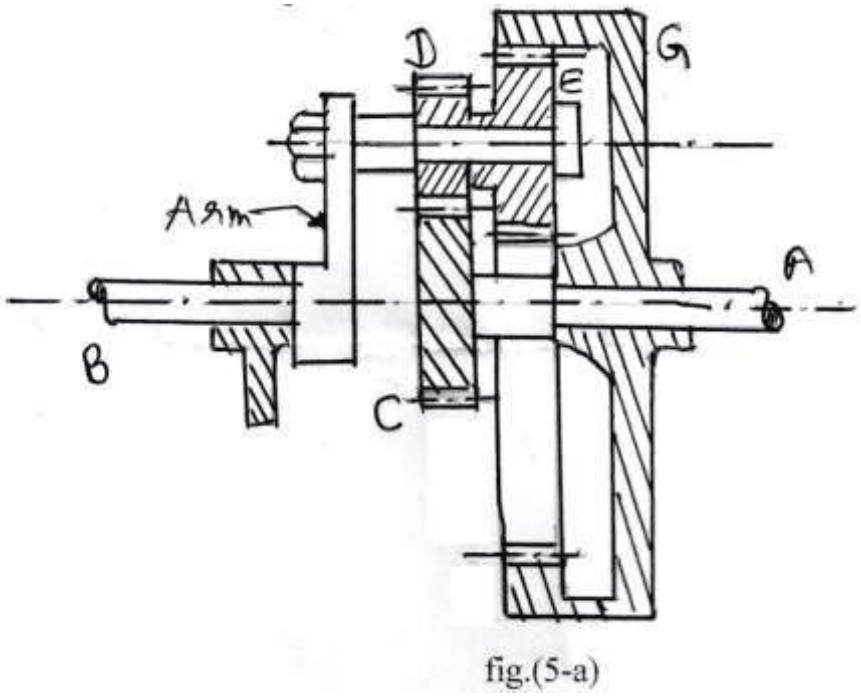

fig.(5-a)

b) Explain working of a centrifugal governor with a neat sketch. **06**

Q.6	**a)**	A, B, C and D are four masses carried by a rotating shaft at radii 100, 125, 200 and 150 mm respectively. The planes in which the masses revolve are spaced 600 mm apart and the masses of B, C and D are 10 kg, 5 kg, and 4 kg respectively. Find the required mass A and the relative angular settings of the four masses so that the shaft shall be in complete balance.	**10**
	b)	Explain following terms for governors: 1) Sensitiveness 2) Isochronism	**04**
Q.7	**a)**	Explain classification of gear trains with neat sketches.	**06**
	b)	Explain importance of balancing of rotary' masses. What do you mean by static and dynamic balancing?	**04**
	c)	Explain the terms 'effort' and 'power' of a governor.	**04**

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Seat No.	

Set Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Kinematics & Theory of Machines (BTN02404)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Assume additional suitable data if necessary and state it clearly.
4) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) When the sleeve of a Porter governor moves upwards, the governor speed _____.
a) increase b) decreases
c) remains unaffected d) may increase or decrease

2) In a Hartnell governor, if a spring of greater stiffness is used, then the governor will be _____.
a) more sensitive b) less sensitive
c) isochronous d) none of these

3) The type of gears used to connect two non-parallel non-intersecting shafts are _____.
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c) spiral gears d) none of these

4) When the axes of first and last gear are co-axial, then gear train is known as _____.
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c) reverted gear train d) epicyclic gear train

5) The radial distance of a tooth from the pitch circle to the bottom of the tooth, is called _____.
a) dedendum b) addendum
c) clearance d) working depth

6) A disturbing mass m_1 attached to a rotating shaft may be balanced by a single mass m_2 attached in the same plane of rotation as that of m_1 such that _____.
a) $m_1.r_2 = m_2.r_1$ b) $m_1.r_1 = m_2.r_2$
c) $m_1.m_2 = r_1.r_2$ d) $m_1.r_1^2 = m_2.r_2^2$

7) For dynamic balancing of a shaft, _____.
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d) none of the above

8) The motion of a piston in the cylinder of a steam engine is an example of _____.
a) completely constrained motion
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d) none of these

9) A ball and a socket joint forms a _____.
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10) The relation between the number of pairs p forming a kinematic chain and the number of links l is _____.
a) $l = 2p - 2$ b) $l = 2p - 3$
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11) The total number of instantaneous centres for a mechanism consisting of n links are _____.
a) n/2 b) n
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12) The component of the acceleration, parallel to the velocity of the particle, at the given instant is called _____.
a) radial component b) tangential component
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13) The angle between the direction of the follower motion and a normal to the pitch curve is called _____.
a) pitch angle b) prime angle
c) base angle d) pressure angle

14) The size of a cam depends upon _____.
a) Base circle b) Pitch circle
c) Prime circle d) Pitch curve

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Kinematics & Theory of Machines (BTN02404)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to right indicates full marks.
3) Assume additional suitable data if necessary and state it clearly
4) Use of scientific calculator is allowed.
5) Use university drawing sheet if required.

Section – I

Q.2 **a)** Explain Kutzbach's criterion for planar mechanisms with suitable examples. **04**

b) An engine mechanism is shown in fig.(2-b). The crank CB = 100 mm and the connecting rod BA = 300 mm with centre of gravity G, 100 mm from B. In the position shown, the crankshaft has a speed of 75 rad/s and an angular acceleration of 1200 rad/s^2. **10**

Find:
1) velocity of G and angular velocity of AB.
2) acceleration of G and angular acceleration of AB.

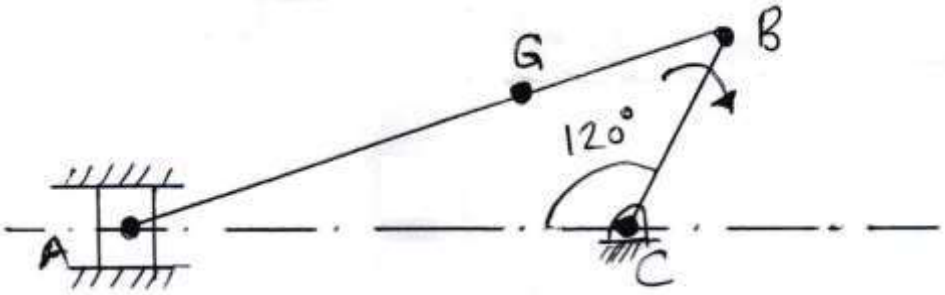

fig.(2-b)

Q.3 **a)** A cam rotating clockwise at a uniform speed of 1000 r.p.m. is required to give a roller follower the motion defined below. **08**

1) Follower to move outwards through 50 mm during 120° of cam rotation
2) Follower to dwell for next 60° of cam rotation
3) Follower to return to its starting position during next 90° of cam rotation
4) Follower to dwell for the rest of the cam rotation

The minimum radius of the cam is 50 mm and the diameter of roller is 10 mm. The line of stroke of the follower is off-set by 20 mm from the axis of the cam shaft. If the displacement of the follower takes place with uniform and equal acceleration and retardation on both the outward and return strokes, draw profile of the cam.

b) Explain with a neat sketch Crank and Slotted lever quick return mechanism. **06**

Q.4 **a)** Explain classification of cams with neat sketches. **06**

b) Differentiate between machine and mechanism. **04**

c) What do you mean by instantaneous centre of rotation? Explain the various types of instantaneous centres. **04**

Section – II

Q.5 **a)** Two shafts A and B are co-axial. A gear C (50 teeth) is rigidly mounted on shaft A. A compound gear D-E gears with C and an internal gear G. D has 20 teeth and gears with C and E has 35 teeth and gears with an internal gear G. The gear G is fixed and is concentric with the shaft axis. The compound gear D-E is mounted on a pin which projects from an arm keyed to the shaft B. Arrangement is as shown in fig.(5-a). Find the number of teeth on internal gear G assuming that all gears have the same module. If the shaft A rotates at 110 r.p.m., find the speed of shaft B. **08**

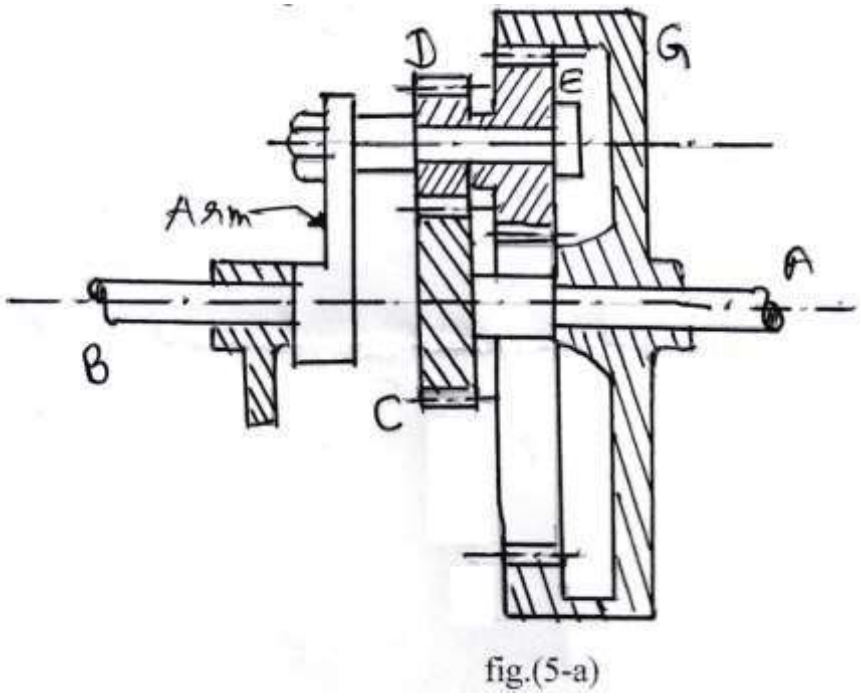

fig.(5-a)

b) Explain working of a centrifugal governor with a neat sketch. **06**

Q.6	**a)**	A, B, C and D are four masses carried by a rotating shaft at radii 100, 125, 200 and 150 mm respectively. The planes in which the masses revolve are spaced 600 mm apart and the masses of B, C and D are 10 kg, 5 kg, and 4 kg respectively. Find the required mass A and the relative angular settings of the four masses so that the shaft shall be in complete balance.	**10**
	b)	Explain following terms for governors: 1) Sensitiveness 2) Isochronism	**04**
Q.7	**a)**	Explain classification of gear trains with neat sketches.	**06**
	b)	Explain importance of balancing of rotary' masses. What do you mean by static and dynamic balancing?	**04**
	c)	Explain the terms 'effort' and 'power' of a governor.	**04**

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Seat No.	

Set R

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Kinematics & Theory of Machines (BTN02404)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Assume additional suitable data if necessary and state it clearly.
4) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) When the axes of first and last gear are co-axial, then gear train is known as _____.
a) simple gear train b) compound gear train
c) reverted gear train d) epicyclic gear train

2) The radial distance of a tooth from the pitch circle to the bottom of the tooth, is called _____.
a) dedendum b) addendum
c) clearance d) working depth

3) A disturbing mass m_1 attached to a rotating shaft may be balanced by a single mass m_2 attached in the same plane of rotation as that of m_1 such that _____.
a) $m_1.r_2 = m_2.r_1$ b) $m_1.r_1 = m_2.r_2$
c) $m_1.m_2 = r_1.r_2$ d) $m_1.r_1^2 = m_2.r_2^2$

4) For dynamic balancing of a shaft, _____.
a) the net dynamic force acting on the shaft is equal to zero
b) the net couple due to dynamic forces acting on the shaft is equal to zero
c) both a) and b)
d) none of the above

5) The motion of a piston in the cylinder of a steam engine is an example of _____.
a) completely constrained motion
b) incompletely constrained motion
c) successfully constrained motion
d) none of these

6) A ball and a socket joint forms a _____.
a) turning pair b) rolling pair
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7) The relation between the number of pairs p forming a kinematic chain and the number of links l is _____.

a) $l = 2p - 2$ b) $l = 2p - 3$
c) $l = 2p - 4$ d) $l = 2p - 5$

8) The total number of instantaneous centres for a mechanism consisting of n links are _____.

a) n/2 b) n
c) (n-1)/2 d) n(n-1)/2

9) The component of the acceleration, parallel to the velocity of the particle, at the given instant is called _____.

a) radial component b) tangential component
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10) The angle between the direction of the follower motion and a normal to the pitch curve is called _____.

a) pitch angle b) prime angle
c) base angle d) pressure angle

11) The size of a cam depends upon _____.

a) Base circle b) Pitch circle
c) Prime circle d) Pitch curve

12) When the sleeve of a Porter governor moves upwards, the governor speed _____.

a) increase b) decreases
c) remains unaffected d) may increase or decrease

13) In a Hartnell governor, if a spring of greater stiffness is used, then the governor will be _____.

a) more sensitive b) less sensitive
c) isochronous d) none of these

14) The type of gears used to connect two non-parallel non-intersecting shafts are _____.

a) spur gears b) helical gears
c) spiral gears d) none of these

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Kinematics & Theory of Machines (BTN02404)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to right indicates full marks.
3) Assume additional suitable data if necessary and state it clearly
4) Use of scientific calculator is allowed.
5) Use university drawing sheet if required.

Section – I

Q.2 **a)** Explain Kutzbach's criterion for planar mechanisms with suitable examples. **04**

b) An engine mechanism is shown in fig.(2-b). The crank CB = 100 mm and the connecting rod BA = 300 mm with centre of gravity G, 100 mm from B. In the position shown, the crankshaft has a speed of 75 rad/s and an angular acceleration of 1200 rad/s^2. **10**

Find:
1) velocity of G and angular velocity of AB.
2) acceleration of G and angular acceleration of AB.

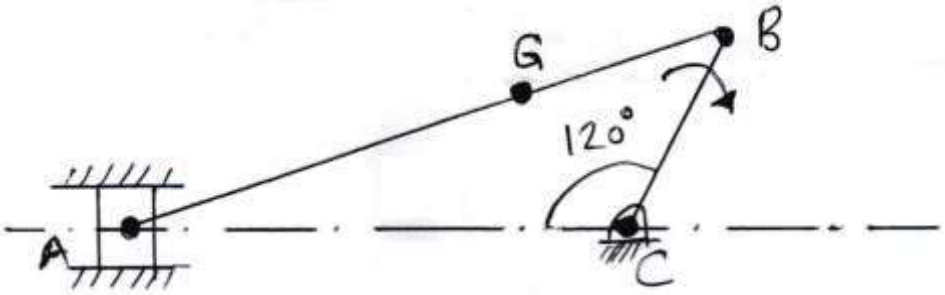

fig.(2-b)

Q.3 **a)** A cam rotating clockwise at a uniform speed of 1000 r.p.m. is required to give a roller follower the motion defined below. **08**

1) Follower to move outwards through 50 mm during 120° of cam rotation
2) Follower to dwell for next 60° of cam rotation
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4) Follower to dwell for the rest of the cam rotation

The minimum radius of the cam is 50 mm and the diameter of roller is 10 mm. The line of stroke of the follower is off-set by 20 mm from the axis of the cam shaft. If the displacement of the follower takes place with uniform and equal acceleration and retardation on both the outward and return strokes, draw profile of the cam.

b) Explain with a neat sketch Crank and Slotted lever quick return mechanism. **06**

Q.4 **a)** Explain classification of cams with neat sketches. **06**

b) Differentiate between machine and mechanism. **04**

c) What do you mean by instantaneous centre of rotation? Explain the various types of instantaneous centres. **04**

Section – II

Q.5 **a)** Two shafts A and B are co-axial. A gear C (50 teeth) is rigidly mounted on shaft A. A compound gear D-E gears with C and an internal gear G. D has 20 teeth and gears with C and E has 35 teeth and gears with an internal gear G. The gear G is fixed and is concentric with the shaft axis. The compound gear D-E is mounted on a pin which projects from an arm keyed to the shaft B. Arrangement is as shown in fig.(5-a). Find the number of teeth on internal gear G assuming that all gears have the same module. If the shaft A rotates at 110 r.p.m., find the speed of shaft B. **08**

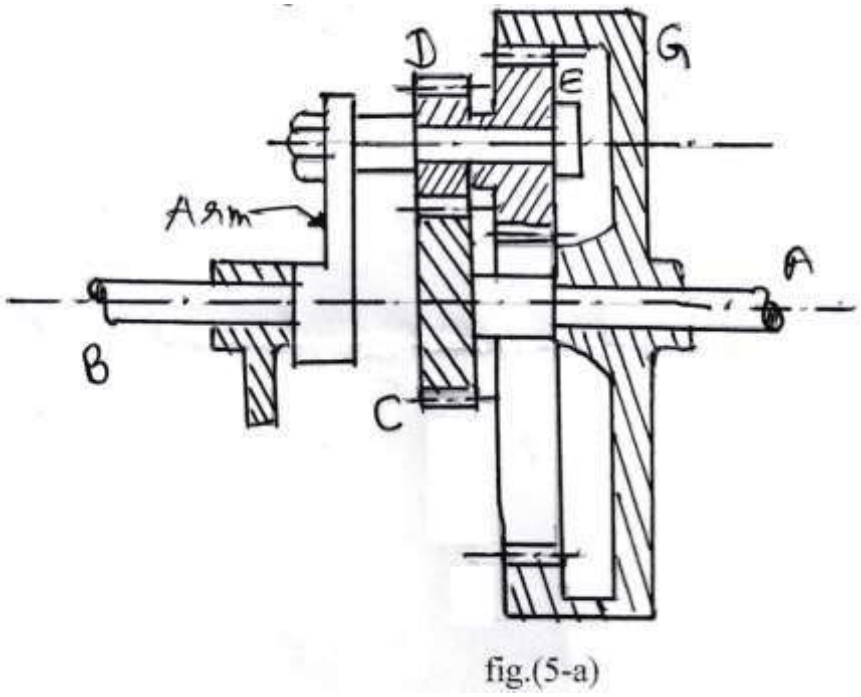

fig.(5-a)

b) Explain working of a centrifugal governor with a neat sketch. **06**

Q.6	**a)**	A, B, C and D are four masses carried by a rotating shaft at radii 100, 125, 200 and 150 mm respectively. The planes in which the masses revolve are spaced 600 mm apart and the masses of B, C and D are 10 kg, 5 kg, and 4 kg respectively. Find the required mass A and the relative angular settings of the four masses so that the shaft shall be in complete balance.	**10**
	b)	Explain following terms for governors: 1) Sensitiveness 2) Isochronism	**04**
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	b)	Explain importance of balancing of rotary' masses. What do you mean by static and dynamic balancing?	**04**
	c)	Explain the terms 'effort' and 'power' of a governor.	**04**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Kinematics & Theory of Machines (BTN02404)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The angle between the direction of the follower motion and a normal to the pitch curve is called _____.
a) pitch angle b) prime angle
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Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Kinematics & Theory of Machines (BTN02404)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
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5) Use university drawing sheet if required.

Section – I

Q.2 **a)** Explain Kutzbach's criterion for planar mechanisms with suitable examples. **04**

b) An engine mechanism is shown in fig.(2-b). The crank CB = 100 mm and the connecting rod BA = 300 mm with centre of gravity G, 100 mm from B. In the position shown, the crankshaft has a speed of 75 rad/s and an angular acceleration of 1200 rad/s^2. **10**

Find:
1) velocity of G and angular velocity of AB.
2) acceleration of G and angular acceleration of AB.

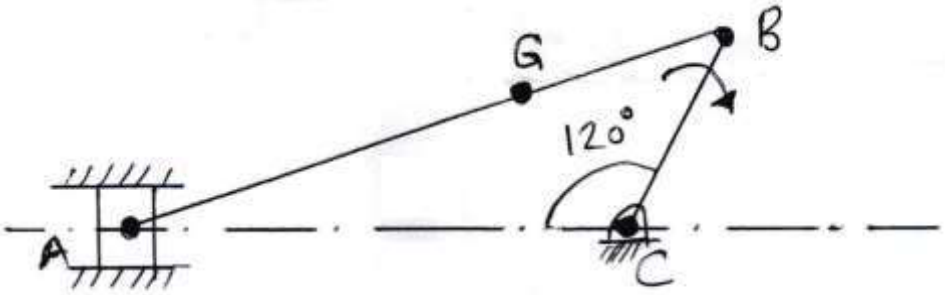

fig.(2-b)

Q.3 **a)** A cam rotating clockwise at a uniform speed of 1000 r.p.m. is required to give a roller follower the motion defined below. **08**

1) Follower to move outwards through 50 mm during 120° of cam rotation
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Q.4 **a)** Explain classification of cams with neat sketches. **06**

b) Differentiate between machine and mechanism. **04**

c) What do you mean by instantaneous centre of rotation? Explain the various types of instantaneous centres. **04**

Section – II

Q.5 **a)** Two shafts A and B are co-axial. A gear C (50 teeth) is rigidly mounted on shaft A. A compound gear D-E gears with C and an internal gear G. D has 20 teeth and gears with C and E has 35 teeth and gears with an internal gear G. The gear G is fixed and is concentric with the shaft axis. The compound gear D-E is mounted on a pin which projects from an arm keyed to the shaft B. Arrangement is as shown in fig.(5-a). Find the number of teeth on internal gear G assuming that all gears have the same module. If the shaft A rotates at 110 r.p.m., find the speed of shaft B. **08**

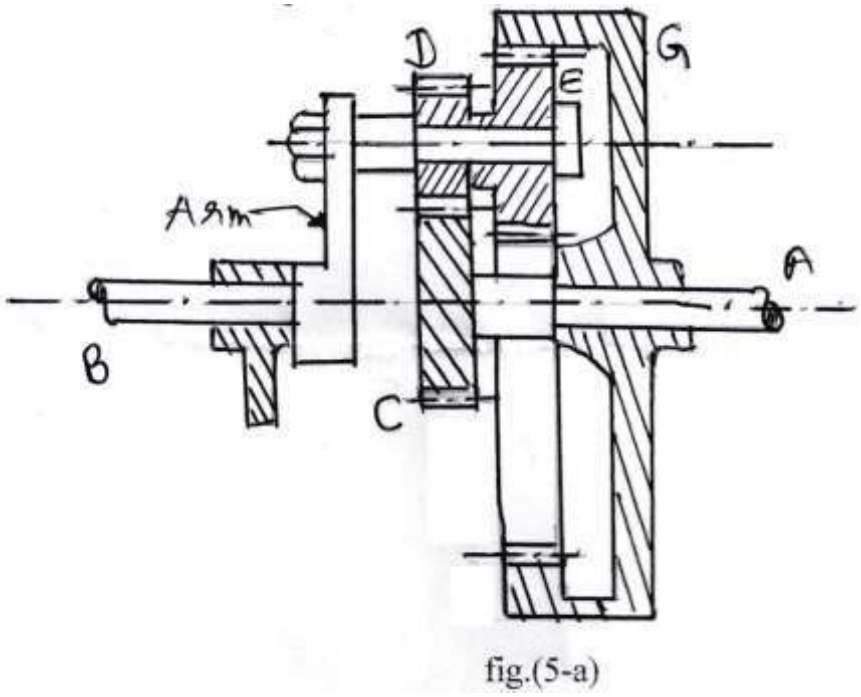

fig.(5-a)

b) Explain working of a centrifugal governor with a neat sketch. **06**

Q.6	**a)**	A, B, C and D are four masses carried by a rotating shaft at radii 100, 125, 200 and 150 mm respectively. The planes in which the masses revolve are spaced 600 mm apart and the masses of B, C and D are 10 kg, 5 kg, and 4 kg respectively. Find the required mass A and the relative angular settings of the four masses so that the shaft shall be in complete balance.	**10**
	b)	Explain following terms for governors: 1) Sensitiveness 2) Isochronism	**04**
Q.7	**a)**	Explain classification of gear trains with neat sketches.	**06**
	b)	Explain importance of balancing of rotary' masses. What do you mean by static and dynamic balancing?	**04**
	c)	Explain the terms 'effort' and 'power' of a governor.	**04**

SLR-GF-743

Seat No.	

Set P

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Mechatronic Systems (BTN02408)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each questions carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The name mechatronics was originated in _____.
a) 1959 b) 1984
c) 1969 d) 1980

2) Sensor who requires external power supply is called as _____.
a) Primary Sensor b) Secondary Sensor
c) Active Sensor d) Passive Sensor

3) Any inductive device such as LVDT is based on _____ law.
a) Lorentz b) Newton
c) Tesla d) Faraday's

4) Suppose registers 'A' and B'contain 70H and 80H respectively. After instruction MOV A, B, what will be the contents of registers A and B?
a) 80H, 80H b) 80H, 70H
c) 70H, 80H d) 70H, 70H

5) Read-only memory holds _____ kb of storage in 8051.
a) 2 b) 4
c) 6 d) 8

6) Which of the following circuit is used as a special signal to demultiplex the address bus and data bus?
a) Priority Encoder b) Decoder
c) Address Latch Enable d) Demultiplexer

7) Input signal conditioning and interfacing contain _____.
a) Discrete circuits b) Amplifiers
c) A/D, D/A d) All of the above

8) An Arduino uno has _____ analog input pins.
a) 4 b) 6
c) 8 d) 5

9) Raspberry Pi is a series of _____.
a) Microprocessor b) Microcontroller
c) Logic Gate d) Micro Computers

10) When device provides a current it is called as _____ current.
a) Sourcing b) Sinking
c) Both a & b d) None of these

11) PLC program is written in _____.
a) PLC diagram b) Multiplexer diagram
c) Ladder diagram d) None of the above

12) In this topology if central hub fails the entire system fails _____.
a) Mesh b) Ring
c) Star d) Tree

13) In OSI model this layer deals with hardware issues _____.
a) Data link layer b) Physical layer
c) Transport layer d) Application layer

14) In _____ mode, both stations can transmit and receive simultaneously.
a) Simplex b) Half Duplex
c) Full Duplex d) None of these

Seat No.	

Set **P**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Mechatronic Systems (BTN02408)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions:1) All question are compulsory.
2) Figures to right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Solve any four questions. **16**
- **a)** Differentiate between Microprocessor & Microcontroller.
- **b)** What is Industry 4.0. Explain different elements of Industry 4.0.
- **c)** Define Active & Passive Sensors. Give two examples each.
- **d)** Explain operation of LVDT for displacement measurement.
- **e)** Draw block diagram of 8051. State any four features of 8051.

Q.3 Solve any two questions. **12**
- **a)** Draw & explain block diagram of mechatronics system.
- **b)** Interface DC motor with Arduino & Write C program to rotate motor clock wise & anti clock wise with brake on both side.
- **c)** State Different Types of Flow Meters. Explain operation of Electromagnetic Flow Meters in details.

Q.4 Solve any four questions. **16**
- **a)** Write a note source current & sink current.
- **b)** Compare Synchronous transmission and Asynchronous transmission.
- **c)** Compare mesh topology with star topology.
- **d)** Explain concept of Pull-Up & Pull-Down Resistors.
- **e)** Write a note on LAN, MAN & WAN

Q.5 Solve any two questions. **12**
- **a)** Draw pin diagram of L293D motor driver & explain its H-bridge operation for rotation of DC motor.
- **b)** Draw & Explain architecture of PLC.
- **c)** Write a note on Simplex, Half-Duplex & Full-Duplex transmission modes.

Seat No.	

Set **Q**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Mechatronic Systems (BTN02408)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) An Arduino uno has _____ analog input pins.
a) 4 b) 6
c) 8 d) 5

2) Raspberry Pi is a series of _____.
a) Microprocessor b) Microcontroller
c) Logic Gate d) Micro Computers

3) When device provides a current it is called as _____ current.
a) Sourcing b) Sinking
c) Both a & b d) None of these

4) PLC program is written in _____.
a) PLC diagram b) Multiplexer diagram
c) Ladder diagram d) None of the above

5) In this topology if central hub fails the entire system fails _____.
a) Mesh b) Ring
c) Star d) Tree

6) In OSI model this layer deals with hardware issues _____.
a) Data link layer b) Physical layer
c) Transport layer d) Application layer

7) In _____ mode, both stations can transmit and receive simultaneously.
a) Simplex b) Half Duplex
c) Full Duplex d) None of these

8) The name mechatronics was originated in _____.
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9) Sensor who requires external power supply is called as _____.
a) Primary Sensor b) Secondary Sensor
c) Active Sensor d) Passive Sensor

10) Any inductive device such as LVDT is based on _____ law.
a) Lorentz b) Newton
c) Tesla d) Faraday's

11) Suppose registers 'A' and B'contain 70H and 80H respectively. After instruction MOV A, B, what will be the contents of registers A and B?
a) 80H, 80H b) 80H, 70H
c) 70H, 80H d) 70H, 70H

12) Read-only memory holds _____ kb of storage in 8051.
a) 2 b) 4
c) 6 d) 8

13) Which of the following circuit is used as a special signal to demultiplex the address bus and data bus?
a) Priority Encoder b) Decoder
c) Address Latch Enable d) Demultiplexer

14) Input signal conditioning and interfacing contain _____.
a) Discrete circuits b) Amplifiers
c) A/D, D/A d) All of the above

Seat No.	

Set **Q**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Mechatronic Systems (BTN02408)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions:1) All question are compulsory.
2) Figures to right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Solve any four questions. **16**
- **a)** Differentiate between Microprocessor & Microcontroller.
- **b)** What is Industry 4.0. Explain different elements of Industry 4.0.
- **c)** Define Active & Passive Sensors. Give two examples each.
- **d)** Explain operation of LVDT for displacement measurement.
- **e)** Draw block diagram of 8051. State any four features of 8051.

Q.3 Solve any two questions. **12**
- **a)** Draw & explain block diagram of mechatronics system.
- **b)** Interface DC motor with Arduino & Write C program to rotate motor clock wise & anti clock wise with brake on both side.
- **c)** State Different Types of Flow Meters. Explain operation of Electromagnetic Flow Meters in details.

Q.4 Solve any four questions. **16**
- **a)** Write a note source current & sink current.
- **b)** Compare Synchronous transmission and Asynchronous transmission.
- **c)** Compare mesh topology with star topology.
- **d)** Explain concept of Pull-Up & Pull-Down Resistors.
- **e)** Write a note on LAN, MAN & WAN

Q.5 Solve any two questions. **12**
- **a)** Draw pin diagram of L293D motor driver & explain its H-bridge operation for rotation of DC motor.
- **b)** Draw & Explain architecture of PLC.
- **c)** Write a note on Simplex, Half-Duplex & Full-Duplex transmission modes.

Seat No.	

Set **R**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Mechatronic Systems (BTN02408)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each questions carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) PLC program is written in _____.
a) PLC diagram b) Multiplexer diagram
c) Ladder diagram d) None of the above

2) In this topology if central hub fails the entire system fails _____.
a) Mesh b) Ring
c) Star d) Tree

3) In OSI model this layer deals with hardware issues _____.
a) Data link layer b) Physical layer
c) Transport layer d) Application layer

4) In _____ mode, both stations can transmit and receive simultaneously.
a) Simplex b) Half Duplex
c) Full Duplex d) None of these

5) The name mechatronics was originated in _____.
a) 1959 b) 1984
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c) Active Sensor d) Passive Sensor

7) Any inductive device such as LVDT is based on _____ law.
a) Lorentz b) Newton
c) Tesla d) Faraday's

8) Suppose registers 'A' and B'contain 70H and 80H respectively. After instruction MOV A, B, what will be the contents of registers A and B?
a) 80H, 80H b) 80H, 70H
c) 70H, 80H d) 70H, 70H

9) Read-only memory holds _____ kb of storage in 8051.
a) 2 b) 4
c) 6 d) 8

10) Which of the following circuit is used as a special signal to demultiplex the address bus and data bus?

a) Priority Encoder b) Decoder
c) Address Latch Enable d) Demultiplexer

11) Input signal conditioning and interfacing contain _____.

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c) A/D, D/A d) All of the above

12) An Arduino uno has _____ analog input pins.

a) 4 b) 6
c) 8 d) 5

13) Raspberry Pi is a series of _____.

a) Microprocessor b) Microcontroller
c) Logic Gate d) Micro Computers

14) When device provides a current it is called as _____ current.

a) Sourcing b) Sinking
c) Both a & b d) None of these

Seat No.	

Set **R**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Mechatronic Systems (BTN02408)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions:1) All question are compulsory.
2) Figures to right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Solve any four questions. **16**
- **a)** Differentiate between Microprocessor & Microcontroller.
- **b)** What is Industry 4.0. Explain different elements of Industry 4.0.
- **c)** Define Active & Passive Sensors. Give two examples each.
- **d)** Explain operation of LVDT for displacement measurement.
- **e)** Draw block diagram of 8051. State any four features of 8051.

Q.3 Solve any two questions. **12**
- **a)** Draw & explain block diagram of mechatronics system.
- **b)** Interface DC motor with Arduino & Write C program to rotate motor clock wise & anti clock wise with brake on both side.
- **c)** State Different Types of Flow Meters. Explain operation of Electromagnetic Flow Meters in details.

Q.4 Solve any four questions. **16**
- **a)** Write a note source current & sink current.
- **b)** Compare Synchronous transmission and Asynchronous transmission.
- **c)** Compare mesh topology with star topology.
- **d)** Explain concept of Pull-Up & Pull-Down Resistors.
- **e)** Write a note on LAN, MAN & WAN

Q.5 Solve any two questions. **12**
- **a)** Draw pin diagram of L293D motor driver & explain its H-bridge operation for rotation of DC motor.
- **b)** Draw & Explain architecture of PLC.
- **c)** Write a note on Simplex, Half-Duplex & Full-Duplex transmission modes.

Seat No.	

Set **S**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Mechatronic Systems (BTN02408)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each questions carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which of the following circuit is used as a special signal to demultiplex the address bus and data bus?
a) Priority Encoder b) Decoder
c) Address Latch Enable d) Demultiplexer

2) Input signal conditioning and interfacing contain _____.
a) Discrete circuits b) Amplifiers
c) A/D, D/A d) All of the above

3) An Arduino uno has _____ analog input pins.
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6) PLC program is written in _____.
a) PLC diagram b) Multiplexer diagram
c) Ladder diagram d) None of the above

7) In this topology if central hub fails the entire system fails _____.
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c) Star d) Tree

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a) Data link layer b) Physical layer
c) Transport layer d) Application layer

9) In _____ mode, both stations can transmit and receive simultaneously.
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c) Full Duplex d) None of these

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c) Active Sensor d) Passive Sensor

12) Any inductive device such as LVDT is based on _____ law.
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13) Suppose registers 'A' and B'contain 70H and 80H respectively. After instruction MOV A, B, what will be the contents of registers A and B?
a) 80H, 80H b) 80H, 70H
c) 70H, 80H d) 70H, 70H

14) Read-only memory holds _____ kb of storage in 8051.
a) 2 b) 4
c) 6 d) 8

SLR-GF-743

Seat No.	

Set S

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Mechatronic Systems (BTN02408)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions:1) All question are compulsory.
2) Figures to right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Solve any four questions. **16**

a) Differentiate between Microprocessor & Microcontroller.
b) What is Industry 4.0. Explain different elements of Industry 4.0.
c) Define Active & Passive Sensors. Give two examples each.
d) Explain operation of LVDT for displacement measurement.
e) Draw block diagram of 8051. State any four features of 8051.

Q.3 Solve any two questions. **12**

a) Draw & explain block diagram of mechatronics system.
b) Interface DC motor with Arduino & Write C program to rotate motor clock wise & anti clock wise with brake on both side.
c) State Different Types of Flow Meters. Explain operation of Electromagnetic Flow Meters in details.

Q.4 Solve any four questions. **16**

a) Write a note source current & sink current.
b) Compare Synchronous transmission and Asynchronous transmission.
c) Compare mesh topology with star topology.
d) Explain concept of Pull-Up & Pull-Down Resistors.
e) Write a note on LAN, MAN & WAN

Q.5 Solve any two questions. **12**

a) Draw pin diagram of L293D motor driver & explain its H-bridge operation for rotation of DC motor.
b) Draw & Explain architecture of PLC.
c) Write a note on Simplex, Half-Duplex & Full-Duplex transmission modes.

SLR-GF-744

Seat No.	

Set P

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Power Plant and Energy Engineering (BTN02409)

Day & Date: Sunday,31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) If there is one power plant only, the installed capacity of that power plant should be equal to _____.
a) Average load b) Base load
c) Peak load d) Minimum load

2) Identify the non-renewable energy resource from the following: _____.
a) Wave power b) Fuel cells
c) Wind power d) Coal

3) Annual depreciation cost calculated by _____.
a) sinking fund method b) straight method
c) both (a) and (b) d) estimates values

4) Kinetic energy that results from the oscillation of water is called _____.
a) Wave energy b) Tidal energy
c) Ocean thermal energy d) Hydro energy

5) The Function of solar collectors to convert _____.
a) Solar energy into electricity
b) Solar energy into radiations
c) Solar energy into thermal energy
d) None of these

6) The objective of energy management includes _____.
a) Minimising energy costs
b) Minimising waste
c) Minimising environmental degradation
d) All the above

7) A load curve is a plot of _____.
a) Load versus generation capacity
b) Load versus current
c) Load versus cost of power
d) Load versus time

8) What does WECS stands for?
a) Wind energy conversion system
b) Wind engine control system
c) Wind energy combined system
d) Wind engine comparison system

9) An Inspection survey and analysis of energy flows for energy conservation in a building is called as _____.
a) Energy Management b) Energy Audit
c) Energy Conservation d) None of above

10) The geothermal energy is the _____ from the earth.
a) Heat b) Light
c) Photons d) Protons

11) Which Meter is used to measure the Beam Radiations?
a) Pyrheliometer b) Sunshine Recorder
c) Anemometer d) All of the above

12) What is the Acceptance Angle Pyrheliometer?
a) 5° b) 8°
c) 4° d) 10°

13) Economiser is used to heat _____.
a) Feed water b) Air
c) Flue gases d) All of the above

14) Which of the following power plant have longest physical life?
a) Thermal power plant b) Nuclear power plant
c) Hydroelectric power plant d) Diesel power plant

Seat No.	

Set **P**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Power Plant and Energy Engineering (BTN02409)

Day & Date: Sunday,31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from Section - I and Section - II.
2) Figures to right indicate full marks.
3) Assume additional suitable data, if necessary and mention it clearly.
4) Use of a calculator is allowed.

Section – I

Q.2 **a)** What is Tariff? What are the objectives of Tariff? Explain any one Tariff Method. **05**

b) Write a short note on Selection of Boilers for Power Plants. **05**

c) What is Depreciation Cost? Explain Straight Line Method of Depreciation with figure. **04**

Q.3 **a)** Explain Pumped Storage Power Plant with neat sketch. **04**

b) What is meant by Load Curve? Explain any two load curves with neat sketch. **05**

c) The load supplied by a power station is given below: **05**

Time (Hr.)	0 - 6	6 - 12	12 - 14	14 - 18	18 - 24
Load (MW)	35	90	70	100	50

Draw the load curve & load duration curve. Determine average load, load factor and plant capacity factor if plant capacity is 140 MW.

Q.4 **a)** Give the difference between Renewable & Non-Renewable Energy Sources. **05**

b) Explain role of the Government Sector in India for Power development. **04**

c) Explain the role of NTPC and NPCIL in Power Development. **05**

Section – II

Q.5 **a)** Give a list and explain in short different energy audit instruments. **05**

b) What is meant by Energy Audit? What are the objectives of the Energy Audit? **04**

c) What is Energy Conservation? Write a short note on Energy Conservation Act 2001. **05**

Q.6 **a)** What are the different types of Concentrators? Explain any two with neat sketch. **05**

b) Explain Liquid Flat Plate Collector with neat sketch. **04**

c) Write a short note on Pyranometer. **05**

Q.7	**a)**	Explain the basic components of the wind energy conversion system with a neat sketch.	**05**
	b)	Explain with a neat sketch Closed OTEC Cycle Power Plant.	**04**
	c)	What is Wave Energy? Explain Dolphin type Wave Machine with a neat sketch.	**05**

Seat No.	

Set **Q**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Power Plant and Energy Engineering (BTN02409)

Day & Date: Sunday,31-12-2023 Max. Marks: 70
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Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) What does WECS stands for?
a) Wind energy conversion system
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a) Load versus generation capacity
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d) Load versus time

Seat No.	

Set **Q**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Power Plant and Energy Engineering (BTN02409)

Day & Date: Sunday,31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from Section - I and Section - II.
2) Figures to right indicate full marks.
3) Assume additional suitable data, if necessary and mention it clearly.
4) Use of a calculator is allowed.

Section – I

Q.2 **a)** What is Tariff? What are the objectives of Tariff? Explain any one Tariff Method. **05**

b) Write a short note on Selection of Boilers for Power Plants. **05**

c) What is Depreciation Cost? Explain Straight Line Method of Depreciation with figure. **04**

Q.3 **a)** Explain Pumped Storage Power Plant with neat sketch. **04**

b) What is meant by Load Curve? Explain any two load curves with neat sketch. **05**

c) The load supplied by a power station is given below: **05**

Time (Hr.)	0 - 6	6 - 12	12 - 14	14 - 18	18 - 24
Load (MW)	35	90	70	100	50

Draw the load curve & load duration curve. Determine average load, load factor and plant capacity factor if plant capacity is 140 MW.

Q.4 **a)** Give the difference between Renewable & Non-Renewable Energy Sources. **05**

b) Explain role of the Government Sector in India for Power development. **04**

c) Explain the role of NTPC and NPCIL in Power Development. **05**

Section – II

Q.5 **a)** Give a list and explain in short different energy audit instruments. **05**

b) What is meant by Energy Audit? What are the objectives of the Energy Audit? **04**

c) What is Energy Conservation? Write a short note on Energy Conservation Act 2001. **05**

Q.6 **a)** What are the different types of Concentrators? Explain any two with neat sketch. **05**

b) Explain Liquid Flat Plate Collector with neat sketch. **04**

c) Write a short note on Pyranometer. **05**

Q.7	**a)**	Explain the basic components of the wind energy conversion system with a neat sketch.	**05**
	b)	Explain with a neat sketch Closed OTEC Cycle Power Plant.	**04**
	c)	What is Wave Energy? Explain Dolphin type Wave Machine with a neat sketch.	**05**

Seat No.	

Set **R**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Power Plant and Energy Engineering (BTN02409)

Day & Date: Sunday,31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which Meter is used to measure the Beam Radiations?
a) Pyrheliometer b) Sunshine Recorder
c) Anemometer d) All of the above

2) What is the Acceptance Angle Pyrheliometer?
a) 5° b) 8°
c) 4° d) 10°

3) Economiser is used to heat _____.
a) Feed water b) Air
c) Flue gases d) All of the above

4) Which of the following power plant have longest physical life?
a) Thermal power plant b) Nuclear power plant
c) Hydroelectric power plant d) Diesel power plant

5) If there is one power plant only, the installed capacity of that power plant should be equal to _____.
a) Average load b) Base load
c) Peak load d) Minimum load

6) Identify the non-renewable energy resource from the following: _____.
a) Wave power b) Fuel cells
c) Wind power d) Coal

7) Annual depreciation cost calculated by _____.
a) sinking fund method b) straight method
c) both (a) and (b) d) estimates values

8) Kinetic energy that results from the oscillation of water is called _____.
a) Wave energy b) Tidal energy
c) Ocean thermal energy d) Hydro energy

9) The Function of solar collectors to convert _____.
a) Solar energy into electricity
b) Solar energy into radiations
c) Solar energy into thermal energy
d) None of these

10) The objective of energy management includes _____.
a) Minimising energy costs
b) Minimising waste
c) Minimising environmental degradation
d) All the above

11) A load curve is a plot of _____.
a) Load versus generation capacity
b) Load versus current
c) Load versus cost of power
d) Load versus time

12) What does WECS stands for?
a) Wind energy conversion system
b) Wind engine control system
c) Wind energy combined system
d) Wind engine comparison system

13) An Inspection survey and analysis of energy flows for energy conservation in a building is called as _____.
a) Energy Management
b) Energy Audit
c) Energy Conservation
d) None of above

14) The geothermal energy is the _____ from the earth.
a) Heat
b) Light
c) Photons
d) Protons

Seat No.	

Set **R**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Power Plant and Energy Engineering (BTN02409)

Day & Date: Sunday,31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from Section - I and Section - II.
2) Figures to right indicate full marks.
3) Assume additional suitable data, if necessary and mention it clearly.
4) Use of a calculator is allowed.

Section – I

Q.2 **a)** What is Tariff? What are the objectives of Tariff? Explain any one Tariff Method. **05**

b) Write a short note on Selection of Boilers for Power Plants. **05**

c) What is Depreciation Cost? Explain Straight Line Method of Depreciation with figure. **04**

Q.3 **a)** Explain Pumped Storage Power Plant with neat sketch. **04**

b) What is meant by Load Curve? Explain any two load curves with neat sketch. **05**

c) The load supplied by a power station is given below: **05**

Time (Hr.)	0 - 6	6 - 12	12 - 14	14 - 18	18 - 24
Load (MW)	35	90	70	100	50

Draw the load curve & load duration curve. Determine average load, load factor and plant capacity factor if plant capacity is 140 MW.

Q.4 **a)** Give the difference between Renewable & Non-Renewable Energy Sources. **05**

b) Explain role of the Government Sector in India for Power development. **04**

c) Explain the role of NTPC and NPCIL in Power Development. **05**

Section – II

Q.5 **a)** Give a list and explain in short different energy audit instruments. **05**

b) What is meant by Energy Audit? What are the objectives of the Energy Audit? **04**

c) What is Energy Conservation? Write a short note on Energy Conservation Act 2001. **05**

Q.6 **a)** What are the different types of Concentrators? Explain any two with neat sketch. **05**

b) Explain Liquid Flat Plate Collector with neat sketch. **04**

c) Write a short note on Pyranometer. **05**

Q.7	**a)**	Explain the basic components of the wind energy conversion system with a neat sketch.	**05**
	b)	Explain with a neat sketch Closed OTEC Cycle Power Plant.	**04**
	c)	What is Wave Energy? Explain Dolphin type Wave Machine with a neat sketch.	**05**

Seat No.	

Set **S**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Power Plant and Energy Engineering (BTN02409)

Day & Date: Sunday,31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The objective of energy management includes _____.
a) Minimising energy costs
b) Minimising waste
c) Minimising environmental degradation
d) All the above

2) A load curve is a plot of _____.
a) Load versus generation capacity
b) Load versus current
c) Load versus cost of power
d) Load versus time

3) What does WECS stands for?
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b) Wind engine control system
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8) Economiser is used to heat _____.
a) Feed water b) Air
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c) Hydroelectric power plant d) Diesel power plant

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a) Average load b) Base load
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11) Identify the non-renewable energy resource from the following: _____.
a) Wave power b) Fuel cells
c) Wind power d) Coal

12) Annual depreciation cost calculated by _____.
a) sinking fund method b) straight method
c) both (a) and (b) d) estimates values

13) Kinetic energy that results from the oscillation of water is called _____.
a) Wave energy b) Tidal energy
c) Ocean thermal energy d) Hydro energy

14) The Function of solar collectors to convert _____.
a) Solar energy into electricity
b) Solar energy into radiations
c) Solar energy into thermal energy
d) None of these

Seat No.	

Set **S**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Power Plant and Energy Engineering (BTN02409)

Day & Date: Sunday,31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from Section - I and Section - II.
2) Figures to right indicate full marks.
3) Assume additional suitable data, if necessary and mention it clearly.
4) Use of a calculator is allowed.

Section – I

Q.2 **a)** What is Tariff? What are the objectives of Tariff? Explain any one Tariff Method. **05**

b) Write a short note on Selection of Boilers for Power Plants. **05**

c) What is Depreciation Cost? Explain Straight Line Method of Depreciation with figure. **04**

Q.3 **a)** Explain Pumped Storage Power Plant with neat sketch. **04**

b) What is meant by Load Curve? Explain any two load curves with neat sketch. **05**

c) The load supplied by a power station is given below: **05**

Time (Hr.)	0 - 6	6 - 12	12 - 14	14 - 18	18 - 24
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Draw the load curve & load duration curve. Determine average load, load factor and plant capacity factor if plant capacity is 140 MW.

Q.4 **a)** Give the difference between Renewable & Non-Renewable Energy Sources. **05**

b) Explain role of the Government Sector in India for Power development. **04**

c) Explain the role of NTPC and NPCIL in Power Development. **05**

Section – II

Q.5 **a)** Give a list and explain in short different energy audit instruments. **05**

b) What is meant by Energy Audit? What are the objectives of the Energy Audit? **04**

c) What is Energy Conservation? Write a short note on Energy Conservation Act 2001. **05**

Q.6 **a)** What are the different types of Concentrators? Explain any two with neat sketch. **05**

b) Explain Liquid Flat Plate Collector with neat sketch. **04**

c) Write a short note on Pyranometer. **05**

Q.7	**a)**	Explain the basic components of the wind energy conversion system with a neat sketch.	**05**
	b)	Explain with a neat sketch Closed OTEC Cycle Power Plant.	**04**
	c)	What is Wave Energy? Explain Dolphin type Wave Machine with a neat sketch.	**05**

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Seat No.	

Set P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Solid Mechanics (BTN02410)

Day & Date: Sunday 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Hooke's law is applicable within _____.
a) Elastic limit b) Plastic limit
c) Fracture point d) Ultimate strength

2) Which of the following materials is more elastic _____.
a) Rubber b) Glass
c) Steel d) Wood

3) If a material has identical properties in all directions, it is called _____.
a) Elastic b) Plastic
c) Isotropic d) Homogeneous

4) A steel rod of length L and diameter D, fixed at both ends is uniformly heated to a temperature rise of T. Young's modulus is E and the coefficient of linear expansion is α. The thermal stress in the rod is _____.
a) α T b) α TE
c) TE d) None of these

5) The stress function was introduced by _____.
a) G.B. Airy b) Terzaghi
c) Darcy d) None of these

6) Cylinder having inner diameter to wall thickness ratio less than 15 are ____.
a) Thin cylinders b) Thick Cylinders
c) Moderate cylinders d) None of these

7) Lame's equation is used to find stresses in _____.
a) Gears b) Clutches
c) Thin cylinders d) Thick cylinders

8) Shear center is the point in or outside a section through which the shear force applied produces _____.
a) only twisting b) only bending
c) twisting and bending d) no twisting and no bending

9) What advantage is obtained, if the load is applied through shear center in a beam cross-section _____.
a) No twisting moment in the beam
b) No shear in the beam
c) No axial force in the beam
d) No bending moment in the beam

10) Choose the correct statement from the following:
a) The point of intersection of the bending axis with the cross section of the beam, is called shear center
b) For I sections, the shear center coincides with the centroid of the cross section of the beam
c) For channels, the shear center does not coincide its centroid
d) All statements above are correct

11) The effective length for the column fixed at both ends is _____.
a) L
b) L/3
c) L/2
d) L/4

12) Slenderness ratio is the ratio of the effective length of a column and the _____ of its cross-section
a) least radius of gyration
b) least width of column
c) Net load on column
d) Moment of Inertia

13) The principle of virtual work states that, for a body to be in equilibrium, the virtual work should be _____.
a) Any value between zero and one
b) Zero
c) Maximum
d) Minimum

14) In virtual work Principle, the work done by self weight of the body is taken into consideration, when _____.
a) center of gravity moves vertically
b) center of gravity moves horizontally
c) shear center moves horizontally
d) Shear center moves vertically

Seat No.		Set	P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Solid Mechanics (BTN02410)

Day & Date: Sunday 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable calculator is allowed.
4) Assume suitable data if necessary.

Section – I

Q.2 **a)** Explain Cauchy's Stress Tensor. **06**

b) A rod 2 m long is at a temperature of 10°C. Find the expansion of the rod, when the temperature is raised to 80°C. Find the magnitude and nature of temperature stresses and strains in the rod, if expansion is completely prevented. Take $E = 100\ GPa, \alpha = 0.000012/°C$. **08**

Q.3 **a)** Explain Importance of Airy's stress function. **06**

b) Investigate what problem solved by the stress function φ **08**

$$\varphi = \frac{F}{d^3} xy^2(3d - 2y)$$

applied to the region included by $y = 0$ to $y = d$ and $x = 0$ to $x = l$

Q.4 **a)** Explain stresses in thick-walled cylinder subjected to internal and external pressure. **06**

b) Write a short note on stresses in the rotating disc. **08**

Section – II

Q.5 **a)** Explain a shear center. **06**

b) Locate a shear center for the cross section as shown in Fig. 1 **08**

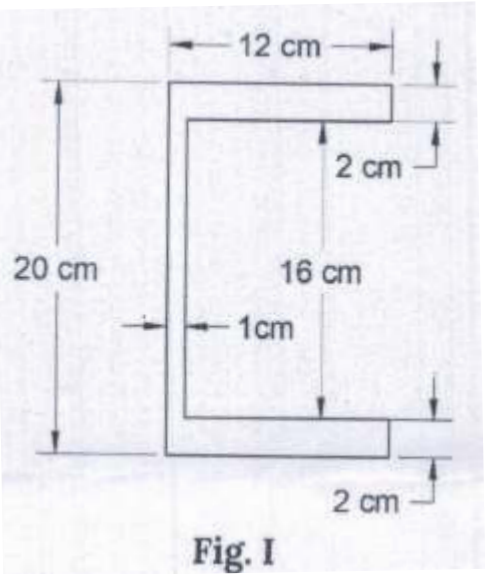

Fig. I

Q.6 **a)** State and explain various assumptions in Euler's theory. **06**

b) A round steel bar 3 m long and 40 mm in diameter is used as a column with both the ends hinged. Find the crippling load by Euler's formula. Take $E = 2.0 \times 10^5 N/mm^2$. **08**

Q.7 **a)** What is the Principle of Virtual Work? Explain in brief its applications. **06**

b) **Write a short note on the following:** **08**

i) Slenderness ratio

ii) Theorem of Virtual Displacements

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Solid Mechanics (BTN02410)

Day & Date: Sunday 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Shear center is the point in or outside a section through which the shear force applied produces _____.
a) only twisting b) only bending
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2) What advantage is obtained, if the load is applied through shear center in a beam cross-section _____.
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a) The point of intersection of the bending axis with the cross section of the beam, is called shear center
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4) The effective length for the column fixed at both ends is _____.
a) L b) L/3
c) L/2 d) L/4

5) Slenderness ratio is the ratio of the effective length of a column and the _____ of its cross-section
a) least radius of gyration b) least width of column
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6) The principle of virtual work states that, for a body to be in equilibrium, the virtual work should be _____.
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b) Zero
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7) In virtual work Principle, the work done by self weight of the body is taken into consideration, when _____.
a) center of gravity moves vertically
b) center of gravity moves horizontally
c) shear center moves horizontally
d) Shear center moves vertically

8) Hooke's law is applicable within _____.
a) Elastic limit b) Plastic limit
c) Fracture point d) Ultimate strength

9) Which of the following materials is more elastic _____.
a) Rubber b) Glass
c) Steel d) Wood

10) If a material has identical properties in all directions, it is called _____.
a) Elastic b) Plastic
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11) A steel rod of length L and diameter D, fixed at both ends is uniformly heated to a temperature rise of T. Young's modulus is E and the coefficient of linear expansion is α. The thermal stress in the rod is _____.
a) α T b) α TE
c) TE d) None of these

12) The stress function was introduced by _____.
a) G.B. Airy b) Terzaghi
c) Darcy d) None of these

13) Cylinder having inner diameter to wall thickness ratio less than 15 are ____.
a) Thin cylinders b) Thick Cylinders
c) Moderate cylinders d) None of these

14) Lame's equation is used to find stresses in _____.
a) Gears b) Clutches
c) Thin cylinders d) Thick cylinders

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Solid Mechanics (BTN02410)

Day & Date: Sunday 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable calculator is allowed.
4) Assume suitable data if necessary.

Section – I

Q.2 **a)** Explain Cauchy's Stress Tensor. **06**

b) A rod 2 m long is at a temperature of 10°C. Find the expansion of the rod, when the temperature is raised to 80°C. Find the magnitude and nature of temperature stresses and strains in the rod, if expansion is completely prevented. Take $E = 100\ GPa, \alpha = 0.000012/°C$. **08**

Q.3 **a)** Explain Importance of Airy's stress function. **06**

b) Investigate what problem solved by the stress function φ **08**

$$\varphi = \frac{F}{d^3} xy^2(3d - 2y)$$

applied to the region included by $y = 0$ to $y = d$ and $x = 0$ to $x = l$

Q.4 **a)** Explain stresses in thick-walled cylinder subjected to internal and external pressure. **06**

b) Write a short note on stresses in the rotating disc. **08**

Section – II

Q.5 **a)** Explain a shear center. **06**

b) Locate a shear center for the cross section as shown in Fig. 1 **08**

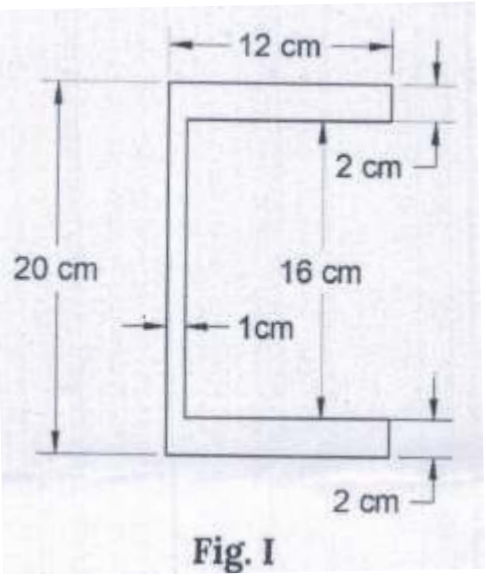

Fig. I

Q.6 **a)** State and explain various assumptions in Euler's theory. **06**

b) A round steel bar 3 m long and 40 mm in diameter is used as a column with both the ends hinged. Find the crippling load by Euler's formula. Take $E = 2.0 \times 10^5 N/mm^2$. **08**

Q.7 **a)** What is the Principle of Virtual Work? Explain in brief its applications. **06**

b) **Write a short note on the following:** **08**

i) Slenderness ratio

ii) Theorem of Virtual Displacements

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Solid Mechanics (BTN02410)

Day & Date: Sunday 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The effective length for the column fixed at both ends is _____.
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Seat No.	

Set R

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Solid Mechanics (BTN02410)

Day & Date: Sunday 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable calculator is allowed.
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Section – I

Q.2 **a)** Explain Cauchy's Stress Tensor. **06**

b) A rod 2 m long is at a temperature of 10°C. Find the expansion of the rod, when the temperature is raised to 80°C. Find the magnitude and nature of temperature stresses and strains in the rod, if expansion is completely prevented. Take $E = 100\ GPa, \alpha = 0.000012/°C$. **08**

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applied to the region included by $y = 0$ to $y = d$ and $x = 0$ to $x = l$

Q.4 **a)** Explain stresses in thick-walled cylinder subjected to internal and external pressure. **06**

b) Write a short note on stresses in the rotating disc. **08**

Section – II

Q.5 **a)** Explain a shear center. **06**

b) Locate a shear center for the cross section as shown in Fig. 1 **08**

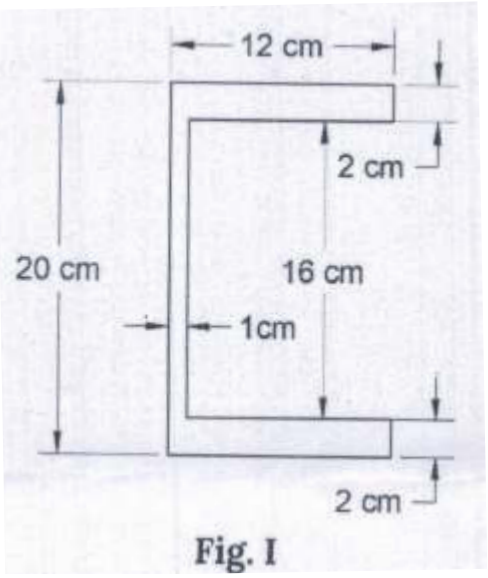


Fig. I

Q.6 **a)** State and explain various assumptions in Euler's theory. **06**

b) A round steel bar 3 m long and 40 mm in diameter is used as a column with both the ends hinged. Find the crippling load by Euler's formula. Take $E = 2.0 \times 10^5 N/mm^2$. **08**

Q.7 **a)** What is the Principle of Virtual Work? Explain in brief its applications. **06**

b) **Write a short note on the following:** **08**

i) Slenderness ratio

ii) Theorem of Virtual Displacements

Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Solid Mechanics (BTN02410)

Day & Date: Sunday 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Cylinder having inner diameter to wall thickness ratio less than 15 are ____.
a) Thin cylinders b) Thick Cylinders
c) Moderate cylinders d) None of these

2) Lame's equation is used to find stresses in _____.
a) Gears b) Clutches
c) Thin cylinders d) Thick cylinders

3) Shear center is the point in or outside a section through which the shear force applied produces _____.
a) only twisting b) only bending
c) twisting and bending d) no twisting and no bending

4) What advantage is obtained, if the load is applied through shear center in a beam cross-section _____.
a) No twisting moment in the beam
b) No shear in the beam
c) No axial force in the beam
d) No bending moment in the beam

5) Choose the correct statement from the following:
a) The point of intersection of the bending axis with the cross section of the beam, is called shear center
b) For I sections, the shear center coincides with the centroid of the cross section of the beam
c) For channels, the shear center does not coincide its centroid
d) All statements above are correct

6) The effective length for the column fixed at both ends is _____.
a) L b) L/3
c) L/2 d) L/4

7) Slenderness ratio is the ratio of the effective length of a column and the _____ of its cross-section
a) least radius of gyration b) least width of column
c) Net load on column d) Moment of Inertia

8) The principle of virtual work states that, for a body to be in equilibrium, the virtual work should be _____.
a) Any value between zero and one
b) Zero
c) Maximum
d) Minimum

9) In virtual work Principle, the work done by self weight of the body is taken into consideration, when _____.
a) center of gravity moves vertically
b) center of gravity moves horizontally
c) shear center moves horizontally
d) Shear center moves vertically

10) Hooke's law is applicable within _____.
a) Elastic limit b) Plastic limit
c) Fracture point d) Ultimate strength

11) Which of the following materials is more elastic _____.
a) Rubber b) Glass
c) Steel d) Wood

12) If a material has identical properties in all directions, it is called _____.
a) Elastic b) Plastic
c) Isotropic d) Homogeneous

13) A steel rod of length L and diameter D, fixed at both ends is uniformly heated to a temperature rise of T. Young's modulus is E and the coefficient of linear expansion is α. The thermal stress in the rod is _____.
a) α T b) α TE
c) TE d) None of these

14) The stress function was introduced by _____.
a) G.B. Airy b) Terzaghi
c) Darcy d) None of these

SLR-GF-745

Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Solid Mechanics (BTN02410)

Day & Date: Sunday 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of a non-programmable calculator is allowed.
4) Assume suitable data if necessary.

Section – I

Q.2 **a)** Explain Cauchy's Stress Tensor. **06**

b) A rod 2 m long is at a temperature of 10°C. Find the expansion of the rod, when the temperature is raised to 80°C. Find the magnitude and nature of temperature stresses and strains in the rod, if expansion is completely prevented. Take $E = 100\ GPa, \alpha = 0.000012/°C$. **08**

Q.3 **a)** Explain Importance of Airy's stress function. **06**

b) Investigate what problem solved by the stress function φ **08**

$$\varphi = \frac{F}{d^3} xy^2(3d - 2y)$$

applied to the region included by $y = 0$ to $y = d$ and $x = 0$ to $x = l$

Q.4 **a)** Explain stresses in thick-walled cylinder subjected to internal and external pressure. **06**

b) Write a short note on stresses in the rotating disc. **08**

Section – II

Q.5 **a)** Explain a shear center. **06**

b) Locate a shear center for the cross section as shown in Fig. 1 **08**

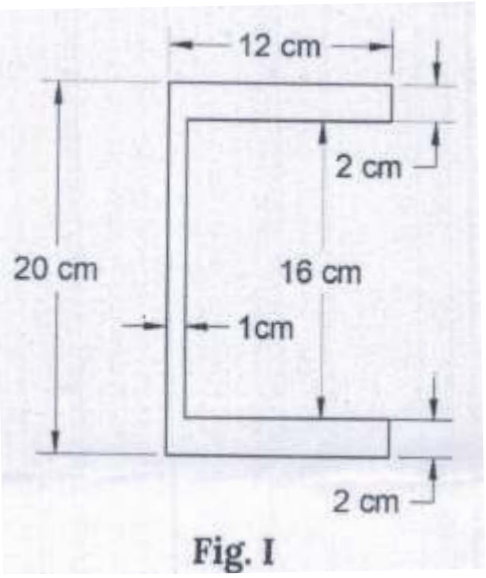


Fig. I

Q.6 **a)** State and explain various assumptions in Euler's theory. **06**

b) A round steel bar 3 m long and 40 mm in diameter is used as a column with both the ends hinged. Find the crippling load by Euler's formula. Take $E = 2.0 \times 10^5 N/mm^2$. **08**

Q.7 **a)** What is the Principle of Virtual Work? Explain in brief its applications. **06**

b) **Write a short note on the following:** **08**

i) Slenderness ratio

ii) Theorem of Virtual Displacements

SLR-GF-746

Seat No.	

Set P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Robotics (BTN02411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) _____ Used to indicate presence or absence of an object.
a) Potentiometer b) Accelerometer
c) Micro switch d) None of these

2) When the position orientation of manipulator are derived from the joint angles and the different configurations, the scheme is known as _____.
a) forward kinematics b) inverse kinematics
c) transformation d) none of these

3) We, human-beings, have got _____.
a) Internal sensors only
b) External sensors only
c) Both internal and external sensors
d) Neither internal nor external sensor

4) The term AGV stands for _____.
a) Automatic Ground Vehicle b) Automated Ground Vehicle
c) Automated Guided Vehicle d) Automatic Gross Vehicle

5) Unimate robot installed at ford motor company for casting _____.
a) 1978 b) 1980
c) 1952 d) 1961

6) Work envelope generated by SCARA robot is _____.
a) sphere b) cylinder
c) rectangular box d) triangle

7) Arc welding is the examples of _____.
a) Point-to-point tasks
b) Continuous path tasks
c) Point-to-point and continuous path tasks
d) Continuous path task and point-to-point tasks

8) The rotation of the wrist mechanism about the arm axis is called _____.
a) Wrist yaw b) Wrist pitch
c) wrist roll d) none of these

9) The smallest increment of movement in to which the robot can divide its work volume is known as _____.
a) spatial resolution b) reparability
c) accuracy d) none of these

10) Degree(s) of freedom of each joint of the robot to be equal to _____.
a) 1 b) 2
c) 3 d) None of these

11) The most widely used technique of control for industrial robots is _____ control.
a) PI b) PID
c) PD d) None of these

12) Smart sensor can do which of the following.
a) Compensate for random error
b) Automatic calibration of accuracy
c) Adjust for non-linearity's
d) all of the above

13) Which of the following are tactile sensors?
a) magnetic sensor b) strain gauge
c) encoder d) range sensor

14) The capability to move wrist wrist up and down is known as _____.
a) Rotational Travers b) Radial Travers
c) Vertical travers d) None of these

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Robotics (BTN02411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Two.

a) Explain Collaborative Robots. **04**

b) Define robot and explain basic components of robots with functions. **06**

c) Define the following **04**
1) Work cell
2) DOF
3) servomechanism

Q.3 **a)** Discuss the construction and working of DC motors. List its advantages, disadvantages and applications. **05**

b) What are the tactile sensors? Explain how they are operated? **04**

c) What are the different factors to be considered when selecting grippers as EOAT (End of Arm Tooling) attachment for industrial robots? **05**

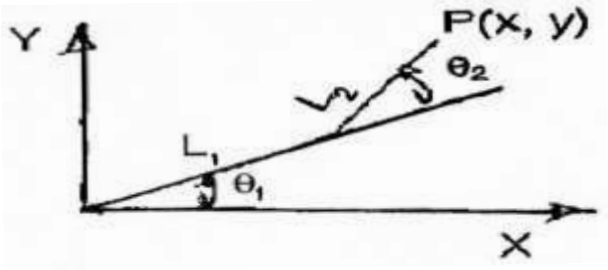
Q.4 **a)** Discuss in detail the different sensors used in robot work cells. **06**

b) Name five different types of robots end effectors. Explain any two. **08**

Section – II

Q.5 Solve any Two.

a) What do you understand by forward & inverse kinematics for 2 dof's? Explain in detail it is desired to determine the values of which the angels $\theta 1$ & $\theta 2$ must be set into order to achieve certain point the length of joint $L1 = 12$ in the length of $L2 = 10$ in. The coordinates $x = 15.7$ and $y = 12.6$ using the reverse transformation method determine the angles $\theta 1$ & $\theta 2$. **08**



b) Explain PI control with neat sketch. **06**

Q.6 **a)** Explain the applications of robot in following. **08**
i) Welding
ii) Spray painting/coating

b) Explain the applications of robot in following. **06**
i) Material handling
ii) Assembly

Q.7 **a)** Write a short note on pick and place robot. **06**

b) Define “Industrial Robot”. List the reasons why and where industrial robots must be deployed in place of humans in the industrial workspace. State possible issues associated with the use of industrial robots in place of human operators. **08**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Robotics (BTN02411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The rotation of the wrist mechanism about the arm axis is called _____.
a) Wrist yaw b) Wrist pitch
c) wrist roll d) none of these

2) The smallest increment of movement in to which the robot can divide its work volume is known as _____.
a) spatial resolution b) reparability
c) accuracy d) none of these

3) Degree(s) of freedom of each joint of the robot to be equal to _____.
a) 1 b) 2
c) 3 d) None of these

4) The most widely used technique of control for industrial robots is _____ control.
a) PI b) PID
c) PD d) None of these

5) Smart sensor can do which of the following.
a) Compensate for random error
b) Automatic calibration of accuracy
c) Adjust for non-linearity's
d) all of the above

6) Which of the following are tactile sensors?
a) magnetic sensor b) strain gauge
c) encoder d) range sensor

7) The capability to move wrist wrist up and down is known as _____.
a) Rotational Travers b) Radial Travers
c) Vertical travers d) None of these

8) _____ Used to indicate presence or absence of an object.
a) Potentiometer b) Accelerometer
c) Micro switch d) None of these

9) When the position orientation of manipulator are derived from the joint angles and the different configurations, the scheme is known as _____.
a) forward kinematics b) inverse kinematics
c) transformation d) none of these

10) We, human-beings, have got _____.
a) Internal sensors only
b) External sensors only
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c) 1952 d) 1961

13) Work envelope generated by SCARA robot is _____.
a) sphere b) cylinder
c) rectangular box d) triangle

14) Arc welding is the examples of _____.
a) Point-to-point tasks
b) Continuous path tasks
c) Point-to-point and continuous path tasks
d) Continuous path task and point-to-point tasks

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Robotics (BTN02411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Two.

a) Explain Collaborative Robots. **04**

b) Define robot and explain basic components of robots with functions. **06**

c) Define the following **04**
1) Work cell
2) DOF
3) servomechanism

Q.3 **a)** Discuss the construction and working of DC motors. List its advantages, disadvantages and applications. **05**

b) What are the tactile sensors? Explain how they are operated? **04**

c) What are the different factors to be considered when selecting grippers as EOAT (End of Arm Tooling) attachment for industrial robots? **05**

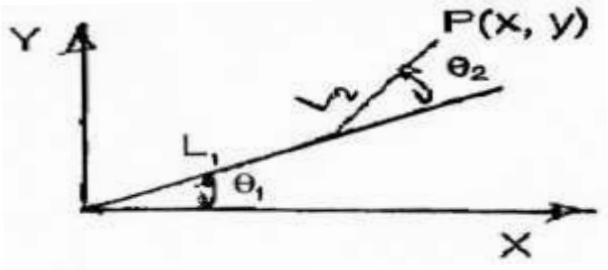
Q.4 **a)** Discuss in detail the different sensors used in robot work cells. **06**

b) Name five different types of robots end effectors. Explain any two. **08**

Section – II

Q.5 Solve any Two.

a) What do you understand by forward & inverse kinematics for 2 dof's? Explain in detail it is desired to determine the values of which the angels $\theta 1$ & $\theta 2$ must be set into order to achieve certain point the length of joint $L1 = 12$ in the length of $L2 = 10$ in. The coordinates $x = 15.7$ and $y = 12.6$ using the reverse transformation method determine the angles $\theta 1$ & $\theta 2$. **08**



b) Explain PI control with neat sketch. **06**

Q.6 **a)** Explain the applications of robot in following. **08**
i) Welding
ii) Spray painting/coating

b) Explain the applications of robot in following. **06**
i) Material handling
ii) Assembly

Q.7 **a)** Write a short note on pick and place robot. **06**

b) Define “Industrial Robot”. List the reasons why and where industrial robots must be deployed in place of humans in the industrial workspace. State possible issues associated with the use of industrial robots in place of human operators. **08**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Robotics (BTN02411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. 14

1) The most widely used technique of control for industrial robots is _____ control.
a) PI b) PID
c) PD d) None of these

2) Smart sensor can do which of the following.
a) Compensate for random error
b) Automatic calibration of accuracy
c) Adjust for non-linearity's
d) all of the above

3) Which of the following are tactile sensors?
a) magnetic sensor b) strain gauge
c) encoder d) range sensor

4) The capability to move wrist wrist up and down is known as _____.
a) Rotational Travers b) Radial Travers
c) Vertical travers d) None of these

5) _____ Used to indicate presence or absence of an object.
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6) When the position orientation of manipulator are derived from the joint angles and the different configurations, the scheme is known as _____.
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9) Unimate robot installed at ford motor company for casting _____.
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10) Work envelope generated by SCARA robot is _____.
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c) rectangular box d) triangle

11) Arc welding is the examples of _____.
a) Point-to-point tasks
b) Continuous path tasks
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d) Continuous path task and point-to-point tasks

12) The rotation of the wrist mechanism about the arm axis is called _____.
a) Wrist yaw b) Wrist pitch
c) wrist roll d) none of these

13) The smallest increment of movement in to which the robot can divide its work volume is known as _____.
a) spatial resolution b) reparability
c) accuracy d) none of these

14) Degree(s) of freedom of each joint of the robot to be equal to _____.
a) 1 b) 2
c) 3 d) None of these

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Robotics (BTN02411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Two.

a) Explain Collaborative Robots. **04**

b) Define robot and explain basic components of robots with functions. **06**

c) Define the following **04**
1) Work cell
2) DOF
3) servomechanism

Q.3 **a)** Discuss the construction and working of DC motors. List its advantages, disadvantages and applications. **05**

b) What are the tactile sensors? Explain how they are operated? **04**

c) What are the different factors to be considered when selecting grippers as EOAT (End of Arm Tooling) attachment for industrial robots? **05**

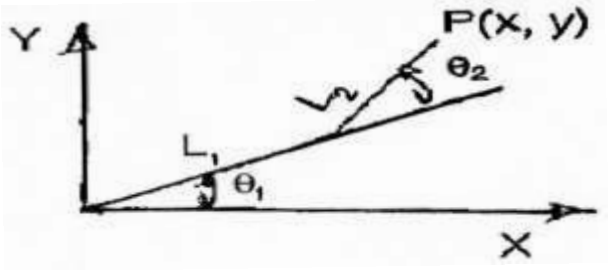
Q.4 **a)** Discuss in detail the different sensors used in robot work cells. **06**

b) Name five different types of robots end effectors. Explain any two. **08**

Section – II

Q.5 Solve any Two.

a) What do you understand by forward & inverse kinematics for 2 dof's? Explain in detail it is desired to determine the values of which the angels $\theta 1$ & $\theta 2$ must be set into order to achieve certain point the length of joint $L1 = 12$ in the length of $L2 = 10$ in. The coordinates $x = 15.7$ and $y = 12.6$ using the reverse transformation method determine the angles $\theta 1$ & $\theta 2$. **08**



b) Explain PI control with neat sketch. **06**

Q.6 **a)** Explain the applications of robot in following. **08**
i) Welding
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ii) Assembly

Q.7 **a)** Write a short note on pick and place robot. **06**

b) Define “Industrial Robot”. List the reasons why and where industrial robots must be deployed in place of humans in the industrial workspace. State possible issues associated with the use of industrial robots in place of human operators. **08**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Robotics (BTN02411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Work envelope generated by SCARA robot is _____.
a) sphere b) cylinder
c) rectangular box d) triangle

2) Arc welding is the examples of _____.
a) Point-to-point tasks
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c) Point-to-point and continuous path tasks
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5) Degree(s) of freedom of each joint of the robot to be equal to _____.
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6) The most widely used technique of control for industrial robots is _____ control.
a) PI b) PID
c) PD d) None of these

7) Smart sensor can do which of the following.
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13) The term AGV stands for _____.
a) Automatic Ground Vehicle b) Automated Ground Vehicle
c) Automated Guided Vehicle d) Automatic Gross Vehicle

14) Unimate robot installed at ford motor company for casting _____.
a) 1978 b) 1980
c) 1952 d) 1961

Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Industrial Robotics (BTN02411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Two.

a) Explain Collaborative Robots. **04**

b) Define robot and explain basic components of robots with functions. **06**

c) Define the following **04**
1) Work cell
2) DOF
3) servomechanism

Q.3 **a)** Discuss the construction and working of DC motors. List its advantages, disadvantages and applications. **05**

b) What are the tactile sensors? Explain how they are operated? **04**

c) What are the different factors to be considered when selecting grippers as EOAT (End of Arm Tooling) attachment for industrial robots? **05**

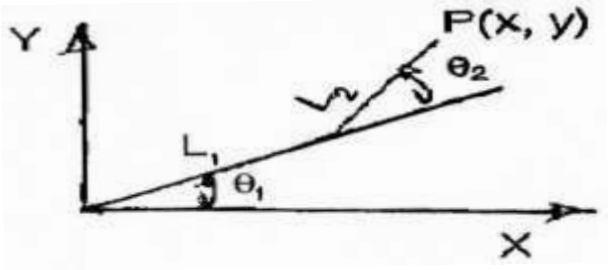
Q.4 **a)** Discuss in detail the different sensors used in robot work cells. **06**

b) Name five different types of robots end effectors. Explain any two. **08**

Section – II

Q.5 Solve any Two.

a) What do you understand by forward & inverse kinematics for 2 dof's? Explain in detail it is desired to determine the values of which the angels $\theta 1$ & $\theta 2$ must be set into order to achieve certain point the length of joint $L1 = 12$ in the length of $L2 = 10$ in. The coordinates $x = 15.7$ and $y = 12.6$ using the reverse transformation method determine the angles $\theta 1$ & $\theta 2$. **08**



b) Explain PI control with neat sketch. **06**

Q.6 **a)** Explain the applications of robot in following. **08**
i) Welding
ii) Spray painting/coating

b) Explain the applications of robot in following. **06**
i) Material handling
ii) Assembly

Q.7 **a)** Write a short note on pick and place robot. **06**

b) Define “Industrial Robot”. List the reasons why and where industrial robots must be deployed in place of humans in the industrial workspace. State possible issues associated with the use of industrial robots in place of human operators. **08**

SLR-GF-747

Seat No.		Set	P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to 3D Printing (BTN02412)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data required.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Choose the correct sequence to generate prototype.
a) 3D CAD data - CAD solid model - STL file - RP prototype
b) CAD solid model - 3D CAD data - RP prototype - STL file
c) STL file - 3D CAD data - CAD solid model - RP prototype
d) 3D CAD data - STL file - CAD solid model - RP prototype

2) From following, the alternative name for Rapid Prototyping is _____
a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) All of the above

3) Following is not the type of Geometrical Modeling?
a) Solid Modeling b) Drafting
c) Surface Modeling d) Wireframe Modeling

4) Process of converting STL file model in to layers is called _____ in RP.
a) Chopping b) Slicing
c) Cutting d) trimming

5) Full form of STL is _____.
a) Straight-lithography b) Streto-lithography
c) Stereo-lithography d) Straight-lipsography

6) In the _____ process, one starts with a single block of solid material larger than the final size of the desired object and material is removed until the desired shape is reached.
a) Subtractive process b) Additive process
c) Formative process d) All of above

7) Which of the following is not Liquid-based RP system?
a) Stereolithography Apparatus (SLA)
b) Laminated Object Manufacturing (LOM)
c) Solid Ground Curing (SGC)
d) Solid Object Ultraviolet-Laser Printer (SOUP)

8) From following, the alternative name for RP is _____
a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) All of the above

9) Which of the following is not subtractive process?
a) Milling b) Stereo-lithography
c) Sawing d) EDM

10) Which of the following aspects is mainly concerned with molding the final shape around the basic skeleton?
a) Functional aspect b) Operational aspect
c) Aesthetic aspect d) None of these

11) The STL files translate the part geometry from a CAD system to _____
a) CNC machine b) CMM machine
c) RP machine d) CAPP machine

12) Which of the following addresses the need to design a product for safety?
a) Soft-Hard Review b) Effect Analysis
c) Experimental design d) None of these

13) The process of obtaining a geometric CAD model from 3points acquired by scanning/digitizing existing parts/products is best known as:
a) Forward Engineering b) Backward Engineering
c) Reverse Engineering d) Product Engineering

14) In the entire reverse engineering process for product design, which one is the first step?
a) CAD model updating b) CAD modelling
c) Data pre-processing d) Data capturing

SLR-GF-747

Seat No.	

Set P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
(Mechanical Engineering)
Introduction to 3D Printing (BTN02412)

Day & Date: Tuesday, 02-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data required.
5) Use of scientific calculator is allowed.

SECTION I

Q.2 Explain the need of additive manufacturing with respect to industry applications. **10**

Q.3 Describe the methodologies of Additive manufacturing. **09**

Q.4 Discuss Stereolithography Additive manufacturing machine with specification and applications. **09**

Q.5 What is meant by Computer Aided Design (CAD)? Explain importance of CAD in industries with applications? **09**

SECTION II

Q.6 Discuss the importance of parametric modeling in CAD software and how it can benefit the additive manufacturing process. **10**

Q.7 Illustrate feature-based modeling in CAD for 3D printing? **09**

Q.8 Enlist different polymer materials used in 3D printing and explain any 02 with applications. **09**

Q.9 Describe different applications of 3D printing in the field of Automobile, Medical and Aerospace sector. **09**

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to 3D Printing (BTN02412)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data required.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) From following, the alternative name for RP is _____
a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) All of the above

2) Which of the following is not subtractive process?
a) Milling b) Stereo-lithography
c) Sawing d) EDM

3) Which of the following aspects is mainly concerned with molding the final shape around the basic skeleton?
a) Functional aspect b) Operational aspect
c) Aesthetic aspect d) None of these

4) The STL files translate the part geometry from a CAD system to _____
a) CNC machine b) CMM machine
c) RP machine d) CAPP machine

5) Which of the following addresses the need to design a product for safety?
a) Soft-Hard Review b) Effect Analysis
c) Experimental design d) None of these

6) The process of obtaining a geometric CAD model from 3points acquired by scanning/digitizing existing parts/products is best known as:
a) Forward Engineering b) Backward Engineering
c) Reverse Engineering d) Product Engineering

7) In the entire reverse engineering process for product design, which one is the first step?
a) CAD model updating b) CAD modelling
c) Data pre-processing d) Data capturing

8) Choose the correct sequence to generate prototype.
a) 3D CAD data - CAD solid model - STL file - RP prototype
b) CAD solid model - 3D CAD data - RP prototype - STL file
c) STL file - 3D CAD data - CAD solid model - RP prototype
d) 3D CAD data - STL file - CAD solid model - RP prototype

9) From following, the alternative name for Rapid Prototyping is _____

a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) All of the above

10) Following is not the type of Geometrical Modeling?

a) Solid Modeling b) Drafting
c) Surface Modeling d) Wireframe Modeling

11) Process of converting STL file model in to layers is called _____ in RP.

a) Chopping b) Slicing
c) Cutting d) trimming

12) Full form of STL is_____ .

a) Straight-lithography b) Streto-lithography
c) Stereo-lithography d) Straight-lipsography

13) In the _____ process, one starts with a single block of solid material larger than the final size of the desired object and material is removed until the desired shape is reached.

a) Subtractive process b) Additive process
c) Formative process d) All of above

14) Which of the following is not Liquid-based RP system?

a) Stereolithography Apparatus (SLA)
b) Laminated Object Manufacturing (LOM)
c) Solid Ground Curing (SGC)
d) Solid Object Ultraviolet-Laser Printer (SOUP)

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
(Mechanical Engineering)
Introduction to 3D Printing (BTN02412)

Day & Date: Tuesday, 02-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data required.
5) Use of scientific calculator is allowed.

SECTION I

Q.2 Explain the need of additive manufacturing with respect to industry applications. **10**

Q.3 Describe the methodologies of Additive manufacturing. **09**

Q.4 Discuss Stereolithography Additive manufacturing machine with specification and applications. **09**

Q.5 What is meant by Computer Aided Design (CAD)? Explain importance of CAD in industries with applications? **09**

SECTION II

Q.6 Discuss the importance of parametric modeling in CAD software and how it can benefit the additive manufacturing process. **10**

Q.7 Illustrate feature-based modeling in CAD for 3D printing? **09**

Q.8 Enlist different polymer materials used in 3D printing and explain any 02 with applications. **09**

Q.9 Describe different applications of 3D printing in the field of Automobile, Medical and Aerospace sector. **09**

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to 3D Printing (BTN02412)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data required.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The STL files translate the part geometry from a CAD system to _____
a) CNC machine b) CMM machine
c) RP machine d) CAPP machine

2) Which of the following addresses the need to design a product for safety?
a) Soft-Hard Review b) Effect Analysis
c) Experimental design d) None of these

3) The process of obtaining a geometric CAD model from 3points acquired by scanning/digitizing existing parts/products is best known as:
a) Forward Engineering b) Backward Engineering
c) Reverse Engineering d) Product Engineering

4) In the entire reverse engineering process for product design, which one is the first step?
a) CAD model updating b) CAD modelling
c) Data pre-processing d) Data capturing

5) Choose the correct sequence to generate prototype.
a) 3D CAD data - CAD solid model - STL file - RP prototype
b) CAD solid model - 3D CAD data - RP prototype - STL file
c) STL file - 3D CAD data - CAD solid model - RP prototype
d) 3D CAD data - STL file - CAD solid model - RP prototype

6) From following, the alternative name for Rapid Prototyping is _____
a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) All of the above

7) Following is not the type of Geometrical Modeling?
a) Solid Modeling b) Drafting
c) Surface Modeling d) Wireframe Modeling

8) Process of converting STL file model in to layers is called _____ in RP.
a) Chopping b) Slicing
c) Cutting d) trimming

9) Full form of STL is_____ .
a) Straight-lithography b) Streto-lithography
c) Stereo-lithography d) Straight-lipsography

10) In the _____ process, one starts with a single block of solid material larger than the final size of the desired object and material is removed until the desired shape is reached.
a) Subtractive process b) Additive process
c) Formative process d) All of above

11) Which of the following is not Liquid-based RP system?
a) Stereolithography Apparatus (SLA)
b) Laminated Object Manufacturing (LOM)
c) Solid Ground Curing (SGC)
d) Solid Object Ultraviolet-Laser Printer (SOUP)

12) From following, the alternative name for RP is _____
a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) All of the above

13) Which of the following is not subtractive process?
a) Milling b) Stereo-lithography
c) Sawing d) EDM

14) Which of the following aspects is mainly concerned with molding the final shape around the basic skeleton?
a) Functional aspect b) Operational aspect
c) Aesthetic aspect d) None of these

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
(Mechanical Engineering)
Introduction to 3D Printing (BTN02412)

Day & Date: Tuesday, 02-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data required.
5) Use of scientific calculator is allowed.

SECTION I

Q.2 Explain the need of additive manufacturing with respect to industry applications. **10**

Q.3 Describe the methodologies of Additive manufacturing. **09**

Q.4 Discuss Stereolithography Additive manufacturing machine with specification and applications. **09**

Q.5 What is meant by Computer Aided Design (CAD)? Explain importance of CAD in industries with applications? **09**

SECTION II

Q.6 Discuss the importance of parametric modeling in CAD software and how it can benefit the additive manufacturing process. **10**

Q.7 Illustrate feature-based modeling in CAD for 3D printing? **09**

Q.8 Enlist different polymer materials used in 3D printing and explain any 02 with applications. **09**

Q.9 Describe different applications of 3D printing in the field of Automobile, Medical and Aerospace sector. **09**

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Seat No.	

Set S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to 3D Printing (BTN02412)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data required.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In the _____ process, one starts with a single block of solid material larger than the final size of the desired object and material is removed until the desired shape is reached.
a) Subtractive process b) Additive process
c) Formative process d) All of above

2) Which of the following is not Liquid-based RP system?
a) Stereolithography Apparatus (SLA)
b) Laminated Object Manufacturing (LOM)
c) Solid Ground Curing (SGC)
d) Solid Object Ultraviolet-Laser Printer (SOUP)

3) From following, the alternative name for RP is _____
a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) All of the above

4) Which of the following is not subtractive process?
a) Milling b) Stereo-lithography
c) Sawing d) EDM

5) Which of the following aspects is mainly concerned with molding the final shape around the basic skeleton?
a) Functional aspect b) Operational aspect
c) Aesthetic aspect d) None of these

6) The STL files translate the part geometry from a CAD system to _____
a) CNC machine b) CMM machine
c) RP machine d) CAPP machine

7) Which of the following addresses the need to design a product for safety?
a) Soft-Hard Review b) Effect Analysis
c) Experimental design d) None of these

8) The process of obtaining a geometric CAD model from 3points acquired by scanning/digitizing existing parts/products is best known as:
a) Forward Engineering b) Backward Engineering
c) Reverse Engineering d) Product Engineering

9) In the entire reverse engineering process for product design, which one is the first step?
a) CAD model updating b) CAD modelling
c) Data pre-processing d) Data capturing

10) Choose the correct sequence to generate prototype.
a) 3D CAD data - CAD solid model - STL file - RP prototype
b) CAD solid model - 3D CAD data - RP prototype - STL file
c) STL file - 3D CAD data - CAD solid model - RP prototype
d) 3D CAD data - STL file - CAD solid model - RP prototype

11) From following, the alternative name for Rapid Prototyping is _____
a) Additive Manufacturing b) Layer Manufacturing
c) Direct CAD Manufacturing d) All of the above

12) Following is not the type of Geometrical Modeling?
a) Solid Modeling b) Drafting
c) Surface Modeling d) Wireframe Modeling

13) Process of converting STL file model in to layers is called _____ in RP.
a) Chopping b) Slicing
c) Cutting d) trimming

14) Full form of STL is_____ .
a) Straight-lithography b) Streto-lithography
c) Stereo-lithography d) Straight-lipsography

SLR-GF-747

Seat No.	

Set S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
(Mechanical Engineering)
Introduction to 3D Printing (BTN02412)

Day & Date: Tuesday, 02-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining. (Q. No. 7, 8 & 9)
3) Figures to the right indicate full marks.
4) Assume suitable data required.
5) Use of scientific calculator is allowed.

SECTION I

Q.2 Explain the need of additive manufacturing with respect to industry applications. **10**

Q.3 Describe the methodologies of Additive manufacturing. **09**

Q.4 Discuss Stereolithography Additive manufacturing machine with specification and applications. **09**

Q.5 What is meant by Computer Aided Design (CAD)? Explain importance of CAD in industries with applications? **09**

SECTION II

Q.6 Discuss the importance of parametric modeling in CAD software and how it can benefit the additive manufacturing process. **10**

Q.7 Illustrate feature-based modeling in CAD for 3D printing? **09**

Q.8 Enlist different polymer materials used in 3D printing and explain any 02 with applications. **09**

Q.9 Describe different applications of 3D printing in the field of Automobile, Medical and Aerospace sector. **09**

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Renewable Energy Sources (BTN02413)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following states is known oil reserves?
a) Jharkhand b) Odisha
c) Madhya Pradesh d) Assam

2) Industrial sector in India consumes _____ total commercial energy produced.
a) more than half of the b) less than 10% of the
c) less than half of the d) None of the Above

3) Solar Energy can be directly converted into thermal energy by using _____.
a) Photovoltaic cell b) Rechargeable cell
c) Solar Collector d) Dry Cell

4) Solar collectors are coated with Black colour for the purpose of _____.
a) For minimum absorbtion of energy
b) For maximum absorbtion of energy
c) For maximum reflection of energy
d) None of above

5) Wind turbine converts _____ of wind into Mechanical energy.
a) Potential scale b) Kinetic energy
c) Chemical energy d) Thermal energy

6) Which of the following is not a renewable source of energy?
a) Wind b) Tidal
c) Solar d) Coal

7) Biomass is used in the production of
a) fibres b) chemicals
c) transportation fuels d) biochemicals

8) Solar Power plant use _____ type of Collectors.
a) Concentrating b) Flat plate
c) Evacuated tube d) None of the above

9) The aerobic digestion of sewage is utilized in the production of
a) metal articles
b) Biofuels
c) Biomass
d) synthetic fuels

10) Why is feathering of wind turbine blades required?
a) To increase drag
b) To reduce drag
c) To prevent the blades from being destroyed by strong winds
d) To extract power from strong winds originating from storms

11) What is a solar collector?
a) A system to collect heat by absorbing sunlight
b) A system to collect rainwater using sunlight
c) A system to collect electricity by using sunlight
d) A device to reflect sunlight back

12) How is the temperature maintained in a bubbling fluidized bed?
a) Biomass
b) Gasification agent
c) A constant ratio of biomass and gasification agent
d) Manipulating the ration of biomass and gasification agent

13) What is the major problem with wind energy?
a) Generates energy from wind
b) It is a renewable source of energy
c) Requires large area of land
d) Compact and does not require large area of land

14) Which of the following technologies are used to convert biomass into useful energy forms?
a) Bio-chemical process
b) Galvanization
c) Doping
d) Photoelectric effect

SLR-GF-748

Seat No.		Set	P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Renewable Energy Sources (BTN02413)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both Sections.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of scientific calculator is allowed.

Section – I

Q.1 Solve the following questions.

a) What are the advantages and disadvantages of conventional & non-conventional energy source? **04**

b) What is the status of non-conventional energy sources in India, and what are their future prospect? **05**

c) What are limitations of solar energy? **05**

Q.2 Solve the following questions.

a) What are the main advantages of flat plate solar collector? **04**

b) What is the present status of nuclear energy and what are their future prospects? **05**

c) What are major advantages and disadvantages of solar PV system? **05**

Q.3 Write a short note on

a) Importance of non-conventional energy sources **04**

b) Solar dryers **05**

c) Indirect forms of solar energy **05**

Section – II

Q.4 Solve the following questions.

a) Explain the major application of wind power. **04**

b) Explain the mechanism of production of local winds. **05**

c) What are the most favorable sites for installing wind turbines? **05**

Q.5 Solve the following questions.

a) What is the main advantage and disadvantage of biomass energy? **05**

b) What is the effect of pumping on the output of tidal plant? **04**

c) Explain the technology of Power generation through OTEC systems **05**

Q.6 Write a short note on:

a) Main advantages and disadvantages of OTEC system **04**

b) Type of bio fuels **05**

c) Advantages of tidal power plant **05**

Seat No.		Set	Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Renewable Energy Sources (BTN02413)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Solar Power plant use _____ type of Collectors.
a) Concentrating b) Flat plate
c) Evacuated tube d) None of the above

2) The aerobic digestion of sewage is utilized in the production of
a) metal articles b) Biofuels
c) Biomass d) synthetic fuels

3) Why is feathering of wind turbine blades required?
a) To increase drag
b) To reduce drag
c) To prevent the blades from being destroyed by strong winds
d) To extract power from strong winds originating from storms

4) What is a solar collector?
a) A system to collect heat by absorbing sunlight
b) A system to collect rainwater using sunlight
c) A system to collect electricity by using sunlight
d) A device to reflect sunlight back

5) How is the temperature maintained in a bubbling fluidized bed?
a) Biomass
b) Gasification agent
c) A constant ratio of biomass and gasification agent
d) Manipulating the ration of biomass and gasification agent

6) What is the major problem with wind energy?
a) Generates energy from wind
b) It is a renewable source of energy
c) Requires large area of land
d) Compact and does not require large area of land

7) Which of the following technologies are used to convert biomass into useful energy forms?
a) Bio-chemical process b) Galvanization
c) Doping d) Photoelectric effect

8) Which of the following states is known oil reserves?
a) Jharkhand b) Odisha
c) Madhya Pradesh d) Assam

9) Industrial sector in India consumes _____ total commercial energy produced.
a) more than half of the b) less than 10% of the
c) less than half of the d) None of the Above

10) Solar Energy can be directly converted into thermal energy by using _____.
a) Photovoltaic cell b) Rechargeable cell
c) Solar Collector d) Dry Cell

11) Solar collectors are coated with Black colour for the purpose of _____.
a) For minimum absorbtion of energy
b) For maximum absorbtion of energy
c) For maximum reflection of energy
d) None of above

12) Wind turbine converts _____ of wind into Mechanical energy.
a) Potential scale b) Kinetic energy
c) Chemical energy d) Thermal energy

13) Which of the following is not a renewable source of energy?
a) Wind b) Tidal
c) Solar d) Coal

14) Biomass is used in the production of
a) fibres b) chemicals
c) transportation fuels d) biochemicals

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Seat No.	

Set Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Renewable Energy Sources (BTN02413)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both Sections.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of scientific calculator is allowed.

Section – I

Q.1 Solve the following questions.

a)	What are the advantages and disadvantages of conventional & non-conventional energy source?	**04**
b)	What is the status of non-conventional energy sources in India, and what are their future prospect?	**05**
c)	What are limitations of solar energy?	**05**

Q.2 Solve the following questions.

a)	What are the main advantages of flat plate solar collector?	**04**
b)	What is the present status of nuclear energy and what are their future prospects?	**05**
c)	What are major advantages and disadvantages of solar PV system?	**05**

Q.3 Write a short note on

a)	Importance of non-conventional energy sources	**04**
b)	Solar dryers	**05**
c)	Indirect forms of solar energy	**05**

Section – II

Q.4 Solve the following questions.

a)	Explain the major application of wind power.	**04**
b)	Explain the mechanism of production of local winds.	**05**
c)	What are the most favorable sites for installing wind turbines?	**05**

Q.5 Solve the following questions.

a)	What is the main advantage and disadvantage of biomass energy?	**05**
b)	What is the effect of pumping on the output of tidal plant?	**04**
c)	Explain the technology of Power generation through OTEC systems	**05**

Q.6 Write a short note on:

a)	Main advantages and disadvantages of OTEC system	**04**
b)	Type of bio fuels	**05**
c)	Advantages of tidal power plant	**05**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Renewable Energy Sources (BTN02413)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What is a solar collector?
a) A system to collect heat by absorbing sunlight
b) A system to collect rainwater using sunlight
c) A system to collect electricity by using sunlight
d) A device to reflect sunlight back

2) How is the temperature maintained in a bubbling fluidized bed?
a) Biomass
b) Gasification agent
c) A constant ratio of biomass and gasification agent
d) Manipulating the ration of biomass and gasification agent

3) What is the major problem with wind energy?
a) Generates energy from wind
b) It is a renewable source of energy
c) Requires large area of land
d) Compact and does not require large area of land

4) Which of the following technologies are used to convert biomass into useful energy forms?
a) Bio-chemical process b) Galvanization
c) Doping d) Photoelectric effect

5) Which of the following states is known oil reserves?
a) Jharkhand b) Odisha
c) Madhya Pradesh d) Assam

6) Industrial sector in India consumes _____ total commercial energy produced.
a) more than half of the b) less than 10% of the
c) less than half of the d) None of the Above

7) Solar Energy can be directly converted into thermal energy by using _____.
a) Photovoltaic cell b) Rechargeable cell
c) Solar Collector d) Dry Cell

8) Solar collectors are coated with Black colour for the purpose of _____.
a) For minimum absorbtion of energy
b) For maximum absorbtion of energy
c) For maximum reflection of energy
d) None of above

9) Wind turbine converts _____ of wind into Mechanical energy.
a) Potential scale
b) Kinetic energy
c) Chemical energy
d) Thermal energy

10) Which of the following is not a renewable source of energy?
a) Wind
b) Tidal
c) Solar
d) Coal

11) Biomass is used in the production of
a) fibres
b) chemicals
c) transportation fuels
d) biochemicals

12) Solar Power plant use _____ type of Collectors.
a) Concentrating
b) Flat plate
c) Evacuated tube
d) None of the above

13) The aerobic digestion of sewage is utilized in the production of
a) metal articles
b) Biofuels
c) Biomass
d) synthetic fuels

14) Why is feathering of wind turbine blades required?
a) To increase drag
b) To reduce drag
c) To prevent the blades from being destroyed by strong winds
d) To extract power from strong winds originating from storms

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Seat No.	

Set R

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Renewable Energy Sources (BTN02413)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both Sections.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of scientific calculator is allowed.

Section – I

Q.1 Solve the following questions.

a) What are the advantages and disadvantages of conventional & non-conventional energy source? **04**

b) What is the status of non-conventional energy sources in India, and what are their future prospect? **05**

c) What are limitations of solar energy? **05**

Q.2 Solve the following questions.

a) What are the main advantages of flat plate solar collector? **04**

b) What is the present status of nuclear energy and what are their future prospects? **05**

c) What are major advantages and disadvantages of solar PV system? **05**

Q.3 Write a short note on

a) Importance of non-conventional energy sources **04**

b) Solar dryers **05**

c) Indirect forms of solar energy **05**

Section – II

Q.4 Solve the following questions.

a) Explain the major application of wind power. **04**

b) Explain the mechanism of production of local winds. **05**

c) What are the most favorable sites for installing wind turbines? **05**

Q.5 Solve the following questions.

a) What is the main advantage and disadvantage of biomass energy? **05**

b) What is the effect of pumping on the output of tidal plant? **04**

c) Explain the technology of Power generation through OTEC systems **05**

Q.6 Write a short note on:

a) Main advantages and disadvantages of OTEC system **04**

b) Type of bio fuels **05**

c) Advantages of tidal power plant **05**

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Renewable Energy Sources (BTN02413)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following is not a renewable source of energy?
a) Wind b) Tidal
c) Solar d) Coal

2) Biomass is used in the production of
a) fibres b) chemicals
c) transportation fuels d) biochemicals

3) Solar Power plant use _____ type of Collectors.
a) Concentrating b) Flat plate
c) Evacuated tube d) None of the above

4) The aerobic digestion of sewage is utilized in the production of
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c) Biomass d) synthetic fuels

5) Why is feathering of wind turbine blades required?
a) To increase drag
b) To reduce drag
c) To prevent the blades from being destroyed by strong winds
d) To extract power from strong winds originating from storms

6) What is a solar collector?
a) A system to collect heat by absorbing sunlight
b) A system to collect rainwater using sunlight
c) A system to collect electricity by using sunlight
d) A device to reflect sunlight back

7) How is the temperature maintained in a bubbling fluidized bed?
a) Biomass
b) Gasification agent
c) A constant ratio of biomass and gasification agent
d) Manipulating the ration of biomass and gasification agent

8) What is the major problem with wind energy?
a) Generates energy from wind
b) It is a renewable source of energy
c) Requires large area of land
d) Compact and does not require large area of land

9) Which of the following technologies are used to convert biomass into useful energy forms?
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b) Galvanization
c) Doping
d) Photoelectric effect

10) Which of the following states is known oil reserves?
a) Jharkhand
b) Odisha
c) Madhya Pradesh
d) Assam

11) Industrial sector in India consumes _____ total commercial energy produced.
a) more than half of the
b) less than 10% of the
c) less than half of the
d) None of the Above

12) Solar Energy can be directly converted into thermal energy by using _____.
a) Photovoltaic cell
b) Rechargeable cell
c) Solar Collector
d) Dry Cell

13) Solar collectors are coated with Black colour for the purpose of _____.
a) For minimum absorbtion of energy
b) For maximum absorbtion of energy
c) For maximum reflection of energy
d) None of above

14) Wind turbine converts _____ of wind into Mechanical energy.
a) Potential scale
b) Kinetic energy
c) Chemical energy
d) Thermal energy

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Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Renewable Energy Sources (BTN02413)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both Sections.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of scientific calculator is allowed.

Section – I

Q.1 Solve the following questions.

a) What are the advantages and disadvantages of conventional & non-conventional energy source? **04**

b) What is the status of non-conventional energy sources in India, and what are their future prospect? **05**

c) What are limitations of solar energy? **05**

Q.2 Solve the following questions.

a) What are the main advantages of flat plate solar collector? **04**

b) What is the present status of nuclear energy and what are their future prospects? **05**

c) What are major advantages and disadvantages of solar PV system? **05**

Q.3 Write a short note on

a) Importance of non-conventional energy sources **04**

b) Solar dryers **05**

c) Indirect forms of solar energy **05**

Section – II

Q.4 Solve the following questions.

a) Explain the major application of wind power. **04**

b) Explain the mechanism of production of local winds. **05**

c) What are the most favorable sites for installing wind turbines? **05**

Q.5 Solve the following questions.

a) What is the main advantage and disadvantage of biomass energy? **05**

b) What is the effect of pumping on the output of tidal plant? **04**

c) Explain the technology of Power generation through OTEC systems **05**

Q.6 Write a short note on:

a) Main advantages and disadvantages of OTEC system **04**

b) Type of bio fuels **05**

c) Advantages of tidal power plant **05**

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Seat No.	

Set P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Automobile Engineering (BTN02414)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The cooling system of automobile engine is most simple when the engine is _____.
a) Front b) Centre
c) rear on the left d) rear on the right

2) Which of the following statements regarding four-wheel drive is correct?
a) All the four wheels can be steered
b) All the four wheels are powered
c) Vehicle has four wheels
d) None of the above

3) The front wheel drive as compared to rear wheel drive.
a) requires longer' propeller shaft
b) gives better riding performance
c) has a greater skidding tendency
d) provides increased tractive effort

4) A clutch is usually designed to transmit maximum torque which is:
a) 90 percent of the maximum engine torque
b) equal to the maximum engine torque.
c) 150 percent of the maximum engine torque
d) none of the above

5) By using synchronizing device, the two involved adjacent gears have their speeds _____.
a) increased b) reduced
c) equalized d) unequalized

6) The smallest gears inside the differential casing are _____.
a) pinion gears b) Sun gears
c) side gears d) ring gears

7) The brakes employed in cars are usually operated _____.
a) mechanically b) Hydraulically
c) by means of engine vacuum d) by compressed air

8) The hand brake usually operates on _____.
a) left wheels b) front wheel
c) right wheel d) rear wheels

9) Most popular manual steering gear for cars today is _____.
a) worm and nut type b) worm and wheel type
c) cam and roller type d) rack and pinion type

10) In the recirculating ball type steering gear, the balls travel between the ball nut and the _____.
a) gear rack b) worm shaft
c) steering wheel shaft d) worm wheel

11) The included angle is the sum of the _____.
a) camber and caster b) caster and S.A.I
c) camber and S.A.I d) camber and toe-in

12) The most effective section against the bending is _____.
a) Rectangular bar b) round bar
c) round hollow tube d) square hollow section

13) _____ is the term used to describe any arrangement by which the wheels are connected to the carriage unit in a manner such that the rise and fall of one when has no effect on the others.
a) Independent suspension b) Leaf spring suspension
c) Conventional suspension d) none of the above

14) The components suspension system is:
a) Springs
b) Dampers or shock absorbers
c) Stabilizer and a linkage system
d) All of these

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Seat No.	

Set P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Automobile Engineering (BTN02414)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any 2 question in both Section.
2) Figures to the right indicate full marks.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Answer the following question.

a) Explain all wheel drive with neat sketch. State its advantages and disadvantages. **08**

b) Explain with neat sketch multiplate clutch. **06**

Q.3 Answer the following question.

a) Explain with neat sketch the working of sliding contact gear box. **08**

b) Explain requirement of transmission system and explain in brief double declutching in case of constant mesh gear box. **06**

Q.4 Answer the following question.

a) Explain disc brake with neat sketch. What are the advantages and disadvantages of disc brake. **08**

b) What are the functions of propeller shaft, slip joint and universal joint and explain these with neat sketch. **06**

Section – II

Q.5 Answer the following question.

a) Explain steering system layout with neat sketch. Explain function of each of the component in the layout. **08**

b) Define the following with neat sketch: **06**
1) Camber angle
2) King-pin inclination
3) Included angle
4) Caster angle

Q.6 Answer the following question.

a) What is suspension? Differentiate with neat sketches dependent and independent suspension systems. **08**

b) Explain with neat sketch shock absorber. **06**

Q.7 Answer the following question.

a) Explain with neat sketch starting system in automobile. **06**

b) What is spark plug? Explain with neat sketch. **04**

c) Explain the construction of battery. **04**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Automobile Engineering (BTN02414)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The hand brake usually operates on _____.
a) left wheels b) front wheel
c) right wheel d) rear wheels

2) Most popular manual steering gear for cars today is _____.
a) worm and nut type b) worm and wheel type
c) cam and roller type d) rack and pinion type

3) In the recirculating ball type steering gear, the balls travel between the ball nut and the _____.
a) gear rack b) worm shaft
c) steering wheel shaft d) worm wheel

4) The included angle is the sum of the _____.
a) camber and caster b) caster and S.A.I
c) camber and S.A.I d) camber and toe-in

5) The most effective section against the bending is _____.
a) Rectangular bar b) round bar
c) round hollow tube d) square hollow section

6) _____ is the term used to describe any arrangement by which the wheels are connected to the carriage unit in a manner such that the rise and fall of one when has no effect on the others.
a) Independent suspension b) Leaf spring suspension
c) Conventional suspension d) none of the above

7) The components suspension system is:
a) Springs
b) Dampers or shock absorbers
c) Stabilizer and a linkage system
d) All of these

8) The cooling system of automobile engine is most simple when the engine is _____.

a) Front
b) Centre
c) rear on the left
d) rear on the right

9) Which of the following statements regarding four-wheel drive is correct?

a) All the four wheels can be steered
b) All the four wheels are powered
c) Vehicle has four wheels
d) None of the above

10) The front wheel drive as compared to rear wheel drive.

a) requires longer' propeller shaft
b) gives better riding performance
c) has a greater skidding tendency
d) provides increased tractive effort

11) A clutch is usually designed to transmit maximum torque which is:

a) 90 percent of the maximum engine torque
b) equal to the maximum engine torque.
c) 150 percent of the maximum engine torque
d) none of the above

12) By using synchronizing device, the two involved adjacent gears have their speeds _____.

a) increased
b) reduced
c) equalized
d) unequalized

13) The smallest gears inside the differential casing are _____.

a) pinion gears
b) Sun gears
c) side gears
d) ring gears

14) The brakes employed in cars are usually operated _____.

a) mechanically
b) Hydraulically
c) by means of engine vacuum
d) by compressed air

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Seat No.	

Set Q

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Automobile Engineering (BTN02414)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any 2 question in both Section.
2) Figures to the right indicate full marks.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Answer the following question.

a) Explain all wheel drive with neat sketch. State its advantages and disadvantages. **08**

b) Explain with neat sketch multiplate clutch. **06**

Q.3 Answer the following question.

a) Explain with neat sketch the working of sliding contact gear box. **08**

b) Explain requirement of transmission system and explain in brief double declutching in case of constant mesh gear box. **06**

Q.4 Answer the following question.

a) Explain disc brake with neat sketch. What are the advantages and disadvantages of disc brake. **08**

b) What are the functions of propeller shaft, slip joint and universal joint and explain these with neat sketch. **06**

Section – II

Q.5 Answer the following question.

a) Explain steering system layout with neat sketch. Explain function of each of the component in the layout. **08**

b) Define the following with neat sketch: **06**
1) Camber angle
2) King-pin inclination
3) Included angle
4) Caster angle

Q.6 Answer the following question.

a) What is suspension? Differentiate with neat sketches dependent and independent suspension systems. **08**

b) Explain with neat sketch shock absorber. **06**

Q.7 Answer the following question.

a) Explain with neat sketch starting system in automobile. **06**

b) What is spark plug? Explain with neat sketch. **04**

c) Explain the construction of battery. **04**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Automobile Engineering (BTN02414)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The included angle is the sum of the _____.
a) camber and caster b) caster and S.A.I
c) camber and S.A.I d) camber and toe-in

2) The most effective section against the bending is _____.
a) Rectangular bar b) round bar
c) round hollow tube d) square hollow section

3) _____ is the term used to describe any arrangement by which the wheels are connected to the carriage unit in a manner such that the rise and fall of one when has no effect on the others.
a) Independent suspension b) Leaf spring suspension
c) Conventional suspension d) none of the above

4) The components suspension system is:
a) Springs
b) Dampers or shock absorbers
c) Stabilizer and a linkage system
d) All of these

5) The cooling system of automobile engine is most simple when the engine is _____.
a) Front b) Centre
c) rear on the left d) rear on the right

6) Which of the following statements regarding four-wheel drive is correct?
a) All the four wheels can be steered
b) All the four wheels are powered
c) Vehicle has four wheels
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7) The front wheel drive as compared to rear wheel drive.
a) requires longer' propeller shaft
b) gives better riding performance
c) has a greater skidding tendency
d) provides increased tractive effort

8) A clutch is usually designed to transmit maximum torque which is:
a) 90 percent of the maximum engine torque
b) equal to the maximum engine torque.
c) 150 percent of the maximum engine torque
d) none of the above

9) By using synchronizing device, the two involved adjacent gears have their speeds _____.
a) increased b) reduced
c) equalized d) unequalized

10) The smallest gears inside the differential casing are _____.
a) pinion gears b) Sun gears
c) side gears d) ring gears

11) The brakes employed in cars are usually operated _____.
a) mechanically b) Hydraulically
c) by means of engine vacuum d) by compressed air

12) The hand brake usually operates on _____.
a) left wheels b) front wheel
c) right wheel d) rear wheels

13) Most popular manual steering gear for cars today is _____.
a) worm and nut type b) worm and wheel type
c) cam and roller type d) rack and pinion type

14) In the recirculating ball type steering gear, the balls travel between the ball nut and the _____.
a) gear rack b) worm shaft
c) steering wheel shaft d) worm wheel

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Seat No.	

Set R

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Automobile Engineering (BTN02414)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any 2 question in both Section.
2) Figures to the right indicate full marks.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Answer the following question.

a) Explain all wheel drive with neat sketch. State its advantages and disadvantages. **08**

b) Explain with neat sketch multiplate clutch. **06**

Q.3 Answer the following question.

a) Explain with neat sketch the working of sliding contact gear box. **08**

b) Explain requirement of transmission system and explain in brief double declutching in case of constant mesh gear box. **06**

Q.4 Answer the following question.

a) Explain disc brake with neat sketch. What are the advantages and disadvantages of disc brake. **08**

b) What are the functions of propeller shaft, slip joint and universal joint and explain these with neat sketch. **06**

Section – II

Q.5 Answer the following question.

a) Explain steering system layout with neat sketch. Explain function of each of the component in the layout. **08**

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b) Explain with neat sketch shock absorber. **06**

Q.7 Answer the following question.

a) Explain with neat sketch starting system in automobile. **06**

b) What is spark plug? Explain with neat sketch. **04**

c) Explain the construction of battery. **04**

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Seat No.	

Set S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Automobile Engineering (BTN02414)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The smallest gears inside the differential casing are _____.
a) pinion gears b) Sun gears
c) side gears d) ring gears

2) The brakes employed in cars are usually operated _____.
a) mechanically b) Hydraulically
c) by means of engine vacuum d) by compressed air

3) The hand brake usually operates on _____.
a) left wheels b) front wheel
c) right wheel d) rear wheels

4) Most popular manual steering gear for cars today is _____.
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5) In the recirculating ball type steering gear, the balls travel between the ball nut and the _____.
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c) steering wheel shaft d) worm wheel

6) The included angle is the sum of the _____.
a) camber and caster b) caster and S.A.I
c) camber and S.A.I d) camber and toe-in

7) The most effective section against the bending is _____.
a) Rectangular bar b) round bar
c) round hollow tube d) square hollow section

8) _____ is the term used to describe any arrangement by which the wheels are connected to the carriage unit in a manner such that the rise and fall of one when has no effect on the others.
a) Independent suspension b) Leaf spring suspension
c) Conventional suspension d) none of the above

9) The components suspension system is:
a) Springs
b) Dampers or shock absorbers
c) Stabilizer and a linkage system
d) All of these

10) The cooling system of automobile engine is most simple when the engine is _____.
a) Front
b) Centre
c) rear on the left
d) rear on the right

11) Which of the following statements regarding four-wheel drive is correct?
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a) requires longer' propeller shaft
b) gives better riding performance
c) has a greater skidding tendency
d) provides increased tractive effort

13) A clutch is usually designed to transmit maximum torque which is:
a) 90 percent of the maximum engine torque
b) equal to the maximum engine torque.
c) 150 percent of the maximum engine torque
d) none of the above

14) By using synchronizing device, the two involved adjacent gears have their speeds _____.
a) increased
b) reduced
c) equalized
d) unequalized

SLR-GF-749

Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
MECHANICAL ENGINEERING
Introduction to Automobile Engineering (BTN02414)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any 2 question in both Section.
2) Figures to the right indicate full marks.
4) Use of scientific calculator is allowed.

Section – I

Q.2 Answer the following question.

a) Explain all wheel drive with neat sketch. State its advantages and disadvantages. **08**

b) Explain with neat sketch multiplate clutch. **06**

Q.3 Answer the following question.

a) Explain with neat sketch the working of sliding contact gear box. **08**

b) Explain requirement of transmission system and explain in brief double declutching in case of constant mesh gear box. **06**

Q.4 Answer the following question.

a) Explain disc brake with neat sketch. What are the advantages and disadvantages of disc brake. **08**

b) What are the functions of propeller shaft, slip joint and universal joint and explain these with neat sketch. **06**

Section – II

Q.5 Answer the following question.

a) Explain steering system layout with neat sketch. Explain function of each of the component in the layout. **08**

b) Define the following with neat sketch: **06**
1) Camber angle
2) King-pin inclination
3) Included angle
4) Caster angle

Q.6 Answer the following question.

a) What is suspension? Differentiate with neat sketches dependent and independent suspension systems. **08**

b) Explain with neat sketch shock absorber. **06**

Q.7 Answer the following question.

a) Explain with neat sketch starting system in automobile. **06**

b) What is spark plug? Explain with neat sketch. **04**

c) Explain the construction of battery. **04**

SLR-GF-750

Seat No.		Set	P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Engineering Mathematics – III (BTN04301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of Non programable Calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The P.I. of $(D^4 - m^4)y = \sin mx$ is _____.

a) $\frac{x}{4m^3}\cos mx$ b) $\frac{-x}{4m^3}\cos mx$

c) $\frac{x}{4m^3}\sin mx$ d) $\frac{-x}{4m^3}\sin mx$

2) If $D = \frac{d}{dz}$ and $z = \log x$, then diff. equation $x\frac{d^2y}{dx^2} + 2\frac{dy}{dx} = 6x$ becomes _____

a) $D(D-1)y = 6e^z$ b) $D(D-1)y = 6e^{2z}$

c) $D(D+1)y = 6e^{2z}$ d) $D(D+1)y = 6e^z$

3) $L\left\{\int_0^t \sin 2u\, du\right\} =$_____.

a) $\frac{2}{s^2+4}$ b) $\frac{2}{s(s^2+4)}$

c) $\frac{2}{s(s^2-4)}$ d) $\frac{2s}{s^2+4}$

4) $\int_0^\infty \frac{\sin t}{t}\, dt =$ _____.

a) π b) $\pi/2$

c) $\pi/4$ d) $\pi/3$

5) $L^{-1}\left\{\frac{1}{(s-4)^3}\right\}$ is _____.

a) $e^{4t}\frac{t^2}{2}$ b) $e^{-4t}\frac{t^2}{2}$

c) $e^{4t}\frac{t^3}{6}$ d) $e^{-4t}\frac{t^3}{6}$

6) If $f(x) = \begin{cases} -x, & -\pi < x < 0; \\ x, & 0 < x < \pi \end{cases}$ then the value of b_n is _____

a) π b) $\frac{\pi^2}{2}$

c) $\frac{\pi}{2}$ d) None of these

7) The generalized Newton's Raphson iterative formula to obtained multiple roots of the equation $f(x) = 0$ is _____.

a) $x_{n+1} = x_n + m\frac{f(x_n)}{f'(x_n)}$ b) $x_{n+1} = x_n - m\frac{f(x_n)}{f'(x_n)}$

c) $x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$ d) $x_{n+1} = x_n - m\frac{f'(x_n)}{f(x_n)}$

8) Inverse Z Transform of $\frac{1}{z-a}$ for $k \geq 1|z| > a$ _____.

a) a^{k-1} b) a^{k+1}

c) $-a^{k-1}$ d) $-a^{-k-1}$

9) If $x_k = 1, k \geq 0$ then $z\{x_k\} =$?

a) $\frac{z}{z-1}$ b) $\frac{1}{z-1}$

c) $\frac{1}{(z-1)^2}$ d) $\frac{1}{1-z}$

10) The period of $\cos x$ is _____.

a) π b) 2π

c) 3π d) $\frac{\pi}{3}$

11) Which of the following method is used to find the largest eigen value of a matrix?

a) Gauss-Jorden b) Factorization method

c) Power method d) Muller's method

12) Gauss Seidel method converges only, if the coefficient matrix is _____.

a) Upper triangular matrix b) Diagonally dominant

c) non-singular matrix d) Singular matrix

13) The normal equations require to fit a curve of the form $y = ax^b$

a) 3 b) 4

c) 1 d) 2

14) The variance of the Binomial distribution is _____.

a) nq b) npq

c) np d) pq

Seat No.		Set	P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Engineering Mathematics – III (BTN04301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any THREE questions from the following **09**

a) Solve $(D^3 - 3D^2 + 3D - 1)\, y = x^{1/2}e^x$

b) Find $Z\{x_k\}$, where $\{x_k\} = c^k \sin \alpha k, k \geq 0$. part Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|$

c) Find the Fourier series for $f(x),\ f(x) = x + x^2$ in $(-\pi, \pi)$

d) Solve $(D^3 + D)y = \cos t + t^2 + 3$

Q.3 Attempt any THREE questions from the following **09**

a) Obtain half range cosine series for $f(x) = x \sin x$ in $(0, \pi)$

b) Find the inverse z-transform of $\frac{z^2}{\left(z-\frac{1}{4}\right)\left(z-\frac{1}{5}\right)}, |z| < \frac{1}{5}$

c) Solve $(D^2 + 4D + 4)y = x^2$

d) Find the Fourier series for $f(x)$ in $(-\pi, \pi)\ f(x) = 3x^3$

e) Solve $(D^4 - 1)y = \cos x \cosh x$

Q.4 Attempt any TWO questions from the following **10**

a) In an $L - C$ circuit the charge Q on a plate of a condenser is given by
$\frac{d^2Q}{dt^2} + \frac{Q}{cL} + \frac{E_0}{L}\cos nt$
If $w^2 = \frac{1}{LC}$ and initially $Q = Q_0$ at $t = 0$ and the current is $I = I_0$ at $t = 0$
Prove that charge at any time t is given by
$Q = Q_0 \cos wt + \frac{I_0}{w}\sin wt + \frac{E_0}{2Lw}\, t \sin wt$

b) Find the Fourier series of $f(x) = e^x$ in $(0, 2\pi)$

c) Find $Z\{x_k\}$, where
$\{x_k\} = k^2, k \geq 0$

Section – II

Q.5 Attempt any THREE questions from the following **09**

a) Six dice are thrown 729 times. How many times do you expect at least three dice to show a 5 or 6?

b) Find the Laplace transform of $\left(\int_0^t \frac{1-e^{-u}}{u} du\right)$

c) Evaluate by using Laplace transform $\int_0^\infty \left(\frac{e^{-3t}-e^{-t}}{t}\right) dt$

d) Perform four iterations of false position method to find the positive root of the equation $x \tan x = 1$ taking $x_0 = 2.5$ and $x_1 = 3$

e) Solve the following system of equation by Gauss Elimination method
$x + y + 54z = 110,$
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72$

Q.6 Attempt any THREE questions from the following **09**

a) Find the Inverse Laplace transform of $\tan^{-1}(2/s)$

b) Find the inverse Laplace transform of $\frac{s^2}{(s^2+4)^2}$

c) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

d) Find the equations of the lines of the regression and also the coefficient of correlation from the following data

x:	63	65	66	70	71	72	73	75
y:	115	120	138	140	160	150	178	202

e) Find the Laplace transform of $e^{3t} \sin 2t$

Q.7 Attempt any TWO questions from the following **10**

a) Find the value of $y(0.615)$ for the following data using by finding lines of regression.

x	0.6	0.6	0.6	0.6	0.6	0.6	0.6
y	1.840431	1.858928	1.877610	1.896481	1.915541	1.934792	1.954237

b) Use Laplace transform to evaluate $\frac{d^2y}{dt^2} - \frac{dy}{dt} - 2y = 20 \sin 2t$. Given that when $t = 0; y = 1, \frac{dy}{dt} = 2$

c) Solve the following system of equations by Gauss-Seidel.
$28x + 4y - z = 32$
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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1) Inverse Z Transform of $\frac{1}{z-a}$ for $k \geq 1|z| > a$ _____.

a) a^{k-1} b) a^{k+1}
c) $-a^{k-1}$ d) $-a^{-k-1}$

2) If $x_k = 1, k \geq 0$ then $z\{x_k\} =$?

a) $\frac{z}{z-1}$ b) $\frac{1}{z-1}$
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a) π b) 2π
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4) Which of the following method is used to find the largest eigen value of a matrix?

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Seat No.		Set	Q

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SLR-GF-750

Seat No.	

Set R

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following method is used to find the largest eigen value of a matrix?
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2) Gauss Seidel method converges only, if the coefficient matrix is _____.
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3) The normal equations require to fit a curve of the form $y = ax^b$
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4) The variance of the Binomial distribution is _____.
a) nq b) npq
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6) If $D = \frac{d}{dz}$ and $z = \log x$, then diff. equation $x\frac{d^2y}{dx^2} + 2\frac{dy}{dx} = 6x$ becomes _____
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Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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Section – II

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SLR-GF-750

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2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of Non programable Calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If $f(x) = \begin{cases} -x, & -\pi < x < 0; \\ x, & 0 < x < \pi \end{cases}$ then the value of b_n is _____

a) π b) $\frac{\pi^2}{2}$

c) $\frac{\pi}{2}$ d) None of these

2) The generalized Newton's Raphson iterative formula to obtained multiple roots of the equation $f(x) = 0$ is _____.

a) $x_{n+1} = x_n + m\frac{f(x_n)}{f'(x_n)}$ b) $x_{n+1} = x_n - m\frac{f(x_n)}{f'(x_n)}$

c) $x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$ d) $x_{n+1} = x_n - m\frac{f'(x_n)}{f(x_n)}$

3) Inverse Z Transform of $\frac{1}{z-a}$ for $k \geq 1|z| > a$ _____.

a) a^{k-1} b) a^{k+1}

c) $-a^{k-1}$ d) $-a^{-k-1}$

4) If $x_k = 1, k \geq 0$ then $z\{x_k\} =$?

a) $\frac{z}{z-1}$ b) $\frac{1}{z-1}$

c) $\frac{1}{(z-1)^2}$ d) $\frac{1}{1-z}$

5) The period of $\cos x$ is _____.

a) π b) 2π

c) 3π d) $\frac{\pi}{3}$

6) Which of the following method is used to find the largest eigen value of a matrix?

a) Gauss-Jorden
b) Factorization method
c) Power method
d) Muller's method

7) Gauss Seidel method converges only, if the coefficient matrix is _____.

a) Upper triangular matrix
b) Diagonally dominant
c) non-singular matrix
d) Singular matrix

8) The normal equations require to fit a curve of the form $y = ax^b$

a) 3
b) 4
c) 1
d) 2

9) The variance of the Binomial distribution is _____.

a) nq
b) npq
c) np
d) pq

10) The P.I. of $(D^4 - m^4)y = \sin mx$ is _____.

a) $\frac{x}{4m^3}\cos mx$
b) $\frac{-x}{4m^3}\cos mx$
c) $\frac{x}{4m^3}\sin mx$
d) $\frac{-x}{4m^3}\sin mx$

11) If $D = \frac{d}{dz}$ and $z = \log x$, then diff. equation $x\frac{d^2y}{dx^2} + 2\frac{dy}{dx} = 6x$ becomes _____

a) $D(D-1)y = 6e^z$
b) $D(D-1)y = 6e^{2z}$
c) $D(D+1)y = 6e^{2z}$
d) $D(D+1)y = 6e^z$

12) $L\left\{\int_0^t \sin 2u\, du\right\}$ =_____.

a) $\frac{2}{s^2+4}$
b) $\frac{2}{s(s^2+4)}$
c) $\frac{2}{s(s^2-4)}$
d) $\frac{2s}{s^2+4}$

13) $\int_0^\infty \frac{\sin t}{t}\, dt =$ _____.

a) π
b) $\pi/2$
c) $\pi/4$
d) $\pi/3$

14) $L^{-1}\left\{\frac{1}{(s-4)^3}\right\}$ is _____.

a) $e^{4t}\frac{t^2}{2}$
b) $e^{-4t}\frac{t^2}{2}$
c) $e^{4t}\frac{t^3}{6}$
d) $e^{-4t}\frac{t^3}{6}$

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Engineering Mathematics – III (BTN04301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of Non programmable Calculator is allowed.

Section – I

Q.2 Attempt any THREE questions from the following **09**

a) Solve $(D^3 - 3D^2 + 3D - 1)\, y = x^{1/2}e^x$

b) Find $Z\{x_k\}$, where $\{x_k\} = c^k \sin \alpha k, k \geq 0$. part Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|$

c) Find the Fourier series for $f(x),\ f(x) = x + x^2$ in $(-\pi, \pi)$

d) Solve $(D^3 + D)y = \cos t + t^2 + 3$

Q.3 Attempt any THREE questions from the following **09**

a) Obtain half range cosine series for $f(x) = x \sin x$ in $(0, \pi)$

b) Find the inverse z-transform of $\frac{z^2}{\left(z-\frac{1}{4}\right)\left(z-\frac{1}{5}\right)}, |z| < \frac{1}{5}$

c) Solve $(D^2 + 4D + 4)y = x^2$

d) Find the Fourier series for $f(x)$ in $(-\pi, \pi)\ f(x) = 3x^3$

e) Solve $(D^4 - 1)y = \cos x \cosh x$

Q.4 Attempt any TWO questions from the following **10**

a) In an $L - C$ circuit the charge Q on a plate of a condenser is given by
$\frac{d^2Q}{dt^2} + \frac{Q}{cL} + \frac{E_0}{L}\cos nt$
If $w^2 = \frac{1}{LC}$ and initially $Q = Q_0$ at $t = 0$ and the current is $I = I_0$ at $t = 0$
Prove that charge at any time t is given by
$Q = Q_0 \cos wt + \frac{I_0}{w}\sin wt + \frac{E_0}{2Lw}\, t \sin wt$

b) Find the Fourier series of $f(x) = e^x$ in $(0, 2\pi)$

c) Find $Z\{x_k\}$, where
$\{x_k\} = k^2, k \geq 0$

Section – II

Q.5 Attempt any THREE questions from the following **09**

a) Six dice are thrown 729 times. How many times do you expect at least three dice to show a 5 or 6?

b) Find the Laplace transform of $\left(\int_0^t \frac{1-e^{-u}}{u} du\right)$

c) Evaluate by using Laplace transform $\int_0^\infty \left(\frac{e^{-3t}-e^{-t}}{t}\right) dt$

d) Perform four iterations of false position method to find the positive root of the equation $x \tan x = 1$ taking $x_0 = 2.5$ and $x_1 = 3$

e) Solve the following system of equation by Gauss Elimination method
$x + y + 54z = 110,$
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72$

Q.6 Attempt any THREE questions from the following **09**

a) Find the Inverse Laplace transform of $\tan^{-1}(2/s)$

b) Find the inverse Laplace transform of $\frac{s^2}{(s^2+4)^2}$

c) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

d) Find the equations of the lines of the regression and also the coefficient of correlation from the following data

x:	63	65	66	70	71	72	73	75
y:	115	120	138	140	160	150	178	202

e) Find the Laplace transform of $e^{3t} \sin 2t$

Q.7 Attempt any TWO questions from the following **10**

a) Find the value of $y(0.615)$ for the following data using by finding lines of regression.

x	0.6	0.6	0.6	0.6	0.6	0.6	0.6
y	1.840431	1.858928	1.877610	1.896481	1.915541	1.934792	1.954237

b) Use Laplace transform to evaluate $\frac{d^2y}{dt^2} - \frac{dy}{dt} - 2y = 20 \sin 2t$. Given that when $t = 0; y = 1, \frac{dy}{dt} = 2$

c) Solve the following system of equations by Gauss-Seidel.
$28x + 4y - z = 32$
$2x + 17y + 4z = 35$
$x + 3y + 10z = 24$

SLR-GF-751

Seat No.		Set	P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Network Theory and Analysis (BTN04303)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Maximum power transfer occurs at efficiency of _____.
a) 100% b) 50%
c) 25% d) 75%

2) Thevenin's voltage VTH=0, if _____.
a) There is no dependent source in the circuit
b) There is voltage source of infinite magnitude
c) There is no independent source in the circuit
d) None of above

3) Which among the following is also regarded as Dual of Thevenin's theorem?
a) Superposition Theorem
b) Norton Theorem
c) Maximum Power Transfer Theorem
d) All of above

4) In parallel resonance, resonance occurs when susceptance part of admittance is _____
a) Infinite b) $X_L > X_C$
c) $X_C > X_L$ d) Zero

5) A parallel RLC circuit has R = 4Ω, L = 4H & C = 0.25μF, then at resonance, Quality factor Q is _____
a) 1 b) 5
c) 10 d) 20

6) When two port networks are connected in parallel the resultant ____
a) Z parameters are the sum of individual parameters
b) Y parameters are the sum of individual parameters
c) ABCD parameters are the sum of individual parameters
d) h parameters are the sum of individual parameters

7) Which parameters are widely used in transmission line theory?
a) Z parameters b) Y parameters
c) ABCD parameters d) h parameters

8) Transient behavior occurs in any circuit when _____.
a) There are sudden changes of applied voltage
b) The voltage source is shorted
c) The circuit is connected to/ disconnected from voltage supply
d) All of the above

9) The time constant of series RL circuit is _____
a) L/R b) R/L
c) LR d) $e^{-R/L}$

10) F(s) = 2S/(S2+8), it will have finite Zero at _____
a) Infinity b) On imaginary axis
c) In LHS of S-plane d) At origin of S-plane

11) When a series RC circuit is connected to a constant voltage. At t=0, the current passing through the circuit at t=0+ is
a) V/C b) V/R
c) Infinite d) Zero

12) If network comprises purely resistive elements, what will it provide from following?
a) Attenuation b) phase shift
c) Both a and b d) None of above

13) In the m-derived low pass filter the resonant frequency is to be chosen so that it is _____
a) Same as cut-off frequencies b) Below the cut-off frequencies
c) Above the cut-off frequencies d) None of above

14) The real part of the complex frequency is called _____.
a) radian frequency b) angular frequency
c) sampling frequency d) Neper frequency

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Network Theory and Analysis (BTN04303)

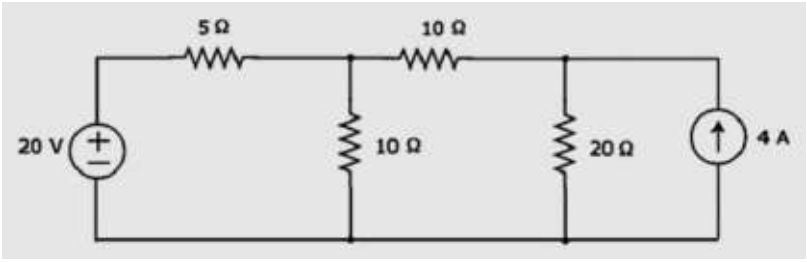
Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

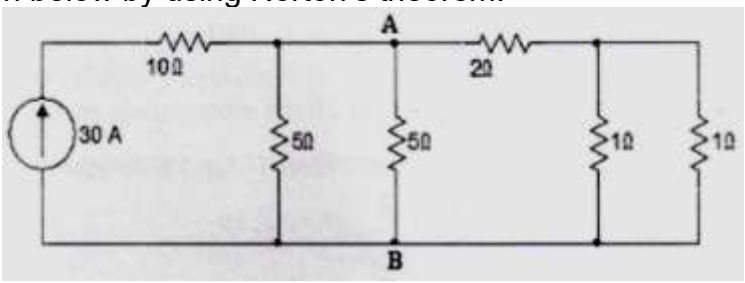
Section – I

Q.2 Answer any four the following questions. **16**

a) Determine the current through 20 Ω resistor of the following circuit using superposition Theorem.

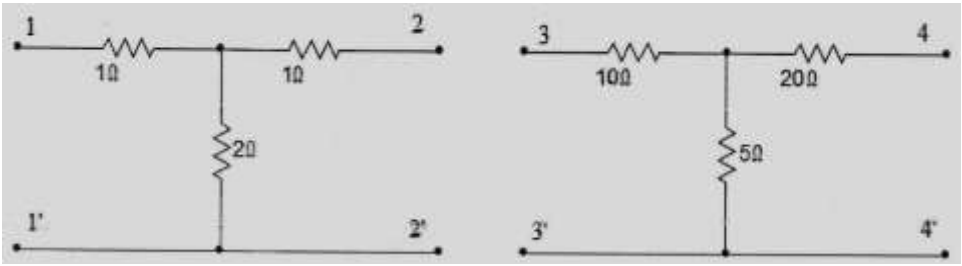


b) Determine the current flowing through the 5 Ω (terminals A-B) resistor in the circuit shown below by using Norton's theorem.



c) Derive the expression for resonant frequency of a tank circuit.

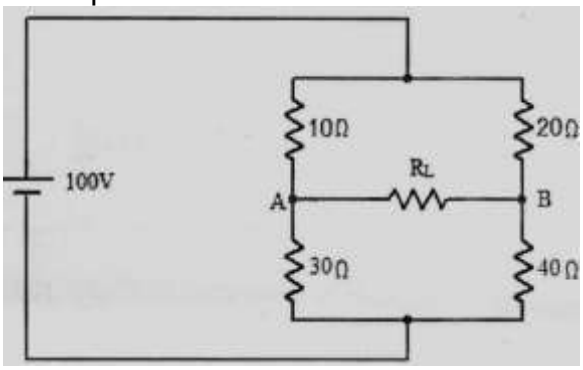
d) Two port network connected in series obtain overall Z parameter of the combination. Also calculate overall Z parameter for given network.



e) Explain cascade connection of two port network.

Q.3 Answer any Two following questions. **12**

a) Determine the load resistance to receive maximum power from the source. Also find the maximum power delivered to the load in the circuit shown figure.



b) V(t) = 10 sinwt is applied to a series RLC circuit. At resonant frequency maximum voltage across capacitor is 500V. The bandwidth is 400 rad/sec & impedance at resonance is 100 Ω. Determine resonant frequency, Quality factor. Also Determine L and C.

c) Derive Z parameters in terms of Y parameters for two port network.

Section – II

Q.4 Attempt Any Four of the following: **16**

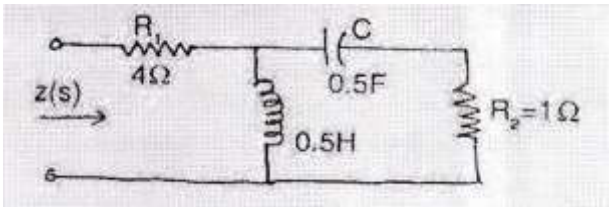
a) Design T type attenuator having 20 dB attenuation with load impedance of 640 Ω .

b) Design constant k type low pass filter (T and π section) having cut off frequency of 2 kHz with load resistance of 500 Ω.

c) Explain the concept of complex frequency.

d) Explain step voltage response for RC series circuit.

e) Calculate the driving point impedance Z(s) and driving point admittance Y(s) of the network shown below.



Q.5 Attempt Any Two of the following. **12**

a) Give the definition of pole and zero of the networks. Draw pole zero diagram for given network function and hence obtain time domain response $i(t)$.

$I(s) = 4\,S\,(S+2)/(S+1)\,(S+3)$

b) Design constant K Band pass filter T and Π Section having cut off frequency of 1 kHz and 10 kHz and a normal impedance of 500 Ω.

c) The series RLC circuit consists of R = 2 Ω , L = 1 H, C = 1F with 100 V constant source. When switch is closed at t=0, determine current $i(t)$ for $t > 0$.

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Network Theory and Analysis (BTN04303)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Transient behavior occurs in any circuit when _____.
a) There are sudden changes of applied voltage
b) The voltage source is shorted
c) The circuit is connected to/ disconnected from voltage supply
d) All of the above

2) The time constant of series RL circuit is _____
a) L/R b) R/L
c) LR d) $e^{-R/L}$

3) F(s) = 2S/(S2+8), it will have finite Zero at _____
a) Infinity b) On imaginary axis
c) In LHS of S-plane d) At origin of S-plane

4) When a series RC circuit is connected to a constant voltage. At t=0, the current passing through the circuit at t=0+ is
a) V/C b) V/R
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5) If network comprises purely resistive elements, what will it provide from following?
a) Attenuation b) phase shift
c) Both a and b d) None of above

6) In the m-derived low pass filter the resonant frequency is to be chosen so that it is _____
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7) The real part of the complex frequency is called _____.
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8) Maximum power transfer occurs at efficiency of _____.
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9) Thevenin's voltage VTH=0, if _____.

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12) A parallel RLC circuit has R = 4Ω, L = 4H & C = 0.25μF, then at resonance, Quality factor Q is _____

a) 1
b) 5
c) 10
d) 20

13) When two port networks are connected in parallel the resultant ____

a) Z parameters are the sum of individual parameters
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14) Which parameters are widely used in transmission line theory?

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d) h parameters

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Network Theory and Analysis (BTN04303)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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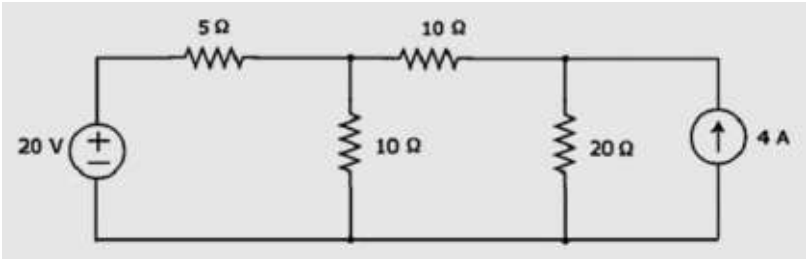
Section – I

Q.2 Answer any four the following questions. **16**

a) Determine the current through 20 Ω resistor of the following circuit using superposition Theorem.



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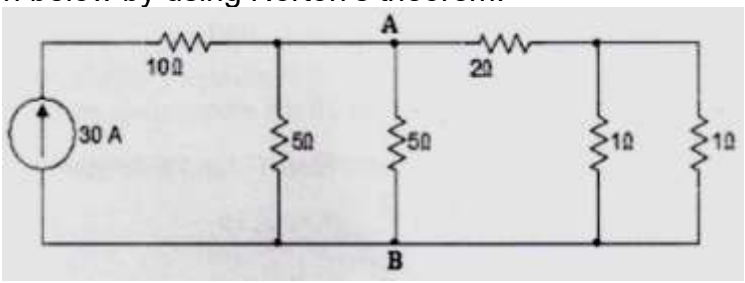
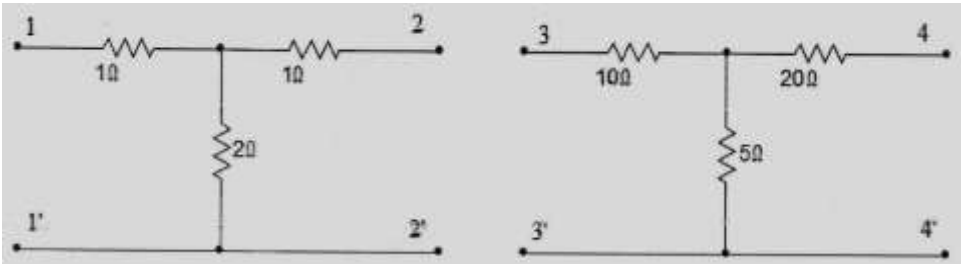


c) Derive the expression for resonant frequency of a tank circuit.

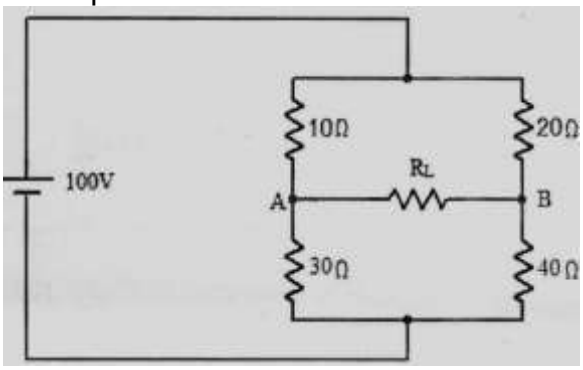
d) Two port network connected in series obtain overall Z parameter of the combination. Also calculate overall Z parameter for given network.



e) Explain cascade connection of two port network.

Q.3 Answer any Two following questions. **12**

a) Determine the load resistance to receive maximum power from the source. Also find the maximum power delivered to the load in the circuit shown figure.



b) V(t) = 10 sinwt is applied to a series RLC circuit. At resonant frequency maximum voltage across capacitor is 500V. The bandwidth is 400 rad/sec & impedance at resonance is 100 Ω. Determine resonant frequency, Quality factor. Also Determine L and C.

c) Derive Z parameters in terms of Y parameters for two port network.

Section – II

Q.4 Attempt Any Four of the following: **16**

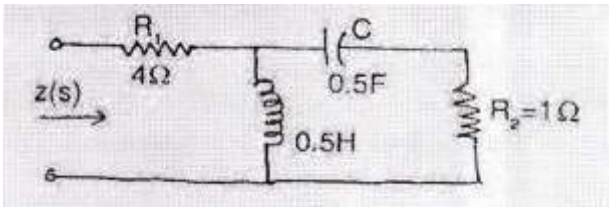
a) Design T type attenuator having 20 dB attenuation with load impedance of 640 Ω .

b) Design constant k type low pass filter (T and π section) having cut off frequency of 2 kHz with load resistance of 500 Ω.

c) Explain the concept of complex frequency.

d) Explain step voltage response for RC series circuit.

e) Calculate the driving point impedance Z(s) and driving point admittance Y(s) of the network shown below.



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a) Give the definition of pole and zero of the networks. Draw pole zero diagram for given network function and hence obtain time domain response $i(t)$.
$I(s) = 4\,S\,(S+2)/(S+1)\,(S+3)$

b) Design constant K Band pass filter T and Π Section having cut off frequency of 1 kHz and 10 kHz and a normal impedance of 500 Ω.

c) The series RLC circuit consists of R = 2 Ω , L = 1 H, C = 1F with 100 V constant source. When switch is closed at t=0, determine current $i(t)$ for $t > 0$.

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Network Theory and Analysis (BTN04303)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) When a series RC circuit is connected to a constant voltage. At t=0, the current passing through the circuit at t=0+ is
a) V/C b) V/R
c) Infinite d) Zero

2) If network comprises purely resistive elements, what will it provide from following?
a) Attenuation b) phase shift
c) Both a and b d) None of above

3) In the m-derived low pass filter the resonant frequency is to be chosen so that it is _____
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c) Above the cut-off frequencies d) None of above

4) The real part of the complex frequency is called _____.
a) radian frequency b) angular frequency
c) sampling frequency d) Neper frequency

5) Maximum power transfer occurs at efficiency of _____.
a) 100% b) 50%
c) 25% d) 75%

6) Thevenin's voltage VTH=0, if _____.
a) There is no dependent source in the circuit
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7) Which among the following is also regarded as Dual of Thevenin's theorem?
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b) Norton Theorem
c) Maximum Power Transfer Theorem
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8) In parallel resonance, resonance occurs when susceptance part of admittance is _____

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b) $X_L > X_C$
c) $X_C > X_L$
d) Zero

9) A parallel RLC circuit has R = 4Ω, L = 4H & C = 0.25μF, then at resonance, Quality factor Q is _____

a) 1
b) 5
c) 10
d) 20

10) When two port networks are connected in parallel the resultant ____

a) Z parameters are the sum of individual parameters
b) Y parameters are the sum of individual parameters
c) ABCD parameters are the sum of individual parameters
d) h parameters are the sum of individual parameters

11) Which parameters are widely used in transmission line theory?

a) Z parameters
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13) The time constant of series RL circuit is _____

a) L/R
b) R/L
c) LR
d) $e^{-R/L}$

14) F(s) = 2S/(S2+8), it will have finite Zero at _____

a) Infinity
b) On imaginary axis
c) In LHS of S-plane
d) At origin of S-plane

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Network Theory and Analysis (BTN04303)

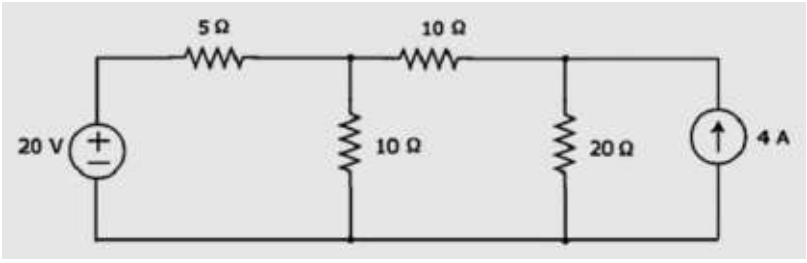
Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

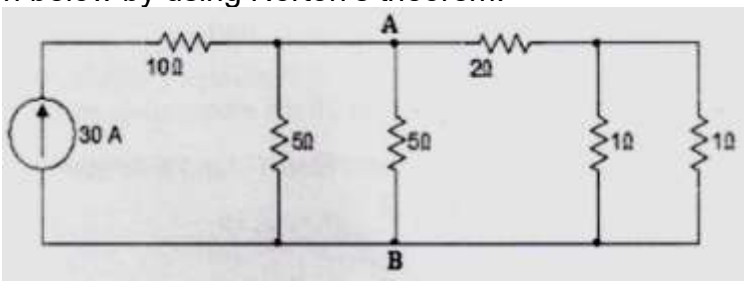
Section – I

Q.2 Answer any four the following questions. **16**

a) Determine the current through 20 Ω resistor of the following circuit using superposition Theorem.

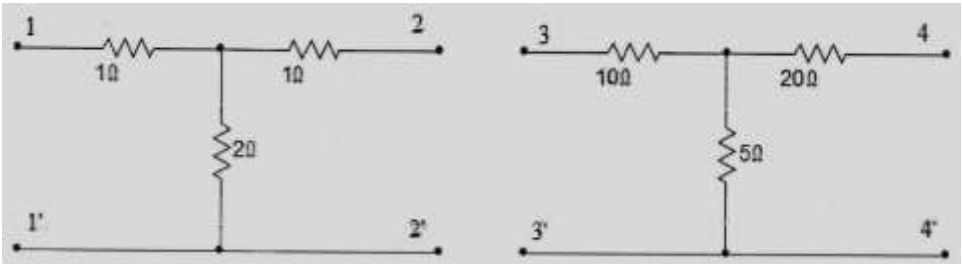


b) Determine the current flowing through the 5 Ω (terminals A-B) resistor in the circuit shown below by using Norton's theorem.



c) Derive the expression for resonant frequency of a tank circuit.

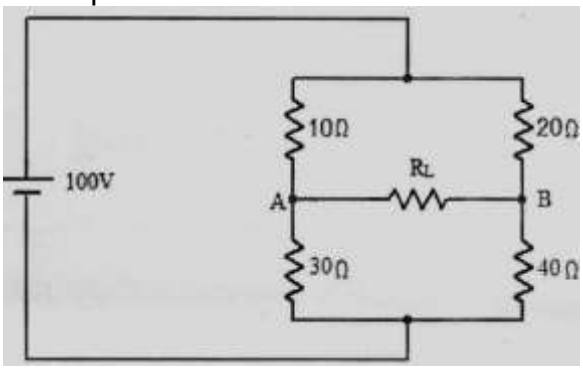
d) Two port network connected in series obtain overall Z parameter of the combination. Also calculate overall Z parameter for given network.



e) Explain cascade connection of two port network.

Q.3 Answer any Two following questions. **12**

a) Determine the load resistance to receive maximum power from the source. Also find the maximum power delivered to the load in the circuit shown figure.



b) V(t) = 10 sinwt is applied to a series RLC circuit. At resonant frequency maximum voltage across capacitor is 500V. The bandwidth is 400 rad/sec & impedance at resonance is 100 Ω. Determine resonant frequency, Quality factor. Also Determine L and C.

c) Derive Z parameters in terms of Y parameters for two port network.

Section – II

Q.4 Attempt Any Four of the following: **16**

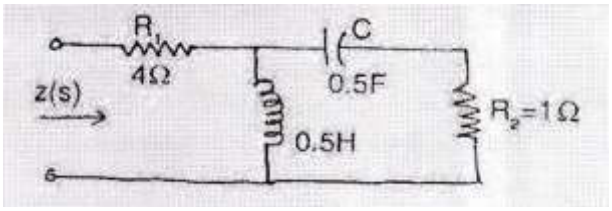
a) Design T type attenuator having 20 dB attenuation with load impedance of 640 Ω .

b) Design constant k type low pass filter (T and π section) having cut off frequency of 2 kHz with load resistance of 500 Ω.

c) Explain the concept of complex frequency.

d) Explain step voltage response for RC series circuit.

e) Calculate the driving point impedance Z(s) and driving point admittance Y(s) of the network shown below.



Q.5 Attempt Any Two of the following. **12**

a) Give the definition of pole and zero of the networks. Draw pole zero diagram for given network function and hence obtain time domain response $i(t)$.
$I(s) = 4\,S\,(S+2)/(S+1)\,(S+3)$

b) Design constant K Band pass filter T and Π Section having cut off frequency of 1 kHz and 10 kHz and a normal impedance of 500 Ω.

c) The series RLC circuit consists of R = 2 Ω , L = 1 H, C = 1F with 100 V constant source. When switch is closed at t=0, determine current $i(t)$ for $t > 0$.

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Network Theory and Analysis (BTN04303)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) When two port networks are connected in parallel the resultant ____
a) Z parameters are the sum of individual parameters
b) Y parameters are the sum of individual parameters
c) ABCD parameters are the sum of individual parameters
d) h parameters are the sum of individual parameters

2) Which parameters are widely used in transmission line theory?
a) Z parameters b) Y parameters
c) ABCD parameters d) h parameters

3) Transient behavior occurs in any circuit when _____.
a) There are sudden changes of applied voltage
b) The voltage source is shorted
c) The circuit is connected to/ disconnected from voltage supply
d) All of the above

4) The time constant of series RL circuit is _____
a) L/R b) R/L
c) LR d) $e^{-R/L}$

5) F(s) = 2S/(S2+8), it will have finite Zero at _____
a) Infinity b) On imaginary axis
c) In LHS of S-plane d) At origin of S-plane

6) When a series RC circuit is connected to a constant voltage. At t=0, the current passing through the circuit at t=0+ is
a) V/C b) V/R
c) Infinite d) Zero

7) If network comprises purely resistive elements, what will it provide from following?
a) Attenuation b) phase shift
c) Both a and b d) None of above

8) In the m-derived low pass filter the resonant frequency is to be chosen so that it is _____
a) Same as cut-off frequencies b) Below the cut-off frequencies
c) Above the cut-off frequencies d) None of above

9) The real part of the complex frequency is called _____.
a) radian frequency b) angular frequency
c) sampling frequency d) Neper frequency

10) Maximum power transfer occurs at efficiency of _____.
a) 100% b) 50%
c) 25% d) 75%

11) Thevenin's voltage VTH=0, if _____.
a) There is no dependent source in the circuit
b) There is voltage source of infinite magnitude
c) There is no independent source in the circuit
d) None of above

12) Which among the following is also regarded as Dual of Thevenin's theorem?
a) Superposition Theorem
b) Norton Theorem
c) Maximum Power Transfer Theorem
d) All of above

13) In parallel resonance, resonance occurs when susceptance part of admittance is _____
a) Infinite b) $X_L > X_C$
c) $X_C > X_L$ d) Zero

14) A parallel RLC circuit has R = 4Ω, L = 4H & C = 0.25μF, then at resonance, Quality factor Q is _____
a) 1 b) 5
c) 10 d) 20

Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Network Theory and Analysis (BTN04303)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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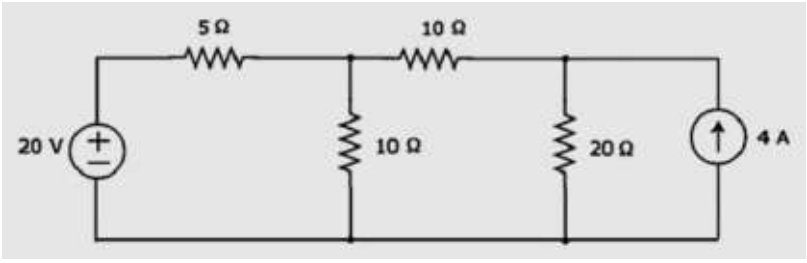
Section – I

Q.2 Answer any four the following questions. **16**

a) Determine the current through 20 Ω resistor of the following circuit using superposition Theorem.



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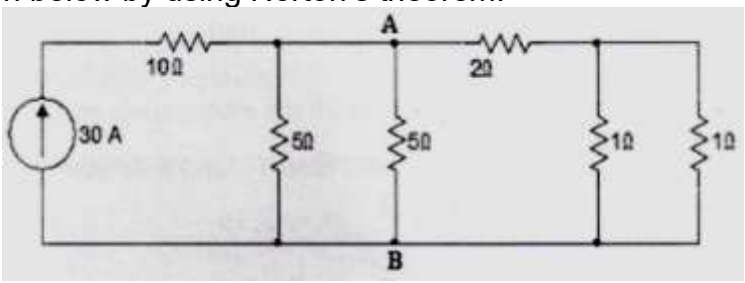
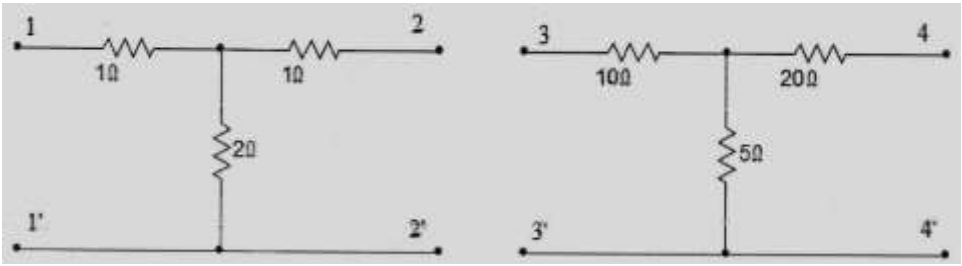


c) Derive the expression for resonant frequency of a tank circuit.

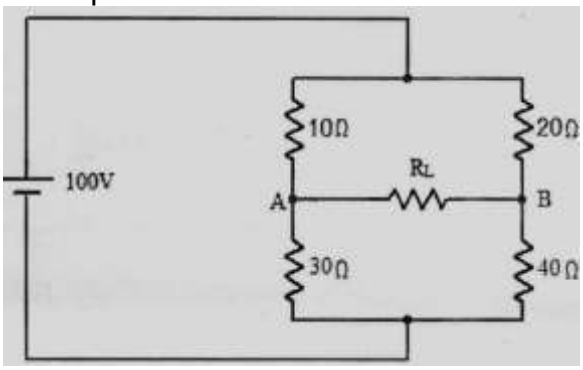
d) Two port network connected in series obtain overall Z parameter of the combination. Also calculate overall Z parameter for given network.



e) Explain cascade connection of two port network.

Q.3 Answer any Two following questions. **12**

a) Determine the load resistance to receive maximum power from the source. Also find the maximum power delivered to the load in the circuit shown figure.



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Section – II

Q.4 Attempt Any Four of the following: **16**

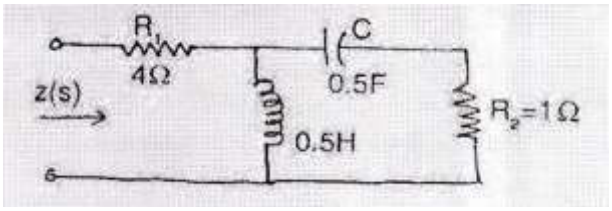
a) Design T type attenuator having 20 dB attenuation with load impedance of 640 Ω .

b) Design constant k type low pass filter (T and π section) having cut off frequency of 2 kHz with load resistance of 500 Ω.

c) Explain the concept of complex frequency.

d) Explain step voltage response for RC series circuit.

e) Calculate the driving point impedance Z(s) and driving point admittance Y(s) of the network shown below.



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a) Give the definition of pole and zero of the networks. Draw pole zero diagram for given network function and hence obtain time domain response $i(t)$.

$I(s) = 4\,S\,(S+2)/(S+1)\,(S+3)$

b) Design constant K Band pass filter T and Π Section having cut off frequency of 1 kHz and 10 kHz and a normal impedance of 500 Ω.

c) The series RLC circuit consists of R = 2 Ω , L = 1 H, C = 1F with 100 V constant source. When switch is closed at t=0, determine current $i(t)$ for $t > 0$.

Seat No.		Set	P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Signals & Systems (BTN04401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) A memory less system is also known as _____ System.
a) Casual b) Static
c) Dynamic d) Non casual

2) Two systems with impulse responses $h1(t)$ and $h2(t)$ are connected in cascade. Then the overall impulse response of the cascaded system is given by _____.
a) product of $h1(t)$ and $h2(t)$
b) sum of $h1(t)$ and $h2(t)$
c) convolution of $h1(t)$ and $h2(t)$
d) subtraction of $h2(t)$ from $h1(t)$

3) Fourier transform of unity is _____.
a) $\delta(\omega)$ b) $\pi\delta(\omega)$
c) $2\pi\delta(\omega)$ d) Unit step signal

4) The fundamental period T of the continuous time signal je^{j2t} is _____
a) 1.0π sec b) 0.4π sec
c) 0.3π sec d) 0.5π sec

5) If the signal $x(t) + (1/3)^t u(t-2)$, then signal $x(t+3)$ is guaranteed to be zero for values of t _____.
a) $-\infty < t < 1$ b) $-\infty < t < 3$
c) $-\infty < t < -1$ d) $-1 < t < \infty$

6) $m(t)$ is an even function, then its Fourier representation has _____.
a) $a_0 = 0$ b) $a_n = 0$
c) $b_n = 0$ d) $a_n = b_n$

7) The Fourier transform of $x(t) = \delta(t-2)$ is _____.
a) $e^{j2\omega}$ b) $e^{-j2\omega}$
c) 1 d) None of these

8) If $x(t)$ signal is multiplied with train of impulses, the process is _____.
a) Convolution b) Z transform
c) Sampling d) Laplace transform

9) Which of the following is the method used for reconstruction of signal from its samples?

a) Zero order hold
b) Linear interpolation
c) Both a) and b)
d) None of these

10) When is the system said to be causal as well as stable in accordance to pole/zero of ROC specified by system transfer function?

a) Only if all the poles of system transfer function lie in left-half of S-plane
b) Only if all the poles of system transfer function lie in right-half of S-plane
c) Only if all the poles of system transfer function lie at the centre of S-plane
d) None of the above

11) The sync function can be defined as $\mathrm{SINC}(x) =$ _____.

a) $\frac{\sin x}{x}$
b) $\frac{\sin \pi x}{x}$
c) $\frac{\sin \pi x}{\pi x}$
d) $\mathrm{SINC}\left(\frac{\sin x}{x}\right)$

12) The analog signal $m(t) = 4\cos 50\pi t + 3\sin 300\pi t - \cos 150\pi t$. Then the value of Nyquist rate Fs is _____.

a) $300\ Hz$
b) $150\ Hz$
c) $200\ Hz$
d) $100\ Hz$

13) If $h1(t)$ is the impulse response of invertible system and $h2(t)$ is the impulse response of its inverse system then their convolution $h2(t)^{*}h1(t)$ will be _____.

a) $u(t)$
b) $\delta(t)$
c) $\delta(-t)$
d) None of these

14) If $x[n] = \{1,2,3\}$ and $h[n] = \{3,4,5\}$ and $y[n] = x[n]^{*}h[n]$, the length of $y[n]$ is _____.

a) 5
b) 6
c) 7
d) 3

Seat No.		Set	P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Signals & Systems (BTN04401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR **16**

a) Sketch and label following signals.
i) $u(t-1)$ ii) $u(t+3)$
iii) $u(t+2)-u(t-3)$ iv) $\delta(t)-\delta(t-1)$

b) Determine whether or not the following signals are periodic or not. If the signal is periodic determine the fundamental period.
i) $x[n]=e^{j5\pi n}$ ii) $x(t)=e^{j4\pi t}u(t+1)$

c) State the Trigonometric Fourier series & derive the expression for computing the coefficients $a0$ & a_n of Trigonometric Fourier Series.

d) Consider the continuous time LTI system with the impulse response given below. Determine whether the system is memory less, causal and /or stable. Justify your answer.

$$h(t)=e^{-2t}u(t+3)$$

e) Obtain and sketch the even and odd parts of the discrete time signal $x(n)=\{1,3,4,5\}$ (↑ at 1)

f) For the continuous time periodic signal

$$x(t)=3+\sin\left(\frac{2\pi}{3}t\right)+4\sin\left(\frac{3\pi}{3}t\right)$$

Determine the fundamental frequency ω_0 and the Fourier series coefficient of Exponential Fourier series a_k.

Q.3 Attempt any TWO. **12**

a) Obtain the convolution integral of following signals.
$x(t)=e^{-t}u(t)$ and $h(t)=u(t)$

b) Determine the Exponential Fourier series representation for the following signals $x(t)$ periodic with period 2 and $x(t)=\begin{cases}1 & 0<t<1\\ -1 & 1\le t<2\end{cases}$

c) Consider two discrete systems with impulse responses $h_1[n]$ and $h2[n]$ given below are connected in cascade. Obtain the Impulse response of Overall system.

$h_1[n]=\{1,2,3\}$ (↑ at 1) and $h2(n)=\{3,4,2,1\}$ (↑ at 3)

Section – II

Q.4 Attempt any FOUR **16**

a) Obtain the Fourier transform of

$$x(t) = e^{-at}u(t), a > 0$$

Sketch Magnitude spectrum.

b) State following properties of Fourier transform.

i) Time shifting
ii) Differentiation
iii) Time scaling
iv) Convolution

c) Consider the Parallel connection of two LTI systems whose system transfer functions are as given below.

$H_1(z) = \frac{z}{z-1/3}$ $\quad ROC: |z| > 1/3$

$H_2(z) = \frac{z}{z-2}$ $\quad ROC: |z| < 2$

Obtain the overall transfer function

d) Explain in brief sample with zero order hold.

e) The analog signal $x(t)$ is given below

$$x(t) = 3\sin(60\pi t) + 10\cos(140\pi t) - \sin(250\pi t)$$

Calculate the Nyquist sampling rate for the signal.

Q.5 Solve any TWO of the Following. **12**

a) Explain impulse train sampling with neat diagram.

b) Determine the Fourier transform of periodic signal $x(t) = \sin(2\pi t + \frac{\pi}{4})$

c) Consider an LTI system with the system function.

$$H(s) = \frac{s+1}{(s+2)(s-1)}$$

Obtain the impulse response $h(t)$ of the system and state the region of convergence of the system if the system is:

i) stable
ii) anticausal

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Signals & Systems (BTN04401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) If $x(t)$ signal is multiplied with train of impulses, the process is _____.
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2) Which of the following is the method used for reconstruction of signal from its samples?
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a) $\frac{\sin x}{x}$ b) $\frac{\sin \pi x}{x}$
c) $\frac{\sin \pi x}{\pi x}$ d) $\mathrm{SINC}\left(\frac{\sin x}{x}\right)$

5) The analog signal $m(t) = 4\cos 50\pi t + 3\sin 300\pi t - \cos 150\pi t$. Then the value of Nyquist rate Fs is _____.
a) $300\ Hz$ b) $150\ Hz$
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6) If $h1(t)$ is the impulse response of invertible system and $h2(t)$ is the impulse response of its inverse system then their convolution $h2(t)^{*}h1(t)$ will be _____.
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7) If $x[n] = \{1,2,3\}$ and $h[n] = \{3,4,5\}$ and $y[n] = x[n]^* h[n]$, the length of $y[n]$ is _____.

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Seat No.		Set	Q

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Signals & Systems (BTN04401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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Section – I

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c) State the Trigonometric Fourier series & derive the expression for computing the coefficients $a0$ & a_n of Trigonometric Fourier Series.

d) Consider the continuous time LTI system with the impulse response given below. Determine whether the system is memory less, causal and /or stable. Justify your answer.

$$h(t)=e^{-2t}u(t+3)$$

e) Obtain and sketch the even and odd parts of the discrete time signal
$x(n)=\{1,3,4,5\}$
↑

f) For the continuous time periodic signal

$$x(t)=3+\sin\left(\frac{2\pi}{3}t\right)+4\sin\left(\frac{3\pi}{3}t\right)$$

Determine the fundamental frequency ω_0 and the Fourier series coefficient of Exponential Fourier series a_k.

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Section – II

Q.4 Attempt any FOUR **16**

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$$x(t) = e^{-at}u(t), a > 0$$

Sketch Magnitude spectrum.

b) State following properties of Fourier transform.

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c) Consider the Parallel connection of two LTI systems whose system transfer functions are as given below.

$H_1(z) = \frac{z}{z-1/3}$ $\quad ROC: |z| > 1/3$

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Obtain the overall transfer function

d) Explain in brief sample with zero order hold.

e) The analog signal $x(t)$ is given below

$$x(t) = 3\sin(60\pi t) + 10\cos(140\pi t) - \sin(250\pi t)$$

Calculate the Nyquist sampling rate for the signal.

Q.5 Solve any TWO of the Following. **12**

a) Explain impulse train sampling with neat diagram.

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c) Consider an LTI system with the system function.

$$H(s) = \frac{s+1}{(s+2)(s-1)}$$

Obtain the impulse response $h(t)$ of the system and state the region of convergence of the system if the system is:

i) stable
ii) anticausal

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Signals & Systems (BTN04401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) The sync function can be defined as $\mathrm{SINC}(x) =$ _____.
a) $\frac{\sin x}{x}$ b) $\frac{\sin \pi x}{x}$
c) $\frac{\sin \pi x}{\pi x}$ d) $\mathrm{SINC}\left(\frac{\sin x}{x}\right)$

2) The analog signal $m(t) = 4\cos 50\pi t + 3\sin 300\pi t - \cos 150\pi t$. Then the value of Nyquist rate Fs is _____.
a) $300\ Hz$ b) $150\ Hz$
c) $200\ Hz$ d) $100\ Hz$

3) If $h1(t)$ is the impulse response of invertible system and $h2(t)$ is the impulse response of its inverse system then their convolution $h2(t)^{*}h1(t)$ will be _____.
a) $u(t)$ b) $\delta(t)$
c) $\delta(-t)$ d) None of these

4) If $x[n] = \{1,2,3\}$ and $h[n] = \{3,4,5\}$ and $y[n] = x[n]^{*}h[n]$, the length of $y[n]$ is _____.
a) 5 b) 6
c) 7 d) 3

5) A memory less system is also known as _____ System.
a) Casual b) Static
c) Dynamic d) Non casual

6) Two systems with impulse responses $h1(t)$ and $h2(t)$ are connected in cascade. Then the overall impulse response of the cascaded system is given by _____.
a) product of $h1(t)$ and $h2(t)$
b) sum of $h1(t)$ and $h2(t)$
c) convolution of $h1(t)$ and $h2(t)$
d) subtraction of $h2(t)$ from $h1(t)$

7) Fourier transform of unity is _____.
a) $\delta(\omega)$ b) $\pi\delta(\omega)$
c) $2\pi\delta(\omega)$ d) Unit step signal

8) The fundamental period T of the continuous time signal je^{j2t} is _____
a) 1.0π sec b) 0.4π sec
c) 0.3π sec d) 0.5π sec

9) If the signal $x(t) + (1/3)^t u(t-2)$, then signal $x(t+3)$ is guaranteed to be zero for values of t _____.
a) $-\infty < t < 1$ b) $-\infty < t < 3$
c) $-\infty < t < -1$ d) $-1 < t < \infty$

10) $m(t)$ is an even function, then its Fourier representation has _____.
a) $a_0 = 0$ b) $a_n = 0$
c) $b_n = 0$ d) $a_n = b_n$

11) The Fourier transform of $x(t) = \delta(t-2)$ is _____.
a) $e^{j2\omega}$ b) $e^{-j2\omega}$
c) 1 d) None of these

12) If $x(t)$ signal is multiplied with train of impulses, the process is _____.
a) Convolution b) Z transform
c) Sampling d) Laplace transform

13) Which of the following is the method used for reconstruction of signal from its samples?
a) Zero order hold b) Linear interpolation
c) Both a) and b) d) None of these

14) When is the system said to be causal as well as stable in accordance to pole/zero of ROC specified by system transfer function?
a) Only if all the poles of system transfer function lie in left-half of S-plane
b) Only if all the poles of system transfer function lie in right-half of S-plane
c) Only if all the poles of system transfer function lie at the centre of S-plane
d) None of the above

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Signals & Systems (BTN04401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR **16**

a) Sketch and label following signals.
i) $u(t-1)$ ii) $u(t+3)$
iii) $u(t+2)-u(t-3)$ iv) $\delta(t)-\delta(t-1)$

b) Determine whether or not the following signals are periodic or not. If the signal is periodic determine the fundamental period.
i) $x[n]=e^{j5\pi n}$ ii) $x(t)=e^{j4\pi t}u(t+1)$

c) State the Trigonometric Fourier series & derive the expression for computing the coefficients $a0$ & a_n of Trigonometric Fourier Series.

d) Consider the continuous time LTI system with the impulse response given below. Determine whether the system is memory less, causal and /or stable. Justify your answer.

$$h(t)=e^{-2t}u(t+3)$$

e) Obtain and sketch the even and odd parts of the discrete time signal
$x(n)=\{1,3,4,5\}$
↑

f) For the continuous time periodic signal

$$x(t)=3+\sin\left(\frac{2\pi}{3}t\right)+4\sin\left(\frac{3\pi}{3}t\right)$$

Determine the fundamental frequency ω_0 and the Fourier series coefficient of Exponential Fourier series a_k.

Q.3 Attempt any TWO. **12**

a) Obtain the convolution integral of following signals.
$x(t)=e^{-t}u(t)$ and $h(t)=u(t)$

b) Determine the Exponential Fourier series representation for the following signals $x(t)$ periodic with period 2 and $x(t)=\begin{cases}1 & 0<t<1\\ -1 & 1\le t<2\end{cases}$

c) Consider two discrete systems with impulse responses $h_1[n]$ and $h2[n]$ given below are connected in cascade. Obtain the Impulse response of Overall system.

$h_1[n]=\{1,2,3\}$ and $h2(n)=\{3,4,2,1\}$
↑ ↑

Section – II

Q.4 Attempt any FOUR **16**

a) Obtain the Fourier transform of

$$x(t) = e^{-at}u(t), a > 0$$

Sketch Magnitude spectrum.

b) State following properties of Fourier transform.

i) Time shifting
ii) Differentiation
iii) Time scaling
iv) Convolution

c) Consider the Parallel connection of two LTI systems whose system transfer functions are as given below.

$H_1(z) = \frac{z}{z-1/3}$ $\quad ROC: |z| > 1/3$

$H_2(z) = \frac{z}{z-2}$ $\quad ROC: |z| < 2$

Obtain the overall transfer function

d) Explain in brief sample with zero order hold.

e) The analog signal $x(t)$ is given below

$$x(t) = 3\sin(60\pi t) + 10\cos(140\pi t) - \sin(250\pi t)$$

Calculate the Nyquist sampling rate for the signal.

Q.5 Solve any TWO of the Following. **12**

a) Explain impulse train sampling with neat diagram.

b) Determine the Fourier transform of periodic signal $x(t) = \sin(2\pi t + \frac{\pi}{4})$

c) Consider an LTI system with the system function.

$$H(s) = \frac{s+1}{(s+2)(s-1)}$$

Obtain the impulse response $h(t)$ of the system and state the region of convergence of the system if the system is:

i) stable
ii) anticausal

Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Signals & Systems (BTN04401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option. **14**

1) $m(t)$ is an even function, then its Fourier representation has _____.
a) $a_0 = 0$ b) $a_n = 0$
c) $b_n = 0$ d) $a_n = b_n$

2) The Fourier transform of $x(t) = \delta(t-2)$ is _____.
a) $e^{j2\omega}$ b) $e^{-j2\omega}$
c) 1 d) None of these

3) If $x(t)$ signal is multiplied with train of impulses, the process is _____.
a) Convolution b) Z transform
c) Sampling d) Laplace transform

4) Which of the following is the method used for reconstruction of signal from its samples?
a) Zero order hold b) Linear interpolation
c) Both a) and b) d) None of these

5) When is the system said to be causal as well as stable in accordance to pole/zero of ROC specified by system transfer function?
a) Only if all the poles of system transfer function lie in left-half of S-plane
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c) Only if all the poles of system transfer function lie at the centre of S-plane
d) None of the above

6) The sync function can be defined as $\mathrm{SINC}(x) =$ _____.
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c) $\frac{\sin \pi x}{\pi x}$ d) $\mathrm{SINC}\left(\frac{\sin x}{x}\right)$

7) The analog signal $m(t) = 4\cos 50\pi t + 3\sin 300\pi t - \cos 150\pi t$. Then the value of Nyquist rate Fs is _____.
a) $300\ Hz$ b) $150\ Hz$
c) $200\ Hz$ d) $100\ Hz$

8) If $h1(t)$ is the impulse response of invertible system and $h2(t)$ is the impulse response of its inverse system then their convolution $h2(t)^{*}h1(t)$ will be _____.

a) $u(t)$ b) $\delta(t)$

c) $\delta(-t)$ d) None of these

9) If $x[n] = \{1,2,3\}$ and $h[n] = \{3,4,5\}$ and $y[n] = x[n]^{*}h[n]$, the length of $y[n]$ is _____.

a) 5 b) 6

c) 7 d) 3

10) A memory less system is also known as _____ System.

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11) Two systems with impulse responses $h1(t)$ and $h2(t)$ are connected in cascade. Then the overall impulse response of the cascaded system is given by _____.

a) product of $h1(t)$ and $h2(t)$

b) sum of $h1(t)$ and $h2(t)$

c) convolution of $h1(t)$ and $h2(t)$

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12) Fourier transform of unity is _____.

a) $\delta(\omega)$ b) $\pi\delta(\omega)$

c) $2\pi\delta(\omega)$ d) Unit step signal

13) The fundamental period T of the continuous time signal je^{j2t} is _____

a) 1.0π sec b) 0.4π sec

c) 0.3π sec d) 0.5π sec

14) If the signal $x(t) + (1/3)^{t}u(t-2)$, then signal $x(t+3)$ is guaranteed to be zero for values of t _____.

a) $-\infty < t < 1$ b) $-\infty < t < 3$

c) $-\infty < t < -1$ d) $-1 < t < \infty$

Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Signals & Systems (BTN04401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR **16**

a) Sketch and label following signals.
i) $u(t-1)$ ii) $u(t+3)$
iii) $u(t+2)-u(t-3)$ iv) $\delta(t)-\delta(t-1)$

b) Determine whether or not the following signals are periodic or not. If the signal is periodic determine the fundamental period.
i) $x[n]=e^{j5\pi n}$ ii) $x(t)=e^{j4\pi t}u(t+1)$

c) State the Trigonometric Fourier series & derive the expression for computing the coefficients $a0$ & a_n of Trigonometric Fourier Series.

d) Consider the continuous time LTI system with the impulse response given below. Determine whether the system is memory less, causal and /or stable. Justify your answer.

$$h(t)=e^{-2t}u(t+3)$$

e) Obtain and sketch the even and odd parts of the discrete time signal
$x(n)=\{1,3,4,5\}$
↑

f) For the continuous time periodic signal

$$x(t)=3+\sin\left(\frac{2\pi}{3}t\right)+4\sin\left(\frac{3\pi}{3}t\right)$$

Determine the fundamental frequency ω_0 and the Fourier series coefficient of Exponential Fourier series a_k.

Q.3 Attempt any TWO. **12**

a) Obtain the convolution integral of following signals.
$x(t)=e^{-t}u(t)$ and $h(t)=u(t)$

b) Determine the Exponential Fourier series representation for the following signals $x(t)$ periodic with period 2 and $x(t)=\begin{cases}1 & 0<t<1\\ -1 & 1\le t<2\end{cases}$

c) Consider two discrete systems with impulse responses $h_1[n]$ and $h2[n]$ given below are connected in cascade. Obtain the Impulse response of Overall system.

$h_1[n]=\{1,2,3\}$ and $h2(n)=\{3,4,2,1\}$
↑ ↑

Section – II

Q.4 Attempt any FOUR **16**

a) Obtain the Fourier transform of

$$x(t) = e^{-at}u(t), a > 0$$

Sketch Magnitude spectrum.

b) State following properties of Fourier transform.

i) Time shifting
ii) Differentiation
iii) Time scaling
iv) Convolution

c) Consider the Parallel connection of two LTI systems whose system transfer functions are as given below.

$H_1(z) = \frac{z}{z-1/3}$ $\quad ROC: |z| > 1/3$

$H_2(z) = \frac{z}{z-2}$ $\quad ROC: |z| < 2$

Obtain the overall transfer function

d) Explain in brief sample with zero order hold.

e) The analog signal $x(t)$ is given below

$$x(t) = 3\sin(60\pi t) + 10\cos(140\pi t) - \sin(250\pi t)$$

Calculate the Nyquist sampling rate for the signal.

Q.5 Solve any TWO of the Following. **12**

a) Explain impulse train sampling with neat diagram.

b) Determine the Fourier transform of periodic signal $x(t) = \sin(2\pi t + \frac{\pi}{4})$

c) Consider an LTI system with the system function.

$$H(s) = \frac{s+1}{(s+2)(s-1)}$$

Obtain the impulse response $h(t)$ of the system and state the region of convergence of the system if the system is:

i) stable
ii) anticausal

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Control Systems (BTN04402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 Each question carries one mark.
2) Answer MCQ/Objective type question on page No. 3 only. Don't forgot to mention, Q. P. set (P/Q/R/S) on Top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

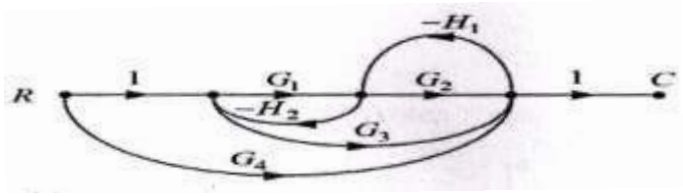
Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) A synchro pair consists of a _____ and a _____.
a) Synchro transmitter & synchro control transformer
b) transmitter & receiver
c) transformer & detector
d) transducer & receiver

2) A stepping motor is a _____ device.
a) mechanical b) electrical
c) analogue d) incremental

3) The _____ number of forward paths and number of loops _____ are present in given SFG.



a) 2,2 b) 2,3
c) 3,2 d) 3,3

4) Three blocks with gain of 4, 6 and 8 are connected in parallel. The total gain of arrangement is _____.
a) 18 b) 196
c) 32 d) 52

5) Loops which do not possess any common node are called as _____.
a) Forward loops b) Feedback loops
c) Touching loops d) Non touching loops

6) If for second order system damping factor is less than one, then system response will be _____.
a) Under damped b) Over damped
c) Critically damped d) None of these

7) What is the type of the closed loop system for the plant transfer function $G(S) = \frac{k\,S}{S^3\,(1+5S)}$

a) 2 b) 1
c) 3 d) 0

8) If the system has repeated pole on the $j\omega$ axis, the system is _____.
a) stable b) marginally stable
c) unstable d) conditionally stable

9) The compensator required to improve the steady state response of system is _____.
a) Lead b) Lag
c) Lag-Lead d) None of these

10) Bandwidth is increased when compensator used is _____.
a) Lead b) Lag
c) Lag-Lead d) None of these

11) Consider the loop transfer function $K(s+6)/(s+3)(s+5)$ In the root locus diagram the centroid will be located at:
a) -4 b) -1
c) -2 d) -3

12) The polar plot of a transfer function passes through the critical point (-1,0). Gain margin is _____.
a) Zero b) -1dB
c) 1 dB d) Infinity

13) The gain margin of a system is 0dB. It represents a _____.
a) stable system b) unstable system
c) marginally stable systems d) conditionally stable system

14) In a bode magnitude plot, which one of the following slopes would be exhibited at high frequencies by a 4^{th} order all-pole system?
a) -80 dB/decade b) -40 dB/decade
c) 40 dB/decade d) 80 dB/decade

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Control Systems (BTN04402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

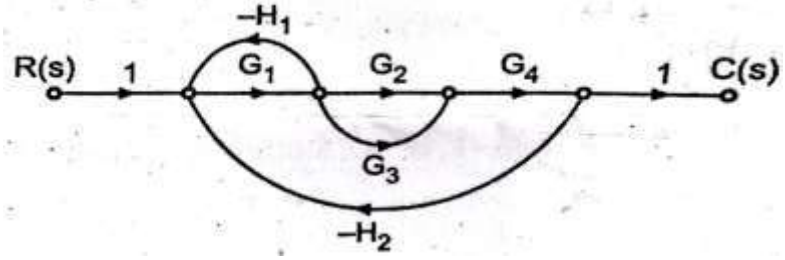
Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Solve any Four of the Following. **16**

a) Define closed loop control system. Elaborate liquid level control system.

b) Using Masons gain formula find the gain of the following system.



c) A unity feedback control system has $G(S) = \frac{40(s+2)}{s(s+1)(s+4)}$ Determine.

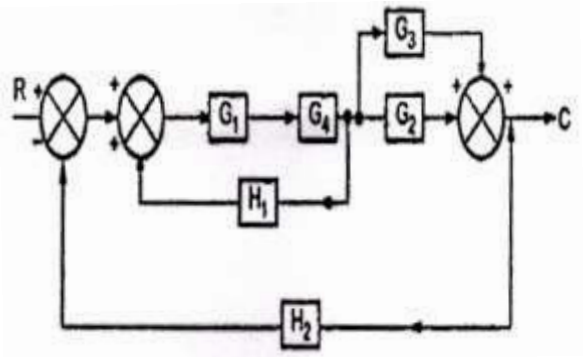
i) Type of system
ii) All error coefficients

d) What is steady state error? Derive an expression of state error.

e) Illustrate speed measurement technique using A.C Tachometer.

Q.3 Solve the Following (Any Two) **12**

a) Obtain transfer function for the given system by using block diagram reduction technique.



b) Derive transfer function of armature-controlled D.C servometer.

c) A second order system is given by $\frac{C(s)}{R(s)} = \frac{25}{(s^2+6s+25)}$

Find its rise time, percentage over shoot, peak time and settling time.

Section – II

Q.4 Attempt the Following (Any Four) **16**

a) What do you mean by proportional integral controller? Elaborate its effect on system performance.

b) Explain frequency domain specifications.

c) Consider a system $G(s)H(s) = \frac{K}{S(S+4)}$. Test a point $S = -2 + j5$ for its existence on root locus and also find corresponding K.

d) Determine the stability, marginal value of K, range of K & frequency of sustained oscillation for above characteristics equation $s^4 + 5s^3 + 5s^2 + 4s + K = 0$.

e) Write a short note on "PID controller".

Q.5 Attempt the Following (Any Two) **12**

a) What is lead compensator? Derive transfer function of lead compensator and also state limitation of its.

b) A feedback system has $G(s)H(s) = \frac{100(s+4)}{s(s+0.5)(s+10)}$. Sketch the Bode plot and comment on stability.

c) Sketch root locus for system $G(s)H(s) = \frac{K}{s(s+1)(s+3)}$ comment on stability.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Control Systems (BTN04402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 Each question carries one mark.
2) Answer MCQ/Objective type question on page No. 3 only. Don't forgot to mention, Q. P. set (P/Q/R/S) on Top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) If the system has repeated pole on the $j\omega$ axis, the system is _____.
a) stable b) marginally stable
c) unstable d) conditionally stable

2) The compensator required to improve the steady state response of system is _____.
a) Lead b) Lag
c) Lag-Lead d) None of these

3) Bandwidth is increased when compensator used is _____.
a) Lead b) Lag
c) Lag-Lead d) None of these

4) Consider the loop transfer function $K(s+6)/(s+3)(s+5)$ In the root locus diagram the centroid will be located at:
a) -4 b) -1
c) -2 d) -3

5) The polar plot of a transfer function passes through the critical point (-1,0). Gain margin is _____.
a) Zero b) -1dB
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6) The gain margin of a system is 0dB. It represents a _____.
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c) marginally stable systems d) conditionally stable system

7) In a bode magnitude plot, which one of the following slopes would be exhibited at high frequencies by a 4^{th} order all-pole system?
a) -80 dB/decade b) -40 dB/decade
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9) A stepping motor is a _____ device.
a) mechanical b) electrical
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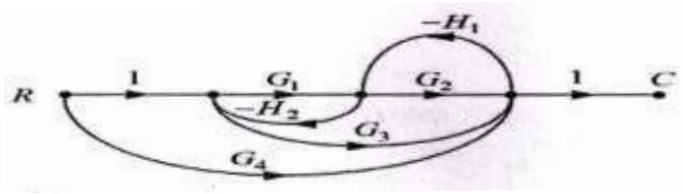
10) The _____ number of forward paths and number of loops _____ are present in given SFG.



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14) What is the type of the closed loop system for the plant transfer function $G(S) = \frac{k\,S}{S^3\,(1+5S)}$

a) 2 b) 1
c) 3 d) 0

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Control Systems (BTN04402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Solve any Four of the Following. **16**

a) Define closed loop control system. Elaborate liquid level control system.

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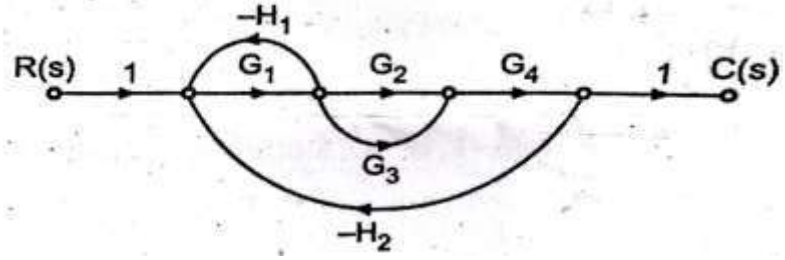

c) A unity feedback control system has $G(S) = \frac{40(s+2)}{s(s+1)(s+4)}$ Determine.

i) Type of system
ii) All error coefficients

d) What is steady state error? Derive an expression of state error.

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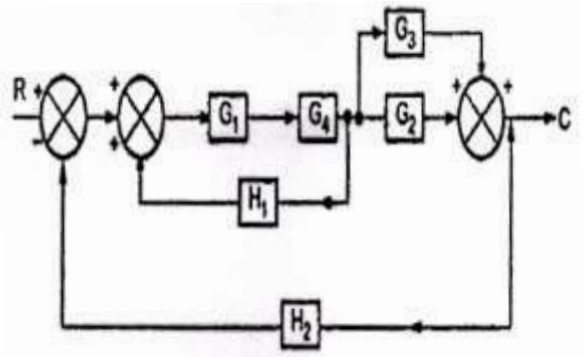

b) Derive transfer function of armature-controlled D.C servometer.

c) A second order system is given by $\frac{C(s)}{R(s)} = \frac{25}{(s^2+6s+25)}$

Find its rise time, percentage over shoot, peak time and settling time.

Section – II

Q.4 Attempt the Following (Any Four) **16**

a) What do you mean by proportional integral controller? Elaborate its effect on system performance.

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d) Determine the stability, marginal value of K, range of K & frequency of sustained oscillation for above characteristics equation $s^4 + 5s^3 + 5s^2 + 4s + K = 0$.

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Q.5 Attempt the Following (Any Two) **12**

a) What is lead compensator? Derive transfer function of lead compensator and also state limitation of its.

b) A feedback system has $G(s)H(s) = \frac{100(s+4)}{s(s+0.5)(s+10)}$. Sketch the Bode plot and comment on stability.

c) Sketch root locus for system $G(s)H(s) = \frac{K}{s(s+1)(s+3)}$ comment on stability.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Control Systems (BTN04402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 Each question carries one mark.
2) Answer MCQ/Objective type question on page No. 3 only. Don't forgot to mention, Q. P. set (P/Q/R/S) on Top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Consider the loop transfer function $K(s+6)/(s+3)(s+5)$ In the root locus diagram the centroid will be located at:
a) -4 b) -1
c) -2 d) -3

2) The polar plot of a transfer function passes through the critical point (-1,0). Gain margin is _____.
a) Zero b) -1dB
c) 1 dB d) Infinity

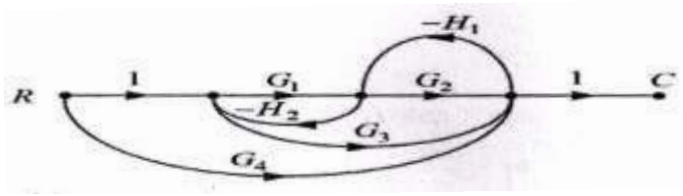
3) The gain margin of a system is 0dB. It represents a _____.
a) stable system b) unstable system
c) marginally stable systems d) conditionally stable system

4) In a bode magnitude plot, which one of the following slopes would be exhibited at high frequencies by a 4^{th} order all-pole system?
a) -80 dB/decade b) -40 dB/decade
c) 40 dB/decade d) 80 dB/decade

5) A synchro pair consists of a _____ and a _____.
a) Synchro transmitter & synchro control transformer
b) transmitter & receiver
c) transformer & detector
d) transducer & receiver

6) A stepping motor is a _____ device.
a) mechanical b) electrical
c) analogue d) incremental

7) The _____ number of forward paths and number of loops _____ are present in given SFG.



a) 2,2 b) 2,3
c) 3,2 d) 3,3

8) Three blocks with gain of 4, 6 and 8 are connected in parallel. The total gain of arrangement is _____.

a) 18 b) 196
c) 32 d) 52

9) Loops which do not possess any common node are called as _____.

a) Forward loops b) Feedback loops
c) Touching loops d) Non touching loops

10) If for second order system damping factor is less than one, then system response will be _____.

a) Under damped b) Over damped
c) Critically damped d) None of these

11) What is the type of the closed loop system for the plant transfer function $G(S) = \frac{k\,S}{S^3\,(1+5S)}$

a) 2 b) 1
c) 3 d) 0

12) If the system has repeated pole on the $j\omega$ axis, the system is _____.

a) stable b) marginally stable
c) unstable d) conditionally stable

13) The compensator required to improve the steady state response of system is _____.

a) Lead b) Lag
c) Lag-Lead d) None of these

14) Bandwidth is increased when compensator used is _____.

a) Lead b) Lag
c) Lag-Lead d) None of these

SLR- GF-756

Seat No.	

Set R

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Control Systems (BTN04402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

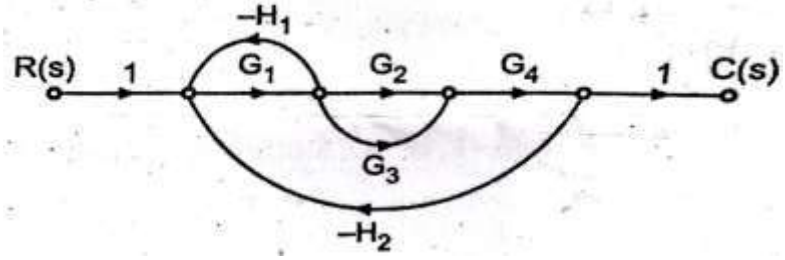
Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Solve any Four of the Following. **16**

a) Define closed loop control system. Elaborate liquid level control system.

b) Using Masons gain formula find the gain of the following system.



c) A unity feedback control system has $G(S) = \frac{40(s+2)}{s(s+1)(s+4)}$ Determine.

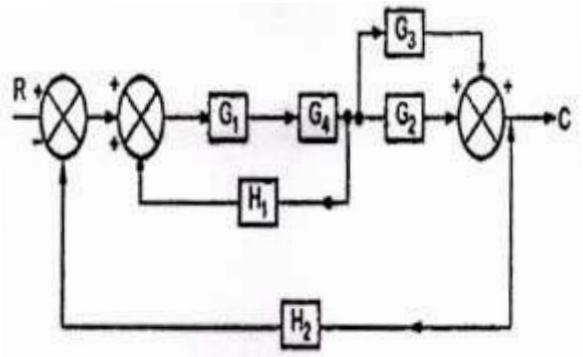
i) Type of system
ii) All error coefficients

d) What is steady state error? Derive an expression of state error.

e) Illustrate speed measurement technique using A.C Tachometer.

Q.3 Solve the Following (Any Two) **12**

a) Obtain transfer function for the given system by using block diagram reduction technique.



b) Derive transfer function of armature-controlled D.C servometer.

c) A second order system is given by $\frac{C(s)}{R(s)} = \frac{25}{(s^2+6s+25)}$

Find its rise time, percentage over shoot, peak time and settling time.

Section – II

Q.4 Attempt the Following (Any Four) **16**

a) What do you mean by proportional integral controller? Elaborate its effect on system performance.

b) Explain frequency domain specifications.

c) Consider a system $G(s)H(s) = \frac{K}{S(S+4)}$. Test a point $S = -2 + j5$ for its existence on root locus and also find corresponding K.

d) Determine the stability, marginal value of K, range of K & frequency of sustained oscillation for above characteristics equation $s^4 + 5s^3 + 5s^2 + 4s + K = 0$.

e) Write a short note on "PID controller".

Q.5 Attempt the Following (Any Two) **12**

a) What is lead compensator? Derive transfer function of lead compensator and also state limitation of its.

b) A feedback system has $G(s)H(s) = \frac{100(s+4)}{s(s+0.5)(s+10)}$. Sketch the Bode plot and comment on stability.

c) Sketch root locus for system $G(s)H(s) = \frac{K}{s(s+1)(s+3)}$ comment on stability.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Control Systems (BTN04402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) If for second order system damping factor is less than one, then system response will be _____.
a) Under damped b) Over damped
c) Critically damped d) None of these

2) What is the type of the closed loop system for the plant transfer function $G(S) = \frac{k\,S}{S^3\,(1+5S)}$
a) 2 b) 1
c) 3 d) 0

3) If the system has repeated pole on the $j\omega$ axis, the system is _____.
a) stable b) marginally stable
c) unstable d) conditionally stable

4) The compensator required to improve the steady state response of system is _____.
a) Lead b) Lag
c) Lag-Lead d) None of these

5) Bandwidth is increased when compensator used is _____.
a) Lead b) Lag
c) Lag-Lead d) None of these

6) Consider the loop transfer function $K(s+6)/(s+3)(s+5)$ In the root locus diagram the centroid will be located at:
a) -4 b) -1
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7) The polar plot of a transfer function passes through the critical point (-1,0). Gain margin is _____.
a) Zero b) -1dB
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9) In a bode magnitude plot, which one of the following slopes would be exhibited at high frequencies by a 4^{th} order all-pole system?
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10) A synchro pair consists of a _____ and a _____.
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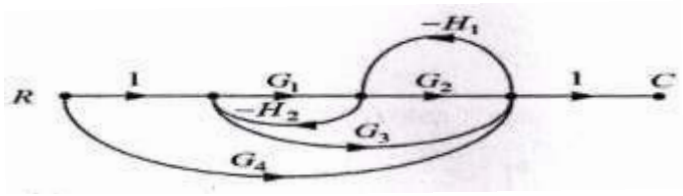

a) 2,2 b) 2,3
c) 3,2 d) 3,3

13) Three blocks with gain of 4, 6 and 8 are connected in parallel. The total gain of arrangement is _____.
a) 18 b) 196
c) 32 d) 52

14) Loops which do not possess any common node are called as _____.
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c) Touching loops d) Non touching loops

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Control Systems (BTN04402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any Four of the Following. **16**

a) Define closed loop control system. Elaborate liquid level control system.

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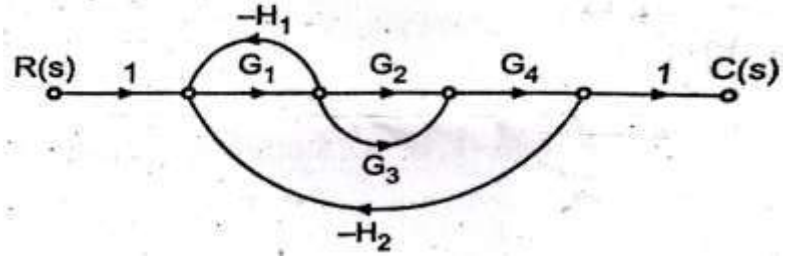

c) A unity feedback control system has $G(S) = \frac{40(s+2)}{s(s+1)(s+4)}$ Determine.

i) Type of system
ii) All error coefficients

d) What is steady state error? Derive an expression of state error.

e) Illustrate speed measurement technique using A.C Tachometer.

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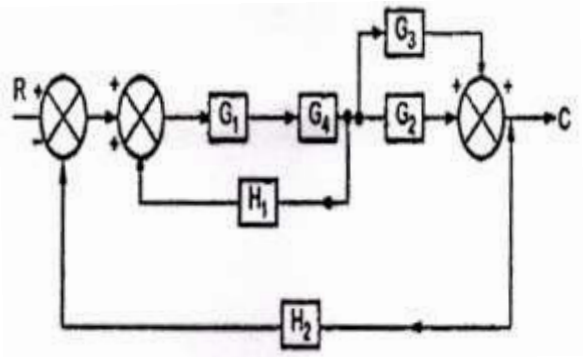
a) Obtain transfer function for the given system by using block diagram reduction technique.



b) Derive transfer function of armature-controlled D.C servometer.

c) A second order system is given by $\frac{C(s)}{R(s)} = \frac{25}{(s^2+6s+25)}$

Find its rise time, percentage over shoot, peak time and settling time.

Section – II

Q.4 Attempt the Following (Any Four) **16**

a) What do you mean by proportional integral controller? Elaborate its effect on system performance.

b) Explain frequency domain specifications.

c) Consider a system $G(s)H(s) = \frac{K}{S(S+4)}$. Test a point $S = -2 + j5$ for its existence on root locus and also find corresponding K.

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b) A feedback system has $G(s)H(s) = \frac{100(s+4)}{s(s+0.5)(s+10)}$. Sketch the Bode plot and comment on stability.

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Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Structures and Algorithms (BTN04405)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What is the postfix expression for the infix expression a-b-c?
a) -ab-c b) ab−c−
c) −-abc d) None of these

2) Linked list is considered as an example of _____ type of memory allocation.
a) Dynamic b) Static
c) Compile time d) Heap

3) Consider the following operation performed on a stack of size 5.
Push(1);
Pop();
Push(2);
Push(3);
Pop();
Push(4);
Pop();
Pop();
Push(5);
After the completion of all operation, the number of elements present in stack are _____.
a) 1 b) 2
c) 3 d) 4

4) What is the term for inserting into a full queue known as?
a) overflow b) underflow
c) null pointer exception d) program won't be compiled

5) Which of the following is false about a circular linked list?
a) Every node has a successor
b) Time complexity of inserting a new node at the head of the list is O(1)
c) Time complexity for deleting the last node is O(n)
d) We can traverse the whole circular linked list by starting from any point

6) In recursion, the condition for which the function will stop calling itself is _____.
a) Best case
b) Worst case
c) Base case
d) There is no such condition

7) Which data structure is used for implementing recursion?
a) Queue
b) Stack
c) Array
d) List

8) The number of binary trees with 3 nodes which when traversed in post order gives the sequence A,B,C is ?
a) 3
b) 9
c) 7
d) 5

9) Using division method, in a given hash table of size 157, the key of value 172 be placed at position _____.
a) 19
b) 72
c) 15
d) 17

10) The array is as follows: 1,2,3,6,8,10. Given that the number 17 is to be searched. At which call it tells that there's no such element? (By using linear search(recursive) algorithm) _____.
a) 7th cell
b) 9th cell
c) 17th cell
d) The function calls itself infinite number of times

11) In the following scenarios, when will you use selection sort?
a) The input is already sorted
b) A large file has to be sorted
c) Large values need to be sorted with small keys
d) Small values need to be sorted with large keys

12) In a graph if $E = (u, v)$ means _____.
a) u is adjacent to v but v is not adjacent to u
b) E begins at u and ends at v
c) u is predecessor and v is successor
d) both b and c

13) Given an adjacency matrix A = [[0, 1, 1], [1, 0, 1], [1, 1, 0]], The total no. of ways in which every vertex can walk to itself using 2 edges is _____.
a) 2
b) 4
c) 6
d) 8

14) Which of the following indicates pre-order traversal?
a) Left sub-tree, Right sub-tree and root
b) Right sub-tree, Left sub-tree and root
c) Root, Left sub-tree, Right sub-tree
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Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Structures and Algorithms (BTN04405)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four: **16**

a) Write a 'C' routine to push and pop an element for a stack.
b) Define queue. Explain the different types of queues with neat diagrams.
c) Explain any one application of linked list with example.
d) Write a 'C' program to find the GCD of two numbers with recusive function.
e) Explain the representation of doubly linked list with an example.

Q.3 Attempt any two: **12**

a) Write a 'C' program to implement following operations on a circular queue
1) Enqueue
2) Dequeue
3) Display
b) Write a program in 'C' to reverse the elements of a linked list using recursion.
c) Convert the following infix expression to postfix expression using stack.
1) $A + B + C + D$
2) $A + B * C - D/E * F$

Section – II

Q.4 Attempt any four: **16**

a) Explain how bubble sort work for the following.
24, 36, 47, 35, 10, 90, 82, 31
b) Write an algorithm for binary search method and mention the drawbacks of linear search method.
c) Define the following with neat diagrams.
1) Cyclic graph
2) Weighted graph
3) Directed graph
4) Isolated graph
d) Construct the binary search tree for the following elements.
78, 26, 94, 43, 23, 14, 53, 76, 29
e) Write a 'C' program to implement an insertion sort method.

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a) What is hashing? Explain the following hash functions with example.
1) Division method
2) Folding method
3) Digit Analysis
4) Midsquare method

b) Explain the adjacency matrix and adjacency linked representation for a graph with example.

c) Draw a binary search tree from the following preorder and inorder paths. Show the intermediate steps.
Preorder: F A E K C D H G B
Inorder: E A C K F H D B G

Seat No.		Set	Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Structures and Algorithms (BTN04405)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
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Duration: 30 Minutes Marks: 14

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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Structures and Algorithms (BTN04405)

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Inorder: E A C K F H D B G

Seat No.		Set	R

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Structures and Algorithms (BTN04405)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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Push(5);
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a) 1 b) 2
c) 3 d) 4

8) What is the term for inserting into a full queue known as?

a) overflow b) underflow
c) null pointer exception d) program won't be compiled

9) Which of the following is false about a circular linked list?

a) Every node has a successor
b) Time complexity of inserting a new node at the head of the list is O(1)
c) Time complexity for deleting the last node is O(n)
d) We can traverse the whole circular linked list by starting from any point

10) In recursion, the condition for which the function will stop calling itself is _____.

a) Best case b) Worst case
c) Base case d) There is no such condition

11) Which data structure is used for implementing recursion?

a) Queue b) Stack
c) Array d) List

12) The number of binary trees with 3 nodes which when traversed in post order gives the sequence A,B,C is ?

a) 3 b) 9
c) 7 d) 5

13) Using division method, in a given hash table of size 157, the key of value 172 be placed at position _____.

a) 19 b) 72
c) 15 d) 17

14) The array is as follows: 1,2,3,6,8,10. Given that the number 17 is to be searched. At which call it tells that there's no such element? (By using linear search(recursive) algorithm) _____.

a) 7th cell
b) 9th cell
c) 17th cell
d) The function calls itself infinite number of times

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Structures and Algorithms (BTN04405)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four: **16**

a) Write a 'C' routine to push and pop an element for a stack.
b) Define queue. Explain the different types of queues with neat diagrams.
c) Explain any one application of linked list with example.
d) Write a 'C' program to find the GCD of two numbers with recusive function.
e) Explain the representation of doubly linked list with an example.

Q.3 Attempt any two: **12**

a) Write a 'C' program to implement following operations on a circular queue
1) Enqueue
2) Dequeue
3) Display
b) Write a program in 'C' to reverse the elements of a linked list using recursion.
c) Convert the following infix expression to postfix expression using stack.
1) $A + B + C + D$
2) $A + B * C - D/E * F$

Section – II

Q.4 Attempt any four: **16**

a) Explain how bubble sort work for the following.
24, 36, 47, 35, 10, 90, 82, 31
b) Write an algorithm for binary search method and mention the drawbacks of linear search method.
c) Define the following with neat diagrams.
1) Cyclic graph
2) Weighted graph
3) Directed graph
4) Isolated graph
d) Construct the binary search tree for the following elements.
78, 26, 94, 43, 23, 14, 53, 76, 29
e) Write a 'C' program to implement an insertion sort method.

Q.5 Attempt any two: **12**

a) What is hashing? Explain the following hash functions with example.
1) Division method
2) Folding method
3) Digit Analysis
4) Midsquare method

b) Explain the adjacency matrix and adjacency linked representation for a graph with example.

c) Draw a binary search tree from the following preorder and inorder paths. Show the intermediate steps.
Preorder: F A E K C D H G B
Inorder: E A C K F H D B G

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Structures and Algorithms (BTN04405)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In recursion, the condition for which the function will stop calling itself is _____.
a) Best case b) Worst case
c) Base case d) There is no such condition

2) Which data structure is used for implementing recursion?
a) Queue b) Stack
c) Array d) List

3) The number of binary trees with 3 nodes which when traversed in post order gives the sequence A,B,C is ?
a) 3 b) 9
c) 7 d) 5

4) Using division method, in a given hash table of size 157, the key of value 172 be placed at position _____.
a) 19 b) 72
c) 15 d) 17

5) The array is as follows: 1,2,3,6,8,10. Given that the number 17 is to be searched. At which call it tells that there's no such element? (By using linear search(recursive) algorithm) _____.
a) 7th cell
b) 9th cell
c) 17th cell
d) The function calls itself infinite number of times

6) In the following scenarios, when will you use selection sort?
a) The input is already sorted
b) A large file has to be sorted
c) Large values need to be sorted with small keys
d) Small values need to be sorted with large keys

7) In a graph if $E = (u, v)$ means _____.
a) u is adjacent to v but v is not adjacent to u
b) E begins at u and ends at v
c) u is predecessor and v is successor
d) both b and c

8) Given an adjacency matrix A = [[0, 1, 1], [1, 0, 1], [1, 1, 0]], The total no. of ways in which every vertex can walk to itself using 2 edges is _____.
a) 2 b) 4
c) 6 d) 8

9) Which of the following indicates pre-order traversal?
a) Left sub-tree, Right sub-tree and root
b) Right sub-tree, Left sub-tree and root
c) Root, Left sub-tree, Right sub-tree
d) Right sub-tree, root, Left sub-tree

10) What is the postfix expression for the infix expression a-b-c?
a) -ab-c b) ab−c−
c) −-abc d) None of these

11) Linked list is considered as an example of _____ type of memory allocation.
a) Dynamic b) Static
c) Compile time d) Heap

12) Consider the following operation performed on a stack of size 5.
Push(1);
Pop();
Push(2);
Push(3);
Pop();
Push(4);
Pop();
Pop();
Push(5);
After the completion of all operation, the number of elements present in stack are _____.
a) 1 b) 2
c) 3 d) 4

13) What is the term for inserting into a full queue known as?
a) overflow b) underflow
c) null pointer exception d) program won't be compiled

14) Which of the following is false about a circular linked list?
a) Every node has a successor
b) Time complexity of inserting a new node at the head of the list is O(1)
c) Time complexity for deleting the last node is O(n)
d) We can traverse the whole circular linked list by starting from any point

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Data Structures and Algorithms (BTN04405)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four: **16**

a) Write a 'C' routine to push and pop an element for a stack.
b) Define queue. Explain the different types of queues with neat diagrams.
c) Explain any one application of linked list with example.
d) Write a 'C' program to find the GCD of two numbers with recusive function.
e) Explain the representation of doubly linked list with an example.

Q.3 Attempt any two: **12**

a) Write a 'C' program to implement following operations on a circular queue
1) Enqueue
2) Dequeue
3) Display
b) Write a program in 'C' to reverse the elements of a linked list using recursion.
c) Convert the following infix expression to postfix expression using stack.
1) $A + B + C + D$
2) $A + B * C - D/E * F$

Section – II

Q.4 Attempt any four: **16**

a) Explain how bubble sort work for the following.
24, 36, 47, 35, 10, 90, 82, 31
b) Write an algorithm for binary search method and mention the drawbacks of linear search method.
c) Define the following with neat diagrams.
1) Cyclic graph
2) Weighted graph
3) Directed graph
4) Isolated graph
d) Construct the binary search tree for the following elements.
78, 26, 94, 43, 23, 14, 53, 76, 29
e) Write a 'C' program to implement an insertion sort method.

Q.5 Attempt any two: **12**

a) What is hashing? Explain the following hash functions with example.
1) Division method
2) Folding method
3) Digit Analysis
4) Midsquare method

b) Explain the adjacency matrix and adjacency linked representation for a graph with example.

c) Draw a binary search tree from the following preorder and inorder paths. Show the intermediate steps.
Preorder: F A E K C D H G B
Inorder: E A C K F H D B G

SLR-GF-758

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Integrated Circuits (BTN04403)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of below ADC has a DAC inside it?
a) flash b) successive approximation
c) single slope d) dual slope

2) Phase lag & Phase lead are types of _____.
a) all pass filter
b) frequency compensating networks
c) integrator response
d) none of these

3) Output voltage swing indicates the values of _____ voltage output of the op amp.
a) saturation b) supply
c) slew rate d) all of these

4) When signals need to travel over long distance in noisy environment, one can use _____ amplifier.
a) differential b) log
c) all pass d) unity gain

5) Schmitt Trigger has _____.
a) two reference levels b) hysteresis
c) positive feedback d) all of these

6) A unipolar digital to analog voltage system requires _____.
a) op amp b) 1408 ADC
c) resistors d) all of these

7) Open loop _____ of the op amp is very high and _____ is very small.
a) gain, bandwidth b) bandwidth, gain
c) UGB, gain d) gain, UGB

8) If $x = (\pm Vsat) / (1 + A\beta)$ then x is _____.
a) saturation voltage
b) total output offset voltage with feedback
c) voltage gain with feedback
d) feedback factor with feedback

9) A practical integrator has an additional _____ than ideal integrator.
a) resistor b) capacitor
c) resistor and capacitor d) two resistors

10) An all pass filter is used to _____.
a) remove noise
b) pass only a particular frequency
c) offer a phase shift
d) all of these

11) Make odd man out: input offset current, input offset voltage, thermal drift, CMRR.
a) input offset current b) input offset voltage
c) thermal drift d) CMRR

12) _____ is an open loop application of op amp.
a) window detector b) voltage follower
c) I to V converter d) V to I converter

13) Which of below circuit has positive feedback?
a) oscillator b) first order filter
c) V to I converter d) I to V converter

14) Which of below is always stable?
a) voltage follower b) integrator
c) differentiator d) all of these

Seat No.	

Set | P

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Integrated Circuits (BTN04403)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve Any Two. **12**

a) Derive an equation for closed loop voltage gain (A_F) for inverting amplifier for ideal & exact case. Also derive equation for closed loop voltage gain and loop gain $(A\beta)$.
b) Draw and explain completely compensated inverting amplifier.
c) Derive an expression for output of an integrator.

Q.3 Solve Any Four. **16**

a) What is loading effect? How op amp can be used to avoid it?
b) V_1, V_2, V_3 & V_o are analog voltages. Show how op amp can be used to obtain V_o where $V_0 = -(V_1+V_2+V_3)/3$
c) Justify: for carrying signal over long distance in a noisy environment one has to use a differential amplifier.
d) Discuss circuit stability criteria.
e) Describe internal block diagram of a typical op amp.

Section – II

Q.4 Solve Any Two. **12**

a) Design a square wave generator for 1 kHz.
b) Explain peak detector using op amp.
c) Design a circuit which through different color LEDs give indication about voltage range of an unknown input voltage. Assume suitable voltage ranges.

Q.5 Solve Any Four. **16**

a) Discuss advantages and disadvantages of active filters over passive filters.
b) Explain any two significant DAC specifications.
c) Show how op amp can be used for notch filter.
d) Discuss Schmitt trigger and its applications.
e) Show how op amp can be used as precision half wave rectifier.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Integrated Circuits (BTN04403)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If $x = (\pm Vsat) / (1 + A\beta)$ then x is _____.
a) saturation voltage
b) total output offset voltage with feedback
c) voltage gain with feedback
d) feedback factor with feedback

2) A practical integrator has an additional _____ than ideal integrator.
a) resistor b) capacitor
c) resistor and capacitor d) two resistors

3) An all pass filter is used to _____.
a) remove noise
b) pass only a particular frequency
c) offer a phase shift
d) all of these

4) Make odd man out: input offset current, input offset voltage, thermal drift, CMRR.
a) input offset current b) input offset voltage
c) thermal drift d) CMRR

5) _____ is an open loop application of op amp.
a) window detector b) voltage follower
c) I to V converter d) V to I converter

6) Which of below circuit has positive feedback?
a) oscillator b) first order filter
c) V to I converter d) I to V converter

7) Which of below is always stable?
a) voltage follower b) integrator
c) differentiator d) all of these

8) Which of below ADC has a DAC inside it?
a) flash b) successive approximation
c) single slope d) dual slope

9) Phase lag & Phase lead are types of _____.
a) all pass filter
b) frequency compensating networks
c) integrator response
d) none of these

10) Output voltage swing indicates the values of _____ voltage output of the op amp.
a) saturation
b) supply
c) slew rate
d) all of these

11) When signals need to travel over long distance in noisy environment, one can use _____ amplifier.
a) differential
b) log
c) all pass
d) unity gain

12) Schmitt Trigger has _____.
a) two reference levels
b) hysteresis
c) positive feedback
d) all of these

13) A unipolar digital to analog voltage system requires _____.
a) op amp
b) 1408 ADC
c) resistors
d) all of these

14) Open loop _____ of the op amp is very high and _____ is very small.
a) gain, bandwidth
b) bandwidth, gain
c) UGB, gain
d) gain, UGB

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Integrated Circuits (BTN04403)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve Any Two. **12**

a) Derive an equation for closed loop voltage gain (A_F) for inverting amplifier for ideal & exact case. Also derive equation for closed loop voltage gain and loop gain $(A\beta)$.
b) Draw and explain completely compensated inverting amplifier.
c) Derive an expression for output of an integrator.

Q.3 Solve Any Four. **16**

a) What is loading effect? How op amp can be used to avoid it?
b) V_1, V_2, V_3 & V_o are analog voltages. Show how op amp can be used to obtain V_o where $V_0 = -(V_1+V_2+V_3)/3$
c) Justify: for carrying signal over long distance in a noisy environment one has to use a differential amplifier.
d) Discuss circuit stability criteria.
e) Describe internal block diagram of a typical op amp.

Section – II

Q.4 Solve Any Two. **12**

a) Design a square wave generator for 1 kHz.
b) Explain peak detector using op amp.
c) Design a circuit which through different color LEDs give indication about voltage range of an unknown input voltage. Assume suitable voltage ranges.

Q.5 Solve Any Four. **16**

a) Discuss advantages and disadvantages of active filters over passive filters.
b) Explain any two significant DAC specifications.
c) Show how op amp can be used for notch filter.
d) Discuss Schmitt trigger and its applications.
e) Show how op amp can be used as precision half wave rectifier.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Integrated Circuits (BTN04403)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Make odd man out: input offset current, input offset voltage, thermal drift, CMRR.
a) input offset current b) input offset voltage
c) thermal drift d) CMRR

2) _____ is an open loop application of op amp.
a) window detector b) voltage follower
c) I to V converter d) V to I converter

3) Which of below circuit has positive feedback?
a) oscillator b) first order filter
c) V to I converter d) I to V converter

4) Which of below is always stable?
a) voltage follower b) integrator
c) differentiator d) all of these

5) Which of below ADC has a DAC inside it?
a) flash b) successive approximation
c) single slope d) dual slope

6) Phase lag & Phase lead are types of _____.
a) all pass filter
b) frequency compensating networks
c) integrator response
d) none of these

7) Output voltage swing indicates the values of _____ voltage output of the op amp.
a) saturation b) supply
c) slew rate d) all of these

8) When signals need to travel over long distance in noisy environment, one can use _____ amplifier.
a) differential b) log
c) all pass d) unity gain

9) Schmitt Trigger has _____.
a) two reference levels b) hysteresis
c) positive feedback d) all of these

10) A unipolar digital to analog voltage system requires _____.
a) op amp b) 1408 ADC
c) resistors d) all of these

11) Open loop _____ of the op amp is very high and _____ is very small.
a) gain, bandwidth b) bandwidth, gain
c) UGB, gain d) gain, UGB

12) If $x = (\pm Vsat) / (1 + A\beta)$ then x is _____.
a) saturation voltage
b) total output offset voltage with feedback
c) voltage gain with feedback
d) feedback factor with feedback

13) A practical integrator has an additional _____ than ideal integrator.
a) resistor b) capacitor
c) resistor and capacitor d) two resistors

14) An all pass filter is used to _____.
a) remove noise
b) pass only a particular frequency
c) offer a phase shift
d) all of these

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Integrated Circuits (BTN04403)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve Any Two. **12**

a) Derive an equation for closed loop voltage gain (A_F) for inverting amplifier for ideal & exact case. Also derive equation for closed loop voltage gain and loop gain $(A\beta)$.
b) Draw and explain completely compensated inverting amplifier.
c) Derive an expression for output of an integrator.

Q.3 Solve Any Four. **16**

a) What is loading effect? How op amp can be used to avoid it?
b) V_1, V_2, V_3 & V_o are analog voltages. Show how op amp can be used to obtain V_o where $V_0 = -(V_1+V_2+V_3)/3$
c) Justify: for carrying signal over long distance in a noisy environment one has to use a differential amplifier.
d) Discuss circuit stability criteria.
e) Describe internal block diagram of a typical op amp.

Section – II

Q.4 Solve Any Two. **12**

a) Design a square wave generator for 1 kHz.
b) Explain peak detector using op amp.
c) Design a circuit which through different color LEDs give indication about voltage range of an unknown input voltage. Assume suitable voltage ranges.

Q.5 Solve Any Four. **16**

a) Discuss advantages and disadvantages of active filters over passive filters.
b) Explain any two significant DAC specifications.
c) Show how op amp can be used for notch filter.
d) Discuss Schmitt trigger and its applications.
e) Show how op amp can be used as precision half wave rectifier.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Integrated Circuits (BTN04403)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A unipolar digital to analog voltage system requires _____.
a) op amp b) 1408 ADC
c) resistors d) all of these

2) Open loop _____ of the op amp is very high and _____ is very small.
a) gain, bandwidth b) bandwidth, gain
c) UGB, gain d) gain, UGB

3) If $x = (\pm Vsat) / (1 + A\beta)$ then x is _____.
a) saturation voltage
b) total output offset voltage with feedback
c) voltage gain with feedback
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4) A practical integrator has an additional _____ than ideal integrator.
a) resistor b) capacitor
c) resistor and capacitor d) two resistors

5) An all pass filter is used to _____.
a) remove noise
b) pass only a particular frequency
c) offer a phase shift
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6) Make odd man out: input offset current, input offset voltage, thermal drift, CMRR.
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7) _____ is an open loop application of op amp.
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8) Which of below circuit has positive feedback?
a) oscillator b) first order filter
c) V to I converter d) I to V converter

9) Which of below is always stable?
a) voltage follower b) integrator
c) differentiator d) all of these

10) Which of below ADC has a DAC inside it?
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c) single slope d) dual slope

11) Phase lag & Phase lead are types of _____.
a) all pass filter
b) frequency compensating networks
c) integrator response
d) none of these

12) Output voltage swing indicates the values of _____ voltage output of the op amp.
a) saturation b) supply
c) slew rate d) all of these

13) When signals need to travel over long distance in noisy environment, one can use _____ amplifier.
a) differential b) log
c) all pass d) unity gain

14) Schmitt Trigger has _____.
a) two reference levels b) hysteresis
c) positive feedback d) all of these

SLR-GF-758

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Integrated Circuits (BTN04403)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Solve Any Two. **12**

a) Derive an equation for closed loop voltage gain (A_F) for inverting amplifier for ideal & exact case. Also derive equation for closed loop voltage gain and loop gain $(A\beta)$.
b) Draw and explain completely compensated inverting amplifier.
c) Derive an expression for output of an integrator.

Q.3 Solve Any Four. **16**

a) What is loading effect? How op amp can be used to avoid it?
b) V_1, V_2, V_3 & V_o are analog voltages. Show how op amp can be used to obtain V_o where $V_0 = -(V_1+V_2+V_3)/3$
c) Justify: for carrying signal over long distance in a noisy environment one has to use a differential amplifier.
d) Discuss circuit stability criteria.
e) Describe internal block diagram of a typical op amp.

Section – II

Q.4 Solve Any Two. **12**

a) Design a square wave generator for 1 kHz.
b) Explain peak detector using op amp.
c) Design a circuit which through different color LEDs give indication about voltage range of an unknown input voltage. Assume suitable voltage ranges.

Q.5 Solve Any Four. **16**

a) Discuss advantages and disadvantages of active filters over passive filters.
b) Explain any two significant DAC specifications.
c) Show how op amp can be used for notch filter.
d) Discuss Schmitt trigger and its applications.
e) Show how op amp can be used as precision half wave rectifier.

SLR-GF-759

Seat No.		Set	P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Communication (BTN04404)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option **14**

1) Which of the following pulse modulation techniques is commonly used in digital communication systems?
a) Pulse Amplitude Modulation (PAM)
b) Pulse Width Modulation (PWM)
c) Pulse Position Modulation (PPM)
d) Pulse Code Modulation (PCM)

2) The Nyquist sampling theorem states that the sampling rate should be:
a) Twice the highest frequency component of the signal
b) Equal to the highest frequency component of the signal
c) Half the highest frequency component of the signal
d) Independent of the highest frequency component of the signal

3) Which of the following statements is true about pulse modulation?
a) It requires a continuous carrier signal for transmission
b) It is immune to noise and distortion
c) It provides efficient bandwidth utilization
d) It is suitable for long-distance communication

4) Pulse position modulation (PPM) is a technique where information is encoded in the:
a) Amplitude of the pulses b) Frequency of the pulses
c) Width of the pulses d) Position of the pulses

5) Communication is a Process of
a) Keeping in touch b) Exchanging information
c) Broadcasting d) entertainment by electronics

6) The ultra high frequency (UHF) extends from
a) 3-30MHz b) 30-300MHz
c) 300-3000MHz d) 3000-30000MHz

7) Noise voltage varies in a resistor as

a) 4 KTR_B b) $\sqrt{4KTR}_B$

c) $\sqrt{2elpB}$ d) $\sqrt{2elpB.R}$

8) For an AM signal, the bandwidth is 10 KHz and highest frequency compound present is 705 kHz. What is the carrier frequency used for this AM signal

a) 695kHz b) 705kHz

c) 700kHz d) 710kHz

9) A carrier is amplitude modulated by 4 signals of 10 KHz, 15 KHz, 20 KHz and 25 KHz what is the bandwidth of the modulated signal?

a) 25kHz b) 50kHz

c) 70kHz d) 140kHz

10) Indicate the false statement regarding the advantages of SSB over double sideband, full carrier -AM:

a) More channel space is available

b) Transmitter circuits must be more stable, giving better reception.

c) The signal is more noise resistance

d) Much less power is required for the same signal length.

11) Which of the following analog modulation scheme requires the minimum transmitted power and minimum channel bandwidth?

a) VSB b) DSB-SC

c) SSB d) AM

12) A Practical local oscillator in the superhetrodyne type of communication receiver is

a) An R-C phase shift oscillator

b) A coplpitt's oscillator

c) A hartely oscillator

d) Phase shift type of harmonic oscillator employ LC resonator

13) When a radio receiver is tuned to 455 KHz, its local oscillator provides the mixer with an input at 1010 kHz. What is the frequency of the other station

a) 910kHz b) 455kHz

c) 355kHz d) 1465kHz

14) In conventional AM superhetrodye receivers, the detectors employed to extract intelligence include

a) Peak detectors b) Ratio detectors

c) Phase locked loops d) Slope detectors

Seat No.	

Set | P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Communication (BTN04404)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any FOUR **16**

a) What is multiplexing? What are its advantages?
b) What is Electromagnetic Spectrum? What is its importance?
c) Explain shot noise. What are its sources?
d) Sketch and explain AM wave for m=1, m<1 and m>1. Which is a better case? Why?
e) Explain a Vestigial sideband signal for TV.

Q.3 Attempt any TWO **12**

a) Discuss principle of Balance Modulator and with suitable diagram explain third method of suppression of sideband.
b) Discuss the different methods of Noise calculation?
c) With suitable block diagram explain superhetrodyne communication receiver.

Section – II

Q.4 Attempt any FOUR **16**

a) Discuss the terms frequency deviation, modulation index, percentage modulation in FM?
b) State Sampling Theorem. Discuss the different types of Sampling.
c) Discuss the concept of LOS & radiation with respect to wave propagation.
d) Define antenna gain and explain polarization of an antenna.
e) Discuss the different characteristics of an antenna.

Q.5 Attempt any TWO **12**

a) Illustrate the block diagram of Armstrong method of FM generation. Also draw the phasor diagram
b) Illustrate with a neat diagram PPM Generation and Regeneration technique
c) Illustrate with a neat diagram PWM Generation and Regeneration technique.

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Communication (BTN04404)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option **14**

1) For an AM signal, the bandwidth is 10 KHz and highest frequency compound present is 705 kHz. What is the carrier frequency used for this AM signal
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b) Transmitter circuits must be more stable, giving better reception.
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d) Much less power is required for the same signal length.

4) Which of the following analog modulation scheme requires the minimum transmitted power and minimum channel bandwidth?
a) VSB b) DSB-SC
c) SSB d) AM

5) A Practical local oscillator in the superhetrodyne type of communication receiver is
a) An R-C phase shift oscillator
b) A coplpitt's oscillator
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6) When a radio receiver is tuned to 455 KHz, its local oscillator provides the mixer with an input at 1010 kHz. What is the frequency of the other station
a) 910kHz b) 455kHz
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a) Peak detectors
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8) Which of the following pulse modulation techniques is commonly used in digital communication systems?

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b) Equal to the highest frequency component of the signal
c) Half the highest frequency component of the signal
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10) Which of the following statements is true about pulse modulation?

a) It requires a continuous carrier signal for transmission
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11) Pulse position modulation (PPM) is a technique where information is encoded in the:

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13) The ultra high frequency (UHF) extends from

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Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Communication (BTN04404)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any FOUR **16**

a) What is multiplexing? What are its advantages?
b) What is Electromagnetic Spectrum? What is its importance?
c) Explain shot noise. What are its sources?
d) Sketch and explain AM wave for m=1, m<1 and m>1. Which is a better case? Why?
e) Explain a Vestigial sideband signal for TV.

Q.3 Attempt any TWO **12**

a) Discuss principle of Balance Modulator and with suitable diagram explain third method of suppression of sideband.
b) Discuss the different methods of Noise calculation?
c) With suitable block diagram explain superhetrodyne communication receiver.

Section – II

Q.4 Attempt any FOUR **16**

a) Discuss the terms frequency deviation, modulation index, percentage modulation in FM?
b) State Sampling Theorem. Discuss the different types of Sampling.
c) Discuss the concept of LOS & radiation with respect to wave propagation.
d) Define antenna gain and explain polarization of an antenna.
e) Discuss the different characteristics of an antenna.

Q.5 Attempt any TWO **12**

a) Illustrate the block diagram of Armstrong method of FM generation. Also draw the phasor diagram
b) Illustrate with a neat diagram PPM Generation and Regeneration technique
c) Illustrate with a neat diagram PWM Generation and Regeneration technique.

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Communication (BTN04404)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option **14**

1) Which of the following analog modulation scheme requires the minimum transmitted power and minimum channel bandwidth?
a) VSB b) DSB-SC
c) SSB d) AM

2) A Practical local oscillator in the superhetrodyne type of communication receiver is
a) An R-C phase shift oscillator
b) A coplpitt's oscillator
c) A hartely oscillator
d) Phase shift type of harmonic oscillator employ LC resonator

3) When a radio receiver is tuned to 455 KHz, its local oscillator provides the mixer with an input at 1010 kHz. What is the frequency of the other station
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4) In conventional AM superhetrodye receivers, the detectors employed to extract intelligence include
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5) Which of the following pulse modulation techniques is commonly used in digital communication systems?
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6) The Nyquist sampling theorem states that the sampling rate should be:
a) Twice the highest frequency component of the signal
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7) Which of the following statements is true about pulse modulation?
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c) It provides efficient bandwidth utilization
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8) Pulse position modulation (PPM) is a technique where information is encoded in the:
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9) Communication is a Process of
a) Keeping in touch
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10) The ultra high frequency (UHF) extends from
a) 3-30MHz
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11) Noise voltage varies in a resistor as
a) 4 KTR_B
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12) For an AM signal, the bandwidth is 10 KHz and highest frequency compound present is 705 kHz. What is the carrier frequency used for this AM signal
a) 695kHz
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13) A carrier is amplitude modulated by 4 signals of 10 KHz, 15 KHz, 20 KHz and 25 KHz what is the bandwidth of the modulated signal?
a) 25kHz
b) 50kHz
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d) 140kHz

14) Indicate the false statement regarding the advantages of SSB over double sideband, full carrier -AM:
a) More channel space is available
b) Transmitter circuits must be more stable, giving better reception.
c) The signal is more noise resistance
d) Much less power is required for the same signal length.

SLR-GF-759

Seat No.	

Set R

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Communication (BTN04404)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any FOUR **16**

a) What is multiplexing? What are its advantages?
b) What is Electromagnetic Spectrum? What is its importance?
c) Explain shot noise. What are its sources?
d) Sketch and explain AM wave for m=1, m<1 and m>1. Which is a better case? Why?
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Q.3 Attempt any TWO **12**

a) Discuss principle of Balance Modulator and with suitable diagram explain third method of suppression of sideband.
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c) With suitable block diagram explain superhetrodyne communication receiver.

Section – II

Q.4 Attempt any FOUR **16**

a) Discuss the terms frequency deviation, modulation index, percentage modulation in FM?
b) State Sampling Theorem. Discuss the different types of Sampling.
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d) Define antenna gain and explain polarization of an antenna.
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Q.5 Attempt any TWO **12**

a) Illustrate the block diagram of Armstrong method of FM generation. Also draw the phasor diagram
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c) Illustrate with a neat diagram PWM Generation and Regeneration technique.

Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Communication (BTN04404)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select suitable option **14**

1) The ultra high frequency (UHF) extends from
a) 3-30MHz b) 30-300MHz
c) 300-3000MHz d) 3000-30000MHz

2) Noise voltage varies in a resistor as
a) 4 KTR_B b) $\sqrt{4KTR_B}$
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3) For an AM signal, the bandwidth is 10 KHz and highest frequency compound present is 705 kHz. What is the carrier frequency used for this AM signal
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4) A carrier is amplitude modulated by 4 signals of 10 KHz, 15 KHz, 20 KHz and 25 KHz what is the bandwidth of the modulated signal?
a) 25kHz b) 50kHz
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5) Indicate the false statement regarding the advantages of SSB over double sideband, full carrier -AM:
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b) Transmitter circuits must be more stable, giving better reception.
c) The signal is more noise resistance
d) Much less power is required for the same signal length.

6) Which of the following analog modulation scheme requires the minimum transmitted power and minimum channel bandwidth?
a) VSB b) DSB-SC
c) SSB d) AM

7) A Practical local oscillator in the superhetrodyne type of communication receiver is
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c) Pulse Position Modulation (PPM)
d) Pulse Code Modulation (PCM)

11) The Nyquist sampling theorem states that the sampling rate should be:
a) Twice the highest frequency component of the signal
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12) Which of the following statements is true about pulse modulation?
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13) Pulse position modulation (PPM) is a technique where information is encoded in the:
a) Amplitude of the pulses b) Frequency of the pulses
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14) Communication is a Process of
a) Keeping in touch b) Exchanging information
c) Broadcasting d) entertainment by electronics

SLR-GF-759

Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Analog Communication (BTN04404)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any FOUR **16**

a) What is multiplexing? What are its advantages?
b) What is Electromagnetic Spectrum? What is its importance?
c) Explain shot noise. What are its sources?
d) Sketch and explain AM wave for m=1, m<1 and m>1. Which is a better case? Why?
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Q.3 Attempt any TWO **12**

a) Discuss principle of Balance Modulator and with suitable diagram explain third method of suppression of sideband.
b) Discuss the different methods of Noise calculation?
c) With suitable block diagram explain superhetrodyne communication receiver.

Section – II

Q.4 Attempt any FOUR **16**

a) Discuss the terms frequency deviation, modulation index, percentage modulation in FM?
b) State Sampling Theorem. Discuss the different types of Sampling.
c) Discuss the concept of LOS & radiation with respect to wave propagation.
d) Define antenna gain and explain polarization of an antenna.
e) Discuss the different characteristics of an antenna.

Q.5 Attempt any TWO **12**

a) Illustrate the block diagram of Armstrong method of FM generation. Also draw the phasor diagram
b) Illustrate with a neat diagram PPM Generation and Regeneration technique
c) Illustrate with a neat diagram PWM Generation and Regeneration technique.

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - II) (New) (CBCS)Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following mentioned standard Probability density functions is applicable to discrete Random Variables?
a) Gaussian Distribution b) Poisson Distribution
c) Rayleigh Distribution d) Exponential Distribution

2) If two events (both with probability greater than 0) are mutually exclusive, then:
a) They also must be complements.
b) they also could be complements.
c) They cannot be complements.
d) None

3) A table with all possible value of a random variable and its corresponding probabilities is called _____.
a) Probability Mass Function b) Probability Density Function
c) Cumulative distribution function d) Probability Distribution

4) Previous probabilities in Bayes Theorem that are changed with help of new available information are classified as _____.
a) independent probabilities b) posterior probabilities
c) interior probabilities d) dependent probabilities

5) The value we would predict for the dependent variable when the independent variables are all equal to zero is called: _____.
a) Slope b) Sum of residual
c) Intercept d) Difficult to tell

6) A relationship where the flow of the data points is best represented by a curve is called: _____.
a) Linear relationship b) Nonlinear relationship
c) Linear positive d) Linear negative

7) The normal approximation to the binomial distribution is most useful for finding which of the following?
a) The probability $P(X = k)$ when X is a binomial random variable with large n.
b) The probability $P(X \leq k)$ when X is a binomial random variable with large n.
c) The probability $P(X = k)$ when X is a normal random variable with small n
d) None of these

8) PCA is a method to reduce your data to the fewest 'principal components' while maximizing the variance explained. True or false?
a) False b) True
c) Both d) None

9) Which of the following techniques would perform better for reducing dimensions of a data set?
a) removing columns which have high variance in data
b) removing columns which have too many missing value
c) removing columns with dissimilar data trends
d) None of the above

10) Type of matrix decomposition model is _____
a) Predictive model b) descriptive model
c) logical model d) None

11) Following are the types of supervised learning _____
a) Regression b) Classification
c) subgroup discovery d) All of above

12) Suppose you are looking to extract the major dimensions of a parrot's personality. Which technique would you use?
a) Maximum likelihood b) Principal component analysis
c) Cluster analysis d) Factor analysis

13) If machine learning model output involves target variable then that model is called as _____
a) Predictive model b) Descriptive model
c) Reinforcement learning d) All of above

14) Application of machine learning methods to large databases is called ___.
a) Big data computing b) Artificial intelligence
c) Data mining d) Internet of things

SLR-GF-760

Seat No.	

Set P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Q.2 Solve any four questions. **16**

a) Define the following terms:
- i) Learning
- ii) LMS weight update rule
- iii) Consistent Hypothesis
- iv) General Boundary

b) Explain various rules in probability with proper example
c) Explain Gaussian process with example.
d) Write note of Problem Formulation
e) Differentiate between regression and classification.

Q.3 Solve any two questions **12**

a) Enlist & explain steps involved in development of regression model.
b) Write short note on construction of probability space. Explain Discrete and Continuous Probabilities
c) Develop procedure in parameter estimation for Bayesian parameter estimation.

Section II

Q.4 Solve any four questions **16**

a) Differentiate between Supervised, Unsupervised in detail.
b) Explain overfitting and under fitting with an example.
c) What is training data, labeled data & unlabeled data? What are key steps involved in developing training data?
d) Explain curse of dimensionality with suitable diagram.
e) What are the basic design issues and approaches to machine learning?

Q.5 Solve any two question **12**

a) What do you mean by a well - posed learning problem? Explain the important features that are required to well - define a learning problem
b) Write a note on Decision theory and Information Theory.
c) What is principal component analysis? Explain the sort of problems you would use PCA for? Also explain its limitations as a method.

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS)Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-GF-760

Seat No.	

Set Q

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any four questions. **16**

a) Define the following terms:
- i) Learning
- ii) LMS weight update rule
- iii) Consistent Hypothesis
- iv) General Boundary

b) Explain various rules in probability with proper example
c) Explain Gaussian process with example.
d) Write note of Problem Formulation
e) Differentiate between regression and classification.

Q.3 Solve any two questions **12**

a) Enlist & explain steps involved in development of regression model.
b) Write short note on construction of probability space. Explain Discrete and Continuous Probabilities
c) Develop procedure in parameter estimation for Bayesian parameter estimation.

Section II

Q.4 Solve any four questions **16**

a) Differentiate between Supervised, Unsupervised in detail.
b) Explain overfitting and under fitting with an example.
c) What is training data, labeled data & unlabeled data? What are key steps involved in developing training data?
d) Explain curse of dimensionality with suitable diagram.
e) What are the basic design issues and approaches to machine learning?

Q.5 Solve any two questions **12**

a) What do you mean by a well - posed learning problem? Explain the important features that are required to well - define a learning problem
b) Write a note on Decision theory and Information Theory.
c) What is principal component analysis? Explain the sort of problems you would use PCA for? Also explain its limitations as a method.

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS)Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Following are the types of supervised learning _____
a) Regression b) Classification
c) subgroup discovery d) All of above

2) Suppose you are looking to extract the major dimensions of a parrot's personality. Which technique would you use?
a) Maximum likelihood b) Principal component analysis
c) Cluster analysis d) Factor analysis

3) If machine learning model output involves target variable then that model is called as _____
a) Predictive model b) Descriptive model
c) Reinforcement learning d) All of above

4) Application of machine learning methods to large databases is called ___.
a) Big data computing b) Artificial intelligence
c) Data mining d) Internet of things

5) Which of the following mentioned standard Probability density functions is applicable to discrete Random Variables?
a) Gaussian Distribution b) Poisson Distribution
c) Rayleigh Distribution d) Exponential Distribution

6) If two events (both with probability greater than 0) are mutually exclusive, then:
a) They also must be complements.
b) they also could be complements.
c) They cannot be complements.
d) None

7) A table with all possible value of a random variable and its corresponding probabilities is called _____.
a) Probability Mass Function b) Probability Density Function
c) Cumulative distribution function d) Probability Distribution

8) Previous probabilities in Bayes Theorem that are changed with help of new available information are classified as _____.
a) independent probabilities b) posterior probabilities
c) interior probabilities d) dependent probabilities

9) The value we would predict for the dependent variable when the independent variables are all equal to zero is called: _____.
a) Slope b) Sum of residual
c) Intercept d) Difficult to tell

10) A relationship where the flow of the data points is best represented by a curve is called: _____.
a) Linear relationship b) Nonlinear relationship
c) Linear positive d) Linear negative

11) The normal approximation to the binomial distribution is most useful for finding which of the following?
a) The probability $P(X = k)$ when X is a binomial random variable with large n.
b) The probability $P(X \leq k)$ when X is a binomial random variable with large n.
c) The probability $P(X = k)$ when X is a normal random variable with small n
d) None of these

12) PCA is a method to reduce your data to the fewest 'principal components' while maximizing the variance explained. True or false?
a) False b) True
c) Both d) None

13) Which of the following techniques would perform better for reducing dimensions of a data set?
a) removing columns which have high variance in data
b) removing columns which have too many missing value
c) removing columns with dissimilar data trends
d) None of the above

14) Type of matrix decomposition model is _____
a) Predictive model b) descriptive model
c) logical model d) None

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Q.2 Solve any four questions. **16**

a) Define the following terms:
- i) Learning
- ii) LMS weight update rule
- iii) Consistent Hypothesis
- iv) General Boundary

b) Explain various rules in probability with proper example
c) Explain Gaussian process with example.
d) Write note of Problem Formulation
e) Differentiate between regression and classification.

Q.3 Solve any two questions **12**

a) Enlist & explain steps involved in development of regression model.
b) Write short note on construction of probability space. Explain Discrete and Continuous Probabilities
c) Develop procedure in parameter estimation for Bayesian parameter estimation.

Section II

Q.4 Solve any four questions **16**

a) Differentiate between Supervised, Unsupervised in detail.
b) Explain overfitting and under fitting with an example.
c) What is training data, labeled data & unlabeled data? What are key steps involved in developing training data?
d) Explain curse of dimensionality with suitable diagram.
e) What are the basic design issues and approaches to machine learning?

Q.5 Solve any two questions **12**

a) What do you mean by a well - posed learning problem? Explain the important features that are required to well - define a learning problem
b) Write a note on Decision theory and Information Theory.
c) What is principal component analysis? Explain the sort of problems you would use PCA for? Also explain its limitations as a method.

SLR-GF-760

Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS)Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) A relationship where the flow of the data points is best represented by a curve is called: _____.
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c) Linear positive d) Linear negative

2) The normal approximation to the binomial distribution is most useful for finding which of the following?
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b) The probability $P(X \leq k)$ when X is a binomial random variable with large n.
c) The probability $P(X = k)$ when X is a normal random variable with small n
d) None of these

3) PCA is a method to reduce your data to the fewest 'principal components' while maximizing the variance explained. True or false?
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c) removing columns with dissimilar data trends
d) None of the above

5) Type of matrix decomposition model is _____
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c) logical model d) None

6) Following are the types of supervised learning _____
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7) Suppose you are looking to extract the major dimensions of a parrot's personality. Which technique would you use?

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c) They cannot be complements.
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12) A table with all possible value of a random variable and its corresponding probabilities is called _____.

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c) Cumulative distribution function d) Probability Distribution

13) Previous probabilities in Bayes Theorem that are changed with help of new available information are classified as _____.

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14) The value we would predict for the dependent variable when the independent variables are all equal to zero is called: _____.

a) Slope b) Sum of residual
c) Intercept d) Difficult to tell

Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.2 Solve any four questions. **16**

a) Define the following terms:
- i) Learning
- ii) LMS weight update rule
- iii) Consistent Hypothesis
- iv) General Boundary

b) Explain various rules in probability with proper example
c) Explain Gaussian process with example.
d) Write note of Problem Formulation
e) Differentiate between regression and classification.

Q.3 Solve any two questions **12**

a) Enlist & explain steps involved in development of regression model.
b) Write short note on construction of probability space. Explain Discrete and Continuous Probabilities
c) Develop procedure in parameter estimation for Bayesian parameter estimation.

Section II

Q.4 Solve any four questions **16**

a) Differentiate between Supervised, Unsupervised in detail.
b) Explain overfitting and under fitting with an example.
c) What is training data, labeled data & unlabeled data? What are key steps involved in developing training data?
d) Explain curse of dimensionality with suitable diagram.
e) What are the basic design issues and approaches to machine learning?

Q.5 Solve any two questions **12**

a) What do you mean by a well - posed learning problem? Explain the important features that are required to well - define a learning problem
b) Write a note on Decision theory and Information Theory.
c) What is principal component analysis? Explain the sort of problems you would use PCA for? Also explain its limitations as a method.

SLR-GF-761

Seat No.		Set	P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) DDL stands for _____.
a) Data declaration language b) Declaration data language
c) Document declaration language d) Data definition language

2) _____ operation can be visualized as a horizontal partition of the relation into two set of tuples.
a) JOIN b) PARTITION
c) SELECT d) PROJECT

3) 'AS' clause is used in SQL for _____.
a) selection b) rename
c) join d) projection

4) What key links records from one database table to a record or records in another database table?
a) Primary key b) Principal Key
c) Foreign key d) Link key

5) Which of the following contains information about the structure of a database?
a) Database management system b) Data dictionary
c) Data repository d) Data warehouse

6) The language which has recently become the defacto standard for interfacing application programs with relational database system is _____.
a) Oracle. b) SQL.
c) DBase. d) 4GL

7) By normalizing relations or sets of relations, one minimizes _____.
a) Data b) Fields
c) Redundancy d) Database

8) Which of the following is a type of Normal Form?
a) ACNF b) BCNF
c) CCNF d) DCNF

9) Domain constraints, functional dependency and referential integrity are special forms of _____

a) Foreign key b) Primary key
c) Assertion d) Referential constraint

10) The database administrator who authorizes all the new users, modifies the database and takes grants privilege is _____.

a) Super user b) Administrator
c) Operator of operating system d) All of these

11) If we wish to grant a privilege and to allow the recipient to pass the privilege on to other users, we append the _____ clause to the appropriate grant command.

a) With grant b) Grant user
c) Grant pass privilege d) With grant option

12) Which of the following is the syntax for views where v is view name?

a) Non-indexed b) Indexed
c) Inserted d) Updated

13) Key value pairs is usually seen in _____.

a) Hash tables b) Heaps
c) Both Hash tables and Heaps d) Skip list

14) A system is in a _____ state if there exists a set of transactions such that every transaction in the set is waiting for another transaction in the set.

a) Idle b) Waiting
c) Deadlock d) Ready

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four questions. **16**

a) What is DBMS? And what is a purpose of database system?
b) Explain cardinality constraints and participating constraints.
c) Explain Relational Query languages
d) Explain the basic structure of SQL queries. Also give examples.
e) Explain Basic SQL clauses.

Q.3 Solve any two questions. **12**

a) Which are the types of Database Languages? Explain with its commands.
b) Construct an E-R diagram for a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents.
c) Explain Extended Relational Algebra operation with example.

Section – II

Q.4 Solve any four questions. **16**

a) Write a short note on Nested subqueries with example.
b) Explain Atomic Domains.
c) Explain Index definition in SQL in detail.
d) Explain the transaction states with neat diagram.
e) Write Features of good Relational Designs.

Q.5 Solve any two questions. **12**

a) List the different Aggregate operations in SQL? Explain any 3 Aggregate operations with queries.
b) Explain in detail B + tree file organization with an example.
c) Explain Time stamp ordering protocol with example.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following is a type of Normal Form?
a) ACNF b) BCNF
c) CCNF d) DCNF

2) Domain constraints, functional dependency and referential integrity are special forms of _____
a) Foreign key b) Primary key
c) Assertion d) Referential constraint

3) The database administrator who authorizes all the new users, modifies the database and takes grants privilege is _____.
a) Super user b) Administrator
c) Operator of operating system d) All of these

4) If we wish to grant a privilege and to allow the recipient to pass the privilege on to other users, we append the _____ clause to the appropriate grant command.
a) With grant b) Grant user
c) Grant pass privilege d) With grant option

5) Which of the following is the syntax for views where v is view name?
a) Non-indexed b) Indexed
c) Inserted d) Updated

6) Key value pairs is usually seen in _____.
a) Hash tables b) Heaps
c) Both Hash tables and Heaps d) Skip list

7) A system is in a _____ state if there exists a set of transactions such that every transaction in the set is waiting for another transaction in the set.
a) Idle b) Waiting
c) Deadlock d) Ready

8) DDL stands for _____.
a) Data declaration language b) Declaration data language
c) Document declaration language d) Data definition language

9) _____ operation can be visualized as a horizontal partition of the relation into two set of tuples.
a) JOIN b) PARTITION
c) SELECT d) PROJECT

10) 'AS' clause is used in SQL for _____.
a) selection b) rename
c) join d) projection

11) What key links records from one database table to a record or records in another database table?
a) Primary key b) Principal Key
c) Foreign key d) Link key

12) Which of the following contains information about the structure of a database?
a) Database management system
b) Data dictionary
c) Data repository
d) Data warehouse

13) The language which has recently become the defacto standard for interfacing application programs with relational database system is _____.
a) Oracle. b) SQL.
c) DBase. d) 4GL

14) By normalizing relations or sets of relations, one minimizes _____.
a) Data b) Fields
c) Redundancy d) Database

SLR-GF-761

Seat No.	

Set Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four questions. **16**

a) What is DBMS? And what is a purpose of database system?
b) Explain cardinality constraints and participating constraints.
c) Explain Relational Query languages
d) Explain the basic structure of SQL queries. Also give examples.
e) Explain Basic SQL clauses.

Q.3 Solve any two questions. **12**

a) Which are the types of Database Languages? Explain with its commands.
b) Construct an E-R diagram for a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents.
c) Explain Extended Relational Algebra operation with example.

Section – II

Q.4 Solve any four questions. **16**

a) Write a short note on Nested subqueries with example.
b) Explain Atomic Domains.
c) Explain Index definition in SQL in detail.
d) Explain the transaction states with neat diagram.
e) Write Features of good Relational Designs.

Q.5 Solve any two questions. **12**

a) List the different Aggregate operations in SQL? Explain any 3 Aggregate operations with queries.
b) Explain in detail B + tree file organization with an example.
c) Explain Time stamp ordering protocol with example.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If we wish to grant a privilege and to allow the recipient to pass the privilege on to other users, we append the _____ clause to the appropriate grant command.
a) With grant b) Grant user
c) Grant pass privilege d) With grant option

2) Which of the following is the syntax for views where v is view name?
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a) Super user b) Administrator
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SLR-GF-761

Seat No.	

Set R

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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Section – II

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Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) Data repository d) Data warehouse

SLR-GF-761

Seat No.	

Set S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four questions. **16**

a) What is DBMS? And what is a purpose of database system?
b) Explain cardinality constraints and participating constraints.
c) Explain Relational Query languages
d) Explain the basic structure of SQL queries. Also give examples.
e) Explain Basic SQL clauses.

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Section – II

Q.4 Solve any four questions. **16**

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d) Explain the transaction states with neat diagram.
e) Write Features of good Relational Designs.

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a) List the different Aggregate operations in SQL? Explain any 3 Aggregate operations with queries.
b) Explain in detail B + tree file organization with an example.
c) Explain Time stamp ordering protocol with example.

Seat No.	

Set | P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) VNC stands for _____
a) Virtual network communication b) Virtual network computing
c) Virtual network computers d) None of these

2) Identify the language preferred for IoT analytics.
a) Python b) HTML
c) php d) bash

3) Who operates the core element?
a) IoT service provider b) IaaS
c) Paas d) SaaS

4) Identify the incorrect advantage of IoT.
a) Reduce waste
b) Enhanced data collection
c) Improve customer engagement
d) Security

5) Through API, _____ service portability is enabled.
a) device b) Network
c) Security d) System

6) Identify the challenge coming under securing the information.
a) Security b) power consumption
c) presence detection d) signaling

7) Total types in which the IoT platform is divided.
a) 2 b) 3
c) 4 d) 5

8) SLA stands for _____
a) Service level argument b) System level argument
c) Service level agreement d) Security level agreement

9) Identify among the following which is not an IoT platform.
a) Salesforce b) AWS
c) Microsoft Azure d) Flipkart

10) Identify among the following which is not a fundamental component of an IoT system.
a) User interface
b) Sensors
c) Transformers
d) Connectivity and data processing

11) Among the following layers, identify the one which layer is used for wireless connection in IoT devices.
a) Datalink b) Transport
c) Network d) Application

12) Total elements in the Open IoT Architecture is _____.
a) 5 b) 6
c) 7 d) 8

13) Which of the following IoT gateway must provide?
a) Protocol abstraction b) Security with hardware
c) Simple and fast installation d) Data storage

14) Identify the protocol used to link all devices in IoT,
a) UDP b) TCP/IP
c) HTTP d) Network

SLR-GF-762

Seat No.	

Set P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Draw the basic architecture of IoT by showing the data in transit of an IoT system.
b) Discuss any one application in IoT with suitable example where occupancy sensor is involved.
c) Discuss various communication systems used in IoT.
d) List any 10 bash commands used with CLI in a Linux based OS.
e) Write a short note on Hysteresis.

Q.3 Attempt any Two. **12**

a) Describe the process of generating platform specific binaries for a given embedded system.
b) Describe the process of authorization and authentication while establishing a remote connection.
c) Describe the process of establishing connection to a remote host powered by embedded Linux (explain sensor-based application).

Section – II

Q.4 Attempt any Four. **16**

a) Write a short note on Calibration Error
b) Write a short note on Near-Field Gesture Sensors
c) Explain the architecture of RFID
d) Explain the process of remotely connecting to a Raspberry Pi using any remote shell connecting tool
e) Explain the basic configuration of Raspberry Pi after first boot

Q.5 Attempt any Two. **12**

a) Explain how temperature sensor can be used for home automation using Raspberry Pi with suitable diagram of interfacing and library dependencies
b) How can you use Python programs for interfacing I/O devices like LEDs, switches, LCDs, etc. with Raspberry Pi?
c) What are some applications of Bluetooth Low Energy (BLE), Wifi, and RFID technologies in various industries?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) SLA stands for _____
a) Service level argument b) System level argument
c) Service level agreement d) Security level agreement

2) Identify among the following which is not an IoT platform.
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c) Microsoft Azure d) Flipkart

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5) Total elements in the Open IoT Architecture is _____.
a) 5 b) 6
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11) Identify the incorrect advantage of IoT.
a) Reduce waste
b) Enhanced data collection
c) Improve customer engagement
d) Security

12) Through API,_____ service portability is enabled.
a) device b) Network
c) Security d) System

13) Identify the challenge coming under securing the information.
a) Security b) power consumption
c) presence detection d) signaling

14) Total types in which the IoT platform is divided.
a) 2 b) 3
c) 4 d) 5

SLR-GF-762

Seat No.	

Set Q

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Draw the basic architecture of IoT by showing the data in transit of an IoT system.
b) Discuss any one application in IoT with suitable example where occupancy sensor is involved.
c) Discuss various communication systems used in IoT.
d) List any 10 bash commands used with CLI in a Linux based OS.
e) Write a short note on Hysteresis.

Q.3 Attempt any Two. **12**

a) Describe the process of generating platform specific binaries for a given embedded system.
b) Describe the process of authorization and authentication while establishing a remote connection.
c) Describe the process of establishing connection to a remote host powered by embedded Linux (explain sensor-based application).

Section – II

Q.4 Attempt any Four. **16**

a) Write a short note on Calibration Error
b) Write a short note on Near-Field Gesture Sensors
c) Explain the architecture of RFID
d) Explain the process of remotely connecting to a Raspberry Pi using any remote shell connecting tool
e) Explain the basic configuration of Raspberry Pi after first boot

Q.5 Attempt any Two. **12**

a) Explain how temperature sensor can be used for home automation using Raspberry Pi with suitable diagram of interfacing and library dependencies
b) How can you use Python programs for interfacing I/O devices like LEDs, switches, LCDs, etc. with Raspberry Pi?
c) What are some applications of Bluetooth Low Energy (BLE), Wifi, and RFID technologies in various industries?

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Among the following layers, identify the one which layer is used for wireless connection in IoT devices.
a) Datalink b) Transport
c) Network d) Application

2) Total elements in the Open IoT Architecture is _____.
a) 5 b) 6
c) 7 d) 8

3) Which of the following IoT gateway must provide?
a) Protocol abstraction b) Security with hardware
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4) Identify the protocol used to link all devices in IoT,
a) UDP b) TCP/IP
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5) VNC stands for _____
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6) Identify the language preferred for IoT analytics.
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c) php d) bash

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c) Paas d) SaaS

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9) Through API, _____ service portability is enabled.
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c) Transformers
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SLR-GF-762

Seat No.	

Set R

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All Questions are compulsory.
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Section – I

Q.2 Attempt any Four. **16**

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d) List any 10 bash commands used with CLI in a Linux based OS.
e) Write a short note on Hysteresis.

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b) Describe the process of authorization and authentication while establishing a remote connection.
c) Describe the process of establishing connection to a remote host powered by embedded Linux (explain sensor-based application).

Section – II

Q.4 Attempt any Four. **16**

a) Write a short note on Calibration Error
b) Write a short note on Near-Field Gesture Sensors
c) Explain the architecture of RFID
d) Explain the process of remotely connecting to a Raspberry Pi using any remote shell connecting tool
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SLR-GF-762

Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Identify the challenge coming under securing the information.
a) Security b) power consumption
c) presence detection d) signaling

2) Total types in which the IoT platform is divided.
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c) 4 d) 5

3) SLA stands for _____
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c) Improve customer engagement
d) Security

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SLR-GF-762

Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONIC ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All Questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Four. **16**

a) Draw the basic architecture of IoT by showing the data in transit of an IoT system.
b) Discuss any one application in IoT with suitable example where occupancy sensor is involved.
c) Discuss various communication systems used in IoT.
d) List any 10 bash commands used with CLI in a Linux based OS.
e) Write a short note on Hysteresis.

Q.3 Attempt any Two. **12**

a) Describe the process of generating platform specific binaries for a given embedded system.
b) Describe the process of authorization and authentication while establishing a remote connection.
c) Describe the process of establishing connection to a remote host powered by embedded Linux (explain sensor-based application).

Section – II

Q.4 Attempt any Four. **16**

a) Write a short note on Calibration Error
b) Write a short note on Near-Field Gesture Sensors
c) Explain the architecture of RFID
d) Explain the process of remotely connecting to a Raspberry Pi using any remote shell connecting tool
e) Explain the basic configuration of Raspberry Pi after first boot

Q.5 Attempt any Two. **12**

a) Explain how temperature sensor can be used for home automation using Raspberry Pi with suitable diagram of interfacing and library dependencies
b) How can you use Python programs for interfacing I/O devices like LEDs, switches, LCDs, etc. with Raspberry Pi?
c) What are some applications of Bluetooth Low Energy (BLE), Wifi, and RFID technologies in various industries?

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Applied Mathematics - I (BTN03301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If $\delta(k) = \begin{cases} 1, & k = 0 \\ 0, & \text{otherwise} \end{cases}$ then $Z\{\delta(k)\} =$ _____.

a) 0 b) 1
c) z d) $1/z$

2) The inverse Z - transform of $z/(z-a), |z| > a$ (with $k \geq 0$) is _____.

a) a^k b) a^{-k}
c) a^{k+1} d) a^{-k-1}

3) The value of the integral $\int_0^\infty e^{-2t} \cos 3t dt$ is _____.

a) $1/13$ b) 13
c) $2/13$ d) 13^2

4) If $L\{f(t)\} = \varphi(s)$ then $L\{e^{-at} f(t)\} =$ _____.

a) $\varphi(s-a)$ b) $\varphi(s/a)$
c) $\frac{1}{s}\varphi(s)$ d) $\varphi(s+a)$

5) Let $L^{-1}\{\phi_1(s)\} = F_1(t)$ and $L^{-1}\{\phi_2(s)\} = F_2(t)$, then $L^{-1}\{\phi_1(s).\phi_2(s)\} =$ _____.

a) $\int_0^t F_1(u).F_2(t-u)du$ b) $\int_s^\infty F_1(u).F_2(t-u)du$
c) $\int_0^\infty F_1(u).F_2(t-u)du$ d) $\int_0^1 F_1(u).F_2(t-u)du$

6) The P.I. of $(D^3 - 3D^2 + 4)y = e^{2x}$ is _____.

a) $\frac{1}{6}e^{2x}$ b) $\frac{x}{12}e^{2x}$
c) $\frac{x^2}{6}e^{2x}$ d) $\frac{x^3}{12}e^{2x}$

7) $\frac{1}{D+1}\left\{\frac{1-x}{x^2}\right\} =$ _____.

a) $\frac{1}{x}$ b) $\frac{1}{x^2}$

c) $-\frac{1}{x^2}$ d) $-\frac{1}{x}$

8) Which of the following is not a Dirichlet's condition?

a) $f(x)$ is periodic b) $f(x)$ is single valued

c) $f(x)$ is even function d) $f(x)$ is finite

9) The Fourier expansion of $f(x) = x \sin x$ in $(-\pi, \pi)$ contains _____.

a) No Sine terms b) No cosine terms

c) both cosine and sine terms d) None of these

10) If $z = \frac{x-20}{5}$ then mean and standard deviation are respectively _____.

a) $5, 20$ b) $20, 5$

c) $10, 5$ d) $5, 10$

11) The probability density function of random variable x is:

x	0	1	2	3	4	5
$P(x)$	0.1	k	0.2	$2k$	0.3	$3k$

a) 0.05666 b) 0.0666

c) $1/50$ d) $1/49$

12) The value of Karl Pearson's coefficient of correlation r lies between _____.

a) -2 and -1 b) -1 and 1

c) 1 and 2 d) 2 and 3

13) Idle time of the queuing system is _____.

a) $\frac{\lambda}{\mu}$ b) $1 - \frac{\lambda}{\mu}$

c) $\frac{\mu}{\lambda}$ d) $1 - \frac{\mu}{\lambda}$

14) Customer may move from one waiting line to another is known as _____.

a) Jockeying b) Reneging

c) Priorities d) Balking

Seat No.		Set	P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Applied Mathematics - I (BTN03301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Solve the following. (Any Three) **09**

a) Solve $(D^4 + 6D^2 + 9)y = 96 \sin 2x \cos x$

b) Solve $(D^3 + 8)y = x^4 + 2x^2 + 1$

c) Find $L\left\{\int_0^t ue^{-2u} \sin 3u \, du\right\}$

d) Find $L^{-1}\{\cot^{-1}(s+1)\}$

e) Find $Z\{k^2 e^{-ak}\}, k \geq 0$

Q.3 Solve the following. (Any Three) **09**

a) Solve $(D^3 - 7D - 6)y = (1 + x^2)e^{2x}$

b) Find $Z\{\cosh \alpha k\}, k \geq 0$

c) Find $L\{e^{2t} \sin 4t \,.\cos 2t\}$

d) Find Z - Transform of $f(k) = \begin{cases} 5^k, k < 0 \\ 3^k, k \geq 0 \end{cases}$

e) find $L^{-1}\left\{\frac{s}{(s^2+4)(s^2+1)}\right\}$ by using Convolution theorem.

Q.4 Attempt the following question. (Any Two) **10**

a) Solve $(D^2 - 4D + 4)y = 8(x^2 + \sin 2x + e^{2x})$

b) Using Laplace transform method solve
$\frac{dy}{dt} + 3y + 2\int_0^t y \, dt = t$ with $y = 0$ at $t = 0$

c) Calculate inverse Z-transform of
$F(z) = \frac{z^3}{(z-1)(z-2)^2}$ if ROC is $|z| > 2$

Section – II

Q.5 Attempt the following question. (Any Three) **09**

a) Find the Fourier half range cosine series of $f(x) = x - x^2 \quad 0 \leq x \leq 1$

b) Find the Fourier expansion of $f(x) = x$ in $(-1,1)$

c) Calculate Karl Pearson's coefficient of correlation
$\sum x = 80, \ \sum x^2 = 900, \ \sum y = 70, \ \sum y^2 = 800, \ \sum xy = 700 \ and \ N = 20$

d) The probability that a student in an evening college will graduate is 0.4. Determine the probability that out of 5 students at least one will graduate.

e) A road transport company has one reservation clerk on duty at a time. She handles information of bus schedules and makes reservations. Customers arrive at a rate of 8 per hour and the clerk can service 12 customers on an average per hour. What is the average number of customers waiting for service of the clerk in the queue?

Q.6 Attempt the following question. (Any Three) **09**

a) Find the Fourier half range sine series of $f(x) = x^2 \quad 0 < x < 1$

b)

x:	0	1	2	3	4	Total value
f:	192	100	24	3	1	320

Fit a Poisson distribution

c)

	x-series	y-series
Mean	18	100
Standard deviation	14	20

Coefficient of correlation between x and y is 0.8. Find equation of line of regression of y on x.

d) Describe the Queueing system.

e) Find the average waiting time per customer in the system for $M|M|1|\infty$ model if $\lambda = 9$ and $\mu = 15$ per hour.

Q.7 Attempt the following question. (Any Two) **10**

a) The life time of certain type of battery has mean life of 400 hrs and a s. d. of 50 hrs. Assuming the distribution to be normal find i) the percentage of batteries which have life time of more than 300 hrs ii) the proportion of batteries between 300 and 500 hrs.
(For $\mathrm{S.N.V.Z}$ area between $z = 0$ and $z = 1$ is 0.3413, For $z = 0$ and $z = 2$ is 0)

b) Find the Fourier expansion of
$f(x) = \pi x \qquad 0 < x < 2\pi$

$= 0 \qquad \pi < x \leq 2\pi \qquad$ in the interval $(0, 2\pi)$

c) Customer arrive at the clinic according to Poisson process with mean interval of 25 minutes. The physician needs on average 20 minutes for a patient to examine.

i) Find the percentage of patients who are not required to wait?

ii) What is the probability that there are more than 4 patients in the queue?

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Applied Mathematics - I (BTN03301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is not a Dirichlet's condition?
a) $f(x)$ is periodic b) $f(x)$ is single valued
c) $f(x)$ is even function d) $f(x)$ is finite

2) The Fourier expansion of $f(x) = x \sin x$ in $(-\pi, \pi)$ contains _____.
a) No Sine terms b) No cosine terms
c) both cosine and sine terms d) None of these

3) If $z = \frac{x-20}{5}$ then mean and standard deviation are respectively _____.
a) $5, 20$ b) $20, 5$
c) $10, 5$ d) $5, 10$

4) The probability density function of random variable x is:

x	0	1	2	3	4	5
$P(x)$	0.1	k	0.2	$2k$	0.3	$3k$

a) 0.05666 b) 0.0666
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6) Idle time of the queuing system is _____.
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c) $\frac{\mu}{\lambda}$ d) $1 - \frac{\mu}{\lambda}$

7) Customer may move from one waiting line to another is known as _____.
a) Jockeying b) Reneging
c) Priorities d) Balking

8) If $\delta(k) = \begin{cases} 1, & k = 0 \\ 0, & \text{otherwise} \end{cases}$ then $Z\{\delta(k)\} =$ _____.

a) 0 b) 1

c) z d) $1/z$

9) The inverse Z - transform of $z/(z-a), |z| > a$ (with $k \geq 0$) is _____.

a) a^k b) a^{-k}

c) a^{k+1} d) a^{-k-1}

10) The value of the integral $\int_0^\infty e^{-2t} \cos 3t dt$ is _____.

a) $1/13$ b) 13

c) $2/13$ d) 13^2

11) If $L\{f(t)\} = \varphi(s)$ then $L\{e^{-at} f(t)\} =$ _____.

a) $\varphi(s-a)$ b) $\varphi(s/a)$

c) $\frac{1}{s}\varphi(s)$ d) $\varphi(s+a)$

12) Let $L^{-1}\{\phi_1(s)\} = F_1(t)$ and $L^{-1}\{\phi_2(s)\} = F_2(t)$, then $L^{-1}\{\phi_1(s).\phi_2(s)\} =$ _____.

a) $\int_0^t F_1(u).F_2(t-u)du$ b) $\int_s^\infty F_1(u).F_2(t-u)du$

c) $\int_0^\infty F_1(u).F_2(t-u)du$ d) $\int_0^1 F_1(u).F_2(t-u)du$

13) The P.I. of $(D^3 - 3D^2 + 4)y = e^{2x}$ is _____.

a) $\frac{1}{6}e^{2x}$ b) $\frac{x}{12}e^{2x}$

c) $\frac{x^2}{6}e^{2x}$ d) $\frac{x^3}{12}e^{2x}$

14) $\frac{1}{D+1}\left\{\frac{1-x}{x^2}\right\} =$ _____.

a) $\frac{1}{x}$ b) $\frac{1}{x^2}$

c) $-\frac{1}{x^2}$ d) $-\frac{1}{x}$

Seat No.		Set	Q

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Applied Mathematics - I (BTN03301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Solve the following. (Any Three) **09**

a) Solve $(D^4 + 6D^2 + 9)y = 96 \sin 2x \cos x$

b) Solve $(D^3 + 8)y = x^4 + 2x^2 + 1$

c) Find $L\left\{\int_0^t ue^{-2u} \sin 3u \, du\right\}$

d) Find $L^{-1}\{\cot^{-1}(s+1)\}$

e) Find $Z\{k^2 e^{-ak}\}, k \geq 0$

Q.3 Solve the following. (Any Three) **09**

a) Solve $(D^3 - 7D - 6)y = (1 + x^2)e^{2x}$

b) Find $Z\{\cosh \alpha k\}, k \geq 0$

c) Find $L\{e^{2t} \sin 4t \,.\cos 2t\}$

d) Find Z - Transform of $f(k) = \begin{cases} 5^k, k < 0 \\ 3^k, k \geq 0 \end{cases}$

e) find $L^{-1}\left\{\frac{s}{(s^2+4)(s^2+1)}\right\}$ by using Convolution theorem.

Q.4 Attempt the following question. (Any Two) **10**

a) Solve $(D^2 - 4D + 4)y = 8(x^2 + \sin 2x + e^{2x})$

b) Using Laplace transform method solve
$\frac{dy}{dt} + 3y + 2\int_0^t y \, dt = t$ with $y = 0$ at $t = 0$

c) Calculate inverse Z-transform of
$F(z) = \frac{z^3}{(z-1)(z-2)^2}$ if ROC is $|z| > 2$

Section – II

Q.5 Attempt the following question. (Any Three) **09**

a) Find the Fourier half range cosine series of $f(x) = x - x^2 \quad 0 \leq x \leq 1$

b) Find the Fourier expansion of $f(x) = x$ in $(-1,1)$

c) Calculate Karl Pearson's coefficient of correlation
$\sum x = 80, \ \sum x^2 = 900, \ \sum y = 70, \ \sum y^2 = 800, \ \sum xy = 700 \ and \ N = 20$

d) The probability that a student in an evening college will graduate is 0.4. Determine the probability that out of 5 students at least one will graduate.

e) A road transport company has one reservation clerk on duty at a time. She handles information of bus schedules and makes reservations. Customers arrive at a rate of 8 per hour and the clerk can service 12 customers on an average per hour. What is the average number of customers waiting for service of the clerk in the queue?

Q.6 Attempt the following question. (Any Three) **09**

a) Find the Fourier half range sine series of $f(x) = x^2 \quad 0 < x < 1$

b)

x:	0	1	2	3	4	Total value
f:	192	100	24	3	1	320

Fit a Poisson distribution

c)

	x-series	y-series
Mean	18	100
Standard deviation	14	20

Coefficient of correlation between x and y is 0.8. Find equation of line of regression of y on x.

d) Describe the Queueing system.

e) Find the average waiting time per customer in the system for $M|M|1|\infty$ model if $\lambda = 9$ and $\mu = 15$ per hour.

Q.7 Attempt the following question. (Any Two) **10**

a) The life time of certain type of battery has mean life of 400 hrs and a s. d. of 50 hrs. Assuming the distribution to be normal find i) the percentage of batteries which have life time of more than 300 hrs ii) the proportion of batteries between 300 and 500 hrs.
(For $\mathrm{S.N.V.}\ Z$ area between $z = 0$ and $z = 1$ is 0.3413, For $z = 0$ and $z = 2$ is 0)

b) Find the Fourier expansion of
$f(x) = \pi x \qquad 0 < x < 2\pi$

$= 0 \qquad \pi < x \leq 2\pi \qquad$ in the interval $(0, 2\pi)$

c) Customer arrive at the clinic according to Poisson process with mean interval of 25 minutes. The physician needs on average 20 minutes for a patient to examine.

i) Find the percentage of patients who are not required to wait?

ii) What is the probability that there are more than 4 patients in the queue?

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Applied Mathematics - I (BTN03301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The probability density function of random variable x is:

x	0	1	2	3	4	5
$P(x)$	0.1	k	0.2	$2k$	0.3	$3k$

a) 0.05666 b) 0.0666
c) $1/50$ d) $1/49$

2) The value of Karl Pearson's coefficient of correlation r lies between _____.
a) -2 and -1 b) -1 and 1
c) 1 and 2 d) 2 and 3

3) Idle time of the queuing system is _____.
a) $\frac{\lambda}{\mu}$ b) $1-\frac{\lambda}{\mu}$
c) $\frac{\mu}{\lambda}$ d) $1-\frac{\mu}{\lambda}$

4) Customer may move from one waiting line to another is known as _____.
a) Jockeying b) Reneging
c) Priorities d) Balking

5) If $\delta(k)=\begin{cases}1, & k=0\\ 0, & \text{otherwise}\end{cases}$ then $Z\{\delta(k)\}=$ _____.
a) 0 b) 1
c) z d) $1/z$

6) The inverse Z - transform of $z/(z-a), |z|>a$ (with $k\geq 0$) is _____.
a) a^k b) a^{-k}
c) a^{k+1} d) a^{-k-1}

7) The value of the integral $\int_0^\infty e^{-2t}\cos 3t dt$ is _____.
a) $1/13$ b) 13
c) $2/13$ d) 13^2

8) If $L\{f(t)\} = \varphi(s)$ then $L\{e^{-at}f(t)\} =$ _____.

a) $\varphi(s-a)$ b) $\varphi(s/a)$

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9) Let $L^{-1}\{\phi_1(s)\} = F_1(t)$ and $L^{-1}\{\phi_2(s)\} = F_2(t)$, then $L^{-1}\{\phi_1(s).\phi_2(s)\} =$ _____.

a) $\int_0^t F_1(u).F_2(t-u)du$ b) $\int_s^\infty F_1(u).F_2(t-u)du$

c) $\int_0^\infty F_1(u).F_2(t-u)du$ d) $\int_0^1 F_1(u).F_2(t-u)du$

10) The P.I. of $(D^3 - 3D^2 + 4)y = e^{2x}$ is _____.

a) $\frac{1}{6}e^{2x}$ b) $\frac{x}{12}e^{2x}$

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11) $\frac{1}{D+1}\left\{\frac{1-x}{x^2}\right\} =$ _____.

a) $\frac{1}{x}$ b) $\frac{1}{x^2}$

c) $-\frac{1}{x^2}$ d) $-\frac{1}{x}$

12) Which of the following is not a Dirichlet's condition?

a) $f(x)$ is periodic b) $f(x)$ is single valued

c) $f(x)$ is even function d) $f(x)$ is finite

13) The Fourier expansion of $f(x) = x\sin x$ in $(-\pi, \pi)$ contains _____.

a) No Sine terms b) No cosine terms

c) both cosine and sine terms d) None of these

14) If $z = \frac{x-20}{5}$ then mean and standard deviation are respectively _____.

a) $5, 20$ b) $20, 5$

c) $10, 5$ d) $5, 10$

SLR-GF-763

Seat No.		Set	R

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Applied Mathematics - I (BTN03301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Solve the following. (Any Three) **09**

a) Solve $(D^4 + 6D^2 + 9)y = 96 \sin 2x \cos x$

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e) Find $Z\{k^2 e^{-ak}\}, k \geq 0$

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a) Solve $(D^3 - 7D - 6)y = (1 + x^2)e^{2x}$

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c) Find $L\{e^{2t} \sin 4t \,.\cos 2t\}$

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a) Solve $(D^2 - 4D + 4)y = 8(x^2 + \sin 2x + e^{2x})$

b) Using Laplace transform method solve
$\frac{dy}{dt} + 3y + 2\int_0^t y \, dt = t$ with $y = 0$ at $t = 0$

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$F(z) = \frac{z^3}{(z-1)(z-2)^2}$ if ROC is $|z| > 2$

Section – II

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b) Find the Fourier expansion of $f(x) = x$ in $(-1,1)$

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(For S.N.V. Z area between $z = 0$ and $z = 1$ is 0.3413, For $z = 0$ and $z = 2$ is 0)

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$f(x) = \pi x \qquad 0 < x < 2\pi$

$= 0 \qquad \pi < x \leq 2\pi \qquad$ in the interval $(0, 2\pi)$

c) Customer arrive at the clinic according to Poisson process with mean interval of 25 minutes. The physician needs on average 20 minutes for a patient to examine.
i) Find the percentage of patients who are not required to wait?
ii) What is the probability that there are more than 4 patients in the queue?

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Applied Mathematics - I (BTN03301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The P.I. of $(D^3 - 3D^2 + 4)y = e^{2x}$ is _____.

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c) $\frac{x^2}{6}e^{2x}$ d) $\frac{x^3}{12}e^{2x}$

2) $\frac{1}{D+1}\left\{\frac{1-x}{x^2}\right\} =$ _____.

a) $\frac{1}{x}$ b) $\frac{1}{x^2}$

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6) The probability density function of random variable x is:

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a) $\int_0^t F_1(u).F_2(t-u)du$ b) $\int_s^\infty F_1(u).F_2(t-u)du$

c) $\int_0^\infty F_1(u).F_2(t-u)du$ d) $\int_0^1 F_1(u).F_2(t-u)du$

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Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Applied Mathematics - I (BTN03301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

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$\frac{dy}{dt} + 3y + 2\int_0^t y \, dt = t$ with $y = 0$ at $t = 0$

c) Calculate inverse Z-transform of
$F(z) = \frac{z^3}{(z-1)(z-2)^2}$ if ROC is $|z| > 2$

Section – II

Q.5 Attempt the following question. (Any Three) **09**

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$\sum x = 80, \sum x^2 = 900, \sum y = 70, \sum y^2 = 800, \sum xy = 700 \; and \; N = 20$

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x:	0	1	2	3	4	Total value
f:	192	100	24	3	1	320

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c)

	x-series	y-series
Mean	18	100
Standard deviation	14	20

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d) Describe the Queueing system.

e) Find the average waiting time per customer in the system for $M|M|1|\infty$ model if $\lambda = 9$ and $\mu = 15$ per hour.

Q.7 Attempt the following question. (Any Two) **10**

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(For $\mathrm{S.N.V.}\ Z$ area between $z = 0$ and $z = 1$ is 0.3413, For $z = 0$ and $z = 2$ is 0)

b) Find the Fourier expansion of
$f(x) = \pi x \qquad 0 < x < 2\pi$

$= 0 \qquad \pi < x \leq 2\pi \qquad$ in the interval $(0, 2\pi)$

c) Customer arrive at the clinic according to Poisson process with mean interval of 25 minutes. The physician needs on average 20 minutes for a patient to examine.

i) Find the percentage of patients who are not required to wait?

ii) What is the probability that there are more than 4 patients in the queue?

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Discrete Mathematical Structures (BTN03302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) $P \Lambda (P \longrightarrow Q)$ is equivalent to _____.
a) P b) $Q \Lambda P$
c) $P \longrightarrow Q$ d) a & b

2) A Partial order relation is Transitive, reflexive & _____.
a) Anti symmetric b) Irreflexive
c) Symmetric d) none of these

3) A $U \sim A$ is equivalent _____.
a) A b) $\sim A$
c) Φ d) E

4) The possible number of relations from $A = \{a, b, c\}$ to $B = \{1,2,3,4\}$ is _____.
a) 12 b) 144
c) 4096 d) 128

5) The number of possible functions from set of m elements to set of n elements are _____.
a) $m + n$ b) m^n
c) n^m d) $m * n$

6) A Monoid with inverse element is called as _____.
a) Group b) Monoid
c) Subgroup d) Sub semigroup

7) Let g be a homomorphism from $< X, 0 >$ to $< Y, * >$. If $g: X \longrightarrow Y$ is one-to-one, then g is called as _____.
a) epimorphism b) monomorphism
c) isomorphism d) all

8) Let $f(x) = 2x$ and $g(x) = 2x$, what is $(g\ o\ f)\ (3) =$ _____
a) 16 b) 12
c) 24 d) 27

9) Rank of well-formed formula is always _____.
a) 0 b) greater than 0
c) less than 1 d) 1

10) LUB is called as _____.
a) Join b) Supremum
c) Infimum d) Both a and b

11) A group $< G, * >$ in which the operation * is commutative is called an _____ group.
a) Abelian b) identity
c) reverse d) semi

12) A group is said to _____ if there exist an element a € G such that every element of G can be written as some power of a.
a) Acyclic b) Cyclic
c) Abalian d) Angular

13) If set A has n elements, then total number of subsets of A is _____.
a) n^2 b) 2^n
c) $2n^2$ d) $(2n)^2$

14) Monoids satisfies the property _____.
a) Inverse b) Identity
c) Idempotent d) Absorption

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Discrete Mathematical Structures (BTN03302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) State and explain Duality law with example.
b) Show that $(P \longrightarrow Q) \wedge (R \longrightarrow Q) \Leftrightarrow (P \vee R) \longrightarrow Q$.
c) Define Cartesian product and find $(A \times B)$, $(B \times A)$ and $(A \times B) \cap (B \times A)$ for $A = \{\alpha, \beta\}$ & $B = \{x, y, z, w\}$.
d) $R \wedge (P \vee Q)$ is valid conclusion from the premises $P \vee Q, Q \longrightarrow R, P \longrightarrow M, \sim M$
e) Solve the following problem
Let $R = \{< 2,3 >, < 4,5 >, < 3,3 >\}$ and
$S = \{< 5,3 >, < 3,6 >, < 4,2 >, < 2,4 >\}$.
Find RoS, SoR, $\mathrm{Ro(SoR)}$, $\mathrm{(RoS)oR}$, RoR, SoS and RoRoR.

Q.3 Attempt any Two: **16**

a) Define Relation and explain the Properties of relation with example.
b) Obtain PDNF and PCNF without using truth table of $(Q \longrightarrow P) \wedge (\sim P \wedge Q)$.
c) State and explain operations on set with an example.

Section – II

Q.4 Attempt any three **12**

a) Define inverse function and explain it with example.
b) Define semigroup and explain the homomorphism of semigroup with types.
c) Define Lattice. State the properties of lattices.
d) Define with example
i) Upper bound
ii) Lower bound
iii) LUB
iv) GLB
e) State and explain function types with an example.

Q.5 Attempt any two. **16**

a) Define algebraic system and explain the properties of it with an example.
b) What is Boolean Algebra? State and explain properties of Boolean algebra.
c) Define polish expression and translate the infix string
$(a + b \uparrow c \uparrow d) * (e + f/d)$ to reverse polish (suffix) expression.

Seat No.		Set	Q

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Discrete Mathematical Structures (BTN03302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Let $f(x) = 2x$ and $g(x) = 2x$, what is $(g\ o\ f)\ (3) =$ _____
a) 16 b) 12
c) 24 d) 27

2) Rank of well-formed formula is always _____.
a) 0 b) greater than 0
c) less than 1 d) 1

3) LUB is called as _____.
a) Join b) Supremum
c) Infimum d) Both a and b

4) A group $< G, * >$ in which the operation * is commutative is called an _____ group.
a) Abelian b) identity
c) reverse d) semi

5) A group is said to _____ if there exist an element a € G such that every element of G can be written as some power of a.
a) Acyclic b) Cyclic
c) Abalian d) Angular

6) If set A has n elements, then total number of subsets of A is _____.
a) n^2 b) 2^n
c) $2n^2$ d) $(2n)^2$

7) Monoids satisfies the property _____.
a) Inverse b) Identity
c) Idempotent d) Absorption

8) $P \wedge (P \rightarrow Q)$ is equivalent to _____.
a) P b) $Q \wedge P$
c) $P \rightarrow Q$ d) a & b

9) A Partial order relation is Transitive, reflexive & _____.
a) Anti symmetric b) Irreflexive
c) Symmetric d) none of these

10) A $U \sim A$ is equivalent _____.
a) A b) $\sim A$
c) Φ d) E

11) The possible number of relations from $A = \{a, b, c\}$ to $B = \{1,2,3,4\}$ is _____.
a) 12 b) 144
c) 4096 d) 128

12) The number of possible functions from set of m elements to set of n elements are _____.
a) $m + n$ b) m^n
c) n^m d) $m * n$

13) A Monoid with inverse element is called as _____.
a) Group b) Monoid
c) Subgroup d) Sub semigroup

14) Let g be a homomorphism from $< X, 0 >$ to $< Y, * >$. If $g: X \longrightarrow Y$ is one-to-one, then g is called as _____.
a) epimorphism b) monomorphism
c) isomorphism d) all

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Discrete Mathematical Structures (BTN03302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) State and explain Duality law with example.
b) Show that $(P \longrightarrow Q) \wedge (R \longrightarrow Q) \Leftrightarrow (P \vee R) \longrightarrow Q$.
c) Define Cartesian product and find $(A \times B)$, $(B \times A)$ and $(A \times B) \cap (B \times A)$ for $A = \{\alpha, \beta\}$ & $B = \{x, y, z, w\}$.
d) $R \wedge (P \vee Q)$ is valid conclusion from the premises $P \vee Q, Q \longrightarrow R, P \longrightarrow M, \sim M$
e) Solve the following problem
Let $R = \{< 2,3 >, < 4,5 >, < 3,3 >\}$ and
$S = \{< 5,3 >, < 3,6 >, < 4,2 >, < 2,4 >\}$.
Find RoS, SoR, $\mathrm{Ro(SoR)}$, $\mathrm{(RoS)oR}$, RoR, SoS and RoRoR.

Q.3 Attempt any Two: **16**

a) Define Relation and explain the Properties of relation with example.
b) Obtain PDNF and PCNF without using truth table of $(Q \longrightarrow P) \wedge (\sim P \wedge Q)$.
c) State and explain operations on set with an example.

Section – II

Q.4 Attempt any three **12**

a) Define inverse function and explain it with example.
b) Define semigroup and explain the homomorphism of semigroup with types.
c) Define Lattice. State the properties of lattices.
d) Define with example
i) Upper bound
ii) Lower bound
iii) LUB
iv) GLB
e) State and explain function types with an example.

Q.5 Attempt any two. **16**

a) Define algebraic system and explain the properties of it with an example.
b) What is Boolean Algebra? State and explain properties of Boolean algebra.
c) Define polish expression and translate the infix string
$(a + b \uparrow c \uparrow d) * (e + f/d)$ to reverse polish (suffix) expression.

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Discrete Mathematical Structures (BTN03302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A group $< G, * >$ in which the operation * is commutative is called an _____ group.
a) Abelian b) identity
c) reverse d) semi

2) A group is said to _____ if there exist an element a € G such that every element of G can be written as some power of a.
a) Acyclic b) Cyclic
c) Abalian d) Angular

3) If set A has n elements, then total number of subsets of A is _____.
a) n^2 b) 2^n
c) $2n^2$ d) $(2n)^2$

4) Monoids satisfies the property _____.
a) Inverse b) Identity
c) Idempotent d) Absorption

5) $P \wedge (P \longrightarrow Q)$ is equivalent to _____.
a) P b) $Q \wedge P$
c) $P \longrightarrow Q$ d) a & b

6) A Partial order relation is Transitive, reflexive & _____.
a) Anti symmetric b) Irreflexive
c) Symmetric d) none of these

7) A $U \sim A$ is equivalent _____.
a) A b) $\sim A$
c) Φ d) E

8) The possible number of relations from $A = \{a, b, c\}$ to $B = \{1,2,3,4\}$ is _____.
a) 12 b) 144
c) 4096 d) 128

9) The number of possible functions from set of m elements to set of n elements are _____.
a) $m + n$ b) m^n
c) n^m d) $m * n$

10) A Monoid with inverse element is called as _____.
a) Group b) Monoid
c) Subgroup d) Sub semigroup

11) Let g be a homomorphism from $< X, 0 >$ to $< Y, * >$. If $g: X \longrightarrow Y$ is one-to-one, then g is called as _____.
a) epimorphism b) monomorphism
c) isomorphism d) all

12) Let $f(x) = 2x$ and $g(x) = 2x$, what is $(g\ o\ f)\ (3) =$ _____
a) 16 b) 12
c) 24 d) 27

13) Rank of well-formed formula is always _____.
a) 0 b) greater than 0
c) less than 1 d) 1

14) LUB is called as _____.
a) Join b) Supremum
c) Infimum d) Both a and b

SLR-GF-764

Seat No.		Set	R

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Discrete Mathematical Structures (BTN03302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) State and explain Duality law with example.
b) Show that $(P \longrightarrow Q) \wedge (R \longrightarrow Q) \Leftrightarrow (P \vee R) \longrightarrow Q$.
c) Define Cartesian product and find $(A \times B)$, $(B \times A)$ and $(A \times B) \cap (B \times A)$ for $A = \{\alpha, \beta\}$ & $B = \{x, y, z, w\}$.
d) $R \wedge (P \vee Q)$ is valid conclusion from the premises $P \vee Q, Q \longrightarrow R, P \longrightarrow M, \sim M$
e) Solve the following problem
Let $R = \{< 2,3 >, < 4,5 >, < 3,3 >\}$ and
$S = \{< 5,3 >, < 3,6 >, < 4,2 >, < 2,4 >\}$.
Find RoS, SoR, $\mathrm{Ro(SoR)}$, $\mathrm{(RoS)oR}$, RoR, SoS and RoRoR.

Q.3 Attempt any Two: **16**

a) Define Relation and explain the Properties of relation with example.
b) Obtain PDNF and PCNF without using truth table of $(Q \longrightarrow P) \wedge (\sim P \wedge Q)$.
c) State and explain operations on set with an example.

Section – II

Q.4 Attempt any three **12**

a) Define inverse function and explain it with example.
b) Define semigroup and explain the homomorphism of semigroup with types.
c) Define Lattice. State the properties of lattices.
d) Define with example
i) Upper bound
ii) Lower bound
iii) LUB
iv) GLB
e) State and explain function types with an example.

Q.5 Attempt any two. **16**

a) Define algebraic system and explain the properties of it with an example.
b) What is Boolean Algebra? State and explain properties of Boolean algebra.
c) Define polish expression and translate the infix string
$(a + b \uparrow c \uparrow d) * (e + f/d)$ to reverse polish (suffix) expression.

Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Discrete Mathematical Structures (BTN03302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) A Monoid with inverse element is called as _____.
a) Group b) Monoid
c) Subgroup d) Sub semigroup

2) Let g be a homomorphism from $< X, 0 >$ to $< Y, * >$. If $g: X \longrightarrow Y$ is one-to-one, then g is called as _____.
a) epimorphism b) monomorphism
c) isomorphism d) all

3) Let $f(x) = 2x$ and $g(x) = 2x$, what is $(g\ o\ f)\ (3) =$ _____
a) 16 b) 12
c) 24 d) 27

4) Rank of well-formed formula is always _____.
a) 0 b) greater than 0
c) less than 1 d) 1

5) LUB is called as _____.
a) Join b) Supremum
c) Infimum d) Both a and b

6) A group $< G, * >$ in which the operation * is commutative is called an _____ group.
a) Abelian b) identity
c) reverse d) semi

7) A group is said to _____ if there exist an element a € G such that every element of G can be written as some power of a.
a) Acyclic b) Cyclic
c) Abalian d) Angular

8) If set A has n elements, then total number of subsets of A is _____.
a) n^2 b) 2^n
c) $2n^2$ d) $(2n)^2$

9) Monoids satisfies the property _____.
a) Inverse b) Identity
c) Idempotent d) Absorption

10) $P \Lambda (P \longrightarrow Q)$ is equivalent to _____.
a) P b) $Q \Lambda P$
c) $P \longrightarrow Q$ d) a & b

11) A Partial order relation is Transitive, reflexive & _____.
a) Anti symmetric b) Irreflexive
c) Symmetric d) none of these

12) A $U \sim A$ is equivalent _____.
a) A b) $\sim A$
c) Φ d) E

13) The possible number of relations from $A = \{a, b, c\}$ to $B = \{1,2,3,4\}$ is _____.
a) 12 b) 144
c) 4096 d) 128

14) The number of possible functions from set of m elements to set of n elements are _____.
a) $m + n$ b) m^n
c) n^m d) $m * n$

SLR-GF-764

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Discrete Mathematical Structures (BTN03302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three. **12**

a) State and explain Duality law with example.
b) Show that $(P \longrightarrow Q) \wedge (R \longrightarrow Q) \Leftrightarrow (P \vee R) \longrightarrow Q$.
c) Define Cartesian product and find $(A \times B)$, $(B \times A)$ and $(A \times B) \cap (B \times A)$ for $A = \{\alpha, \beta\}$ & $B = \{x, y, z, w\}$.
d) $R \wedge (P \vee Q)$ is valid conclusion from the premises $P \vee Q, Q \longrightarrow R, P \longrightarrow M, \sim M$
e) Solve the following problem
Let $R = \{< 2,3 >, < 4,5 >, < 3,3 >\}$ and
$S = \{< 5,3 >, < 3,6 >, < 4,2 >, < 2,4 >\}$.
Find RoS, SoR, $\mathrm{Ro(SoR)}$, $\mathrm{(RoS)oR}$, RoR, SoS and RoRoR.

Q.3 Attempt any Two: **16**

a) Define Relation and explain the Properties of relation with example.
b) Obtain PDNF and PCNF without using truth table of $(Q \longrightarrow P) \wedge (\sim P \wedge Q)$.
c) State and explain operations on set with an example.

Section – II

Q.4 Attempt any three **12**

a) Define inverse function and explain it with example.
b) Define semigroup and explain the homomorphism of semigroup with types.
c) Define Lattice. State the properties of lattices.
d) Define with example
i) Upper bound
ii) Lower bound
iii) LUB
iv) GLB
e) State and explain function types with an example.

Q.5 Attempt any two. **16**

a) Define algebraic system and explain the properties of it with an example.
b) What is Boolean Algebra? State and explain properties of Boolean algebra.
c) Define polish expression and translate the infix string
$(a + b \uparrow c \uparrow d) * (e + f/d)$ to reverse polish (suffix) expression.

SLR-GF-765

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Structures (BTN03303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct option for the following. **14**

1) Which of the following is a non-linear data structure?
a) Linked list b) Array
c) Queue d) Tree

2) Which of the following is not a searching algorithm?
a) Linear search b) Binary search
c) Bubble sort d) a and c only

3) What is hashing?
a) A method of encrypting data
b) A technique for storing and retrieving data based on a key
c) A type of data structure
d) An algorithm for sorting data

4) What is a hash function?
a) A function used to encrypt data
b) A function used to generate a unique key for a given input
c) A function used to sort data
d) A function used to compress data

5) The data structure which allows insertion and deletion at both ends is: _____.
a) Queue b) Stack
c) Linked List d) Binary Tree

6) Which of the following operations is not a basic operation of a stack?
a) Push b) Pop
c) Traverse d) All of the above

7) Which of the following is an application of stack data structure?
a) Conversion of infix to postfix notation
b) CPU scheduling
c) Finding the shortest path in a graph
d) All of the above

8) Which of the following is a type of linked list where each node has a reference to the next node but not to the previous node?

a) Singly Linked List
b) Doubly Linked List
c) Circular Linked List
d) None of the above

9) Which of the following is a type of linked list where each node has a reference to both the next and the previous node?

a) Singly Linked List
b) Doubly Linked List
c) Circular Linked List
d) None of the above

10) What is a tree data structure?

a) A data structure consisting of a single element
b) A data structure consisting of multiple elements arranged in a linear sequence
c) A data structure consisting of multiple elements arranged in a hierarchical manner
d) None of the above

11) Which of the following is not a type of tree traversal?

a) Inorder traversal
b) Preorder traversal
c) Postorder traversal
d) Diagonal traversal

12) What is a multiway tree?

a) A tree with multiple root nodes
b) A tree with multiple leaf nodes
c) A tree where each node can have multiple children
d) None of the above

13) What is an AVL tree?

a) A tree with multiple root nodes
b) A balanced binary search tree where the height difference between left and right sub-trees of any node is at most one
c) A binary search tree with linked nodes
d) A tree where each node can have multiple children

14) In a directed graph, an edge is represented by: _____.

a) A pair of nodes
b) A single node
c) A set of nodes
d) None of the above

Seat No.		Set	P

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Structures (BTN03303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any two. **10**

a) Perform quick sort of following numbers and show the content of the following array after placing the pivot 47 at the proper place.
47, 21, 23, 56, 12, 87, 19, 35, 11, 36, 72, 12

b) Convert the following expression from infix to postfix using stack.

$$A - B/C\hat{}D^{*}E + F/G$$

c) Write a C function to insert a given node in the beginning in a Doubly Linked List.

Q.3 Attempt any three. **18**

a) Explain different open addressing techniques to resolve collision in detail.

b) Write a menu-driven program to implement a circular queue showing operations.
i) Insertion
ii) Deletion
iii) Display

c) Write a program to implement a singly linked list.
i) Insert a node at the beginning of the list
ii) Insert a node at the end of the list
iii) Display the linked list

d) Solve the following example using Heap sort.
25, 35, 18, 9, 46, 70, 48

Section – II

Q.4 Attempt any two. **10**

a) Explain the Breadth First Search (BFS) algorithm for graph traversal.

b) What is tree traversal? Explain different tree traversal methods with example.

c) Define and Explain B+ tree with an example.

Q.5 Attempt any three. **18**

a) Explain with example rotations in AVL tree. Also give an AVL tree for the following elements.
50, 40, 35, 58, 48, 42, 60, 30, 33, 25

b) Explain the Dijkstra algorithm with an example to find the shortest path in a graph.

c) Explain B tree. Show the growth of the B tree of order 5 by inserting the following keys (show each step).
10, 40, 30, 35, 20, 15, 50, 28, 5, 60, 19, 12, 38, 27, 90, 45, 48

d) Write a short note on Threaded Binary Tree.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Structures (BTN03303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct option for the following. **14**

1) Which of the following is a type of linked list where each node has a reference to the next node but not to the previous node?
a) Singly Linked List b) Doubly Linked List
c) Circular Linked List d) None of the above

2) Which of the following is a type of linked list where each node has a reference to both the next and the previous node?
a) Singly Linked List b) Doubly Linked List
c) Circular Linked List d) None of the above

3) What is a tree data structure?
a) A data structure consisting of a single element
b) A data structure consisting of multiple elements arranged in a linear sequence
c) A data structure consisting of multiple elements arranged in a hierarchical manner
d) None of the above

4) Which of the following is not a type of tree traversal?
a) Inorder traversal b) Preorder traversal
c) Postorder traversal d) Diagonal traversal

5) What is a multiway tree?
a) A tree with multiple root nodes
b) A tree with multiple leaf nodes
c) A tree where each node can have multiple children
d) None of the above

6) What is an AVL tree?
a) A tree with multiple root nodes
b) A balanced binary search tree where the height difference between left and right sub-trees of any node is at most one
c) A binary search tree with linked nodes
d) A tree where each node can have multiple children

7) In a directed graph, an edge is represented by: _____.
a) A pair of nodes b) A single node
c) A set of nodes d) None of the above

8) Which of the following is a non-linear data structure?
a) Linked list b) Array
c) Queue d) Tree

9) Which of the following is not a searching algorithm?
a) Linear search b) Binary search
c) Bubble sort d) a and c only

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a) A method of encrypting data
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11) What is a hash function?
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13) Which of the following operations is not a basic operation of a stack?
a) Push b) Pop
c) Traverse d) All of the above

14) Which of the following is an application of stack data structure?
a) Conversion of infix to postfix notation
b) CPU scheduling
c) Finding the shortest path in a graph
d) All of the above

SLR-GF-765

Seat No.	

Set Q

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Structures (BTN03303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any two. **10**

a) Perform quick sort of following numbers and show the content of the following array after placing the pivot 47 at the proper place.
47, 21, 23, 56, 12, 87, 19, 35, 11, 36, 72, 12

b) Convert the following expression from infix to postfix using stack.

$$A - B/C\hat{}D^{*}E + F/G$$

c) Write a C function to insert a given node in the beginning in a Doubly Linked List.

Q.3 Attempt any three. **18**

a) Explain different open addressing techniques to resolve collision in detail.

b) Write a menu-driven program to implement a circular queue showing operations.
i) Insertion
ii) Deletion
iii) Display

c) Write a program to implement a singly linked list.
i) Insert a node at the beginning of the list
ii) Insert a node at the end of the list
iii) Display the linked list

d) Solve the following example using Heap sort.
25, 35, 18, 9, 46, 70, 48

Section – II

Q.4 Attempt any two. **10**

a) Explain the Breadth First Search (BFS) algorithm for graph traversal.

b) What is tree traversal? Explain different tree traversal methods with example.

c) Define and Explain B+ tree with an example.

Q.5 Attempt any three. **18**

a) Explain with example rotations in AVL tree. Also give an AVL tree for the following elements.
50, 40, 35, 58, 48, 42, 60, 30, 33, 25

b) Explain the Dijkstra algorithm with an example to find the shortest path in a graph.

c) Explain B tree. Show the growth of the B tree of order 5 by inserting the following keys (show each step).
10, 40, 30, 35, 20, 15, 50, 28, 5, 60, 19, 12, 38, 27, 90, 45, 48

d) Write a short note on Threaded Binary Tree.

Seat No.		Set	R

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Structures (BTN03303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct option for the following. **14**

1) Which of the following is not a type of tree traversal?
a) Inorder traversal b) Preorder traversal
c) Postorder traversal d) Diagonal traversal

2) What is a multiway tree?
a) A tree with multiple root nodes
b) A tree with multiple leaf nodes
c) A tree where each node can have multiple children
d) None of the above

3) What is an AVL tree?
a) A tree with multiple root nodes
b) A balanced binary search tree where the height difference between left and right sub-trees of any node is at most one
c) A binary search tree with linked nodes
d) A tree where each node can have multiple children

4) In a directed graph, an edge is represented by: _____.
a) A pair of nodes b) A single node
c) A set of nodes d) None of the above

5) Which of the following is a non-linear data structure?
a) Linked list b) Array
c) Queue d) Tree

6) Which of the following is not a searching algorithm?
a) Linear search b) Binary search
c) Bubble sort d) a and c only

7) What is hashing?
a) A method of encrypting data
b) A technique for storing and retrieving data based on a key
c) A type of data structure
d) An algorithm for sorting data

8) What is a hash function?
a) A function used to encrypt data
b) A function used to generate a unique key for a given input
c) A function used to sort data
d) A function used to compress data

9) The data structure which allows insertion and deletion at both ends is: _____.
a) Queue b) Stack
c) Linked List d) Binary Tree

10) Which of the following operations is not a basic operation of a stack?
a) Push b) Pop
c) Traverse d) All of the above

11) Which of the following is an application of stack data structure?
a) Conversion of infix to postfix notation
b) CPU scheduling
c) Finding the shortest path in a graph
d) All of the above

12) Which of the following is a type of linked list where each node has a reference to the next node but not to the previous node?
a) Singly Linked List b) Doubly Linked List
c) Circular Linked List d) None of the above

13) Which of the following is a type of linked list where each node has a reference to both the next and the previous node?
a) Singly Linked List b) Doubly Linked List
c) Circular Linked List d) None of the above

14) What is a tree data structure?
a) A data structure consisting of a single element
b) A data structure consisting of multiple elements arranged in a linear sequence
c) A data structure consisting of multiple elements arranged in a hierarchical manner
d) None of the above

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Structures (BTN03303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any two. **10**

a) Perform quick sort of following numbers and show the content of the following array after placing the pivot 47 at the proper place.
47, 21, 23, 56, 12, 87, 19, 35, 11, 36, 72, 12

b) Convert the following expression from infix to postfix using stack.

$$A - B/C\hat{}D^{*}E + F/G$$

c) Write a C function to insert a given node in the beginning in a Doubly Linked List.

Q.3 Attempt any three. **18**

a) Explain different open addressing techniques to resolve collision in detail.

b) Write a menu-driven program to implement a circular queue showing operations.
i) Insertion
ii) Deletion
iii) Display

c) Write a program to implement a singly linked list.
i) Insert a node at the beginning of the list
ii) Insert a node at the end of the list
iii) Display the linked list

d) Solve the following example using Heap sort.
25, 35, 18, 9, 46, 70, 48

Section – II

Q.4 Attempt any two. **10**

a) Explain the Breadth First Search (BFS) algorithm for graph traversal.

b) What is tree traversal? Explain different tree traversal methods with example.

c) Define and Explain B+ tree with an example.

Q.5 Attempt any three. **18**

a) Explain with example rotations in AVL tree. Also give an AVL tree for the following elements.
50, 40, 35, 58, 48, 42, 60, 30, 33, 25

b) Explain the Dijkstra algorithm with an example to find the shortest path in a graph.

c) Explain B tree. Show the growth of the B tree of order 5 by inserting the following keys (show each step).
10, 40, 30, 35, 20, 15, 50, 28, 5, 60, 19, 12, 38, 27, 90, 45, 48

d) Write a short note on Threaded Binary Tree.

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Structures (BTN03303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose correct option for the following. **14**

1) Which of the following operations is not a basic operation of a stack?
a) Push b) Pop
c) Traverse d) All of the above

2) Which of the following is an application of stack data structure?
a) Conversion of infix to postfix notation
b) CPU scheduling
c) Finding the shortest path in a graph
d) All of the above

3) Which of the following is a type of linked list where each node has a reference to the next node but not to the previous node?
a) Singly Linked List b) Doubly Linked List
c) Circular Linked List d) None of the above

4) Which of the following is a type of linked list where each node has a reference to both the next and the previous node?
a) Singly Linked List b) Doubly Linked List
c) Circular Linked List d) None of the above

5) What is a tree data structure?
a) A data structure consisting of a single element
b) A data structure consisting of multiple elements arranged in a linear sequence
c) A data structure consisting of multiple elements arranged in a hierarchical manner
d) None of the above

6) Which of the following is not a type of tree traversal?
a) Inorder traversal b) Preorder traversal
c) Postorder traversal d) Diagonal traversal

7) What is a multiway tree?
a) A tree with multiple root nodes
b) A tree with multiple leaf nodes
c) A tree where each node can have multiple children
d) None of the above

8) What is an AVL tree?
a) A tree with multiple root nodes
b) A balanced binary search tree where the height difference between left and right sub-trees of any node is at most one
c) A binary search tree with linked nodes
d) A tree where each node can have multiple children

9) In a directed graph, an edge is represented by: _____.
a) A pair of nodes
b) A single node
c) A set of nodes
d) None of the above

10) Which of the following is a non-linear data structure?
a) Linked list
b) Array
c) Queue
d) Tree

11) Which of the following is not a searching algorithm?
a) Linear search
b) Binary search
c) Bubble sort
d) a and c only

12) What is hashing?
a) A method of encrypting data
b) A technique for storing and retrieving data based on a key
c) A type of data structure
d) An algorithm for sorting data

13) What is a hash function?
a) A function used to encrypt data
b) A function used to generate a unique key for a given input
c) A function used to sort data
d) A function used to compress data

14) The data structure which allows insertion and deletion at both ends is: _____.
a) Queue
b) Stack
c) Linked List
d) Binary Tree

SLR-GF-765

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Data Structures (BTN03303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any two. **10**

a) Perform quick sort of following numbers and show the content of the following array after placing the pivot 47 at the proper place.
47, 21, 23, 56, 12, 87, 19, 35, 11, 36, 72, 12

b) Convert the following expression from infix to postfix using stack.
$$A - B/C\hat{}D^{*}E + F/G$$

c) Write a C function to insert a given node in the beginning in a Doubly Linked List.

Q.3 Attempt any three. **18**

a) Explain different open addressing techniques to resolve collision in detail.

b) Write a menu-driven program to implement a circular queue showing operations.
i) Insertion
ii) Deletion
iii) Display

c) Write a program to implement a singly linked list.
i) Insert a node at the beginning of the list
ii) Insert a node at the end of the list
iii) Display the linked list

d) Solve the following example using Heap sort.
25, 35, 18, 9, 46, 70, 48

Section – II

Q.4 Attempt any two. **10**

a) Explain the Breadth First Search (BFS) algorithm for graph traversal.

b) What is tree traversal? Explain different tree traversal methods with example.

c) Define and Explain B+ tree with an example.

Q.5 Attempt any three. **18**

a) Explain with example rotations in AVL tree. Also give an AVL tree for the following elements.
50, 40, 35, 58, 48, 42, 60, 30, 33, 25

b) Explain the Dijkstra algorithm with an example to find the shortest path in a graph.

c) Explain B tree. Show the growth of the B tree of order 5 by inserting the following keys (show each step).
10, 40, 30, 35, 20, 15, 50, 28, 5, 60, 19, 12, 38, 27, 90, 45, 48

d) Write a short note on Threaded Binary Tree.

SLR-GF-766

Seat No.	

Set P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Graphics (BTN03304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives: **14**

1) The maximum number of Pixel gives us _____ image.
a) Better b) Worst
c) Smaller d) None of the above

2) Raster Scan and Random scan techniques are _____.
a) To display an image on the screen
b) Line drawing algorithms
c) Polygon drawing algorithms
d) None of the above

3) The process of selecting and viewing the picture with different views is called _____.
a) Clipping b) Windowing
c) Segmenting d) all of above

4) Which of the following ports resembles the coordinates from the real-world system?
a) Window port b) View Port
c) Universal Port d) None of the above

5) What is the disadvantage of DDA?
a) Round of error b) Subtraction error
c) Addition error d) Both (a) and (b)

6) What is the determinant of the pure reflection matrix?
a) 1 b) 0
c) -1 d) 2

7) Raster objects can also be anti-aliased by shifting the display location of pixel areas is known as _____.
a) Super-sampling b) Pixel shaping
c) Pixel phasing d) Any of these

8) A polygon in which the line segment joining any two points within the polygon lies completely inside the polygon, is called _____ polygon.
a) Convex b) Concave
c) Closed d) Complete

9) The centre region of the screen and the window can be represented as _____.
a) 0000 b) 1111
c) 0110 d) 1001

10) Which of the following is the purpose for using clipping in computer graphics?
a) copying b) zooming
c) adding graphics d) removing objects and lines

11) The shape of the Bezier curve is controlled by _____.
a) control points b) knots
c) end points d) All of the mentioned

12) What should be sequence of transformations that are required to perform rotation of an object around an arbitrary point?
a) Inverse Translation, Rotation, Translation
b) Scaling, Translation, Rotation
c) Translation, Rotation, Inverse Translation
d) Rotation, Translation, Scaling

13) Cohen-Sutherland clipping is an example of _____.
a) polygon clipping b) text clipping
c) line clipping d) curve clipping

14) Window Port In computer graphics Window Port is _____.
a) It represents real world coordinate system
b) A window port can be defined with the help of a GWINDOW statement
c) Window port is the coordinate area specially selected for the display
d) All of the above

SLR-GF-766

Seat No.	

Set P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Graphics (BTN03304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Compare Raster Scan and Random Scan display?
b) Define:
i) Resolution
ii) Aspect ratio
c) Explain RLE.
d) Describe Rotation in 2D transformation.
e) Explain Rotation about an arbitrary point.

Q.3 Attempt any Two. **16**

a) Consider a line from (0,0) to (5,6). Use DDA line drawing algorithm to rasterize this line. (Assume suitable data)
b) Define Computer Graphics. List and explain the applications of computer graphics.
c) Explain Bresenham's Circle generation algorithm.

Section – II

Q.4 Attempt any Three. **12**

a) Write a note on Half toning.
b) Write note on Antialiasing.
c) State advantages and disadvantages of Z-Buffer.
d) Explain Warnock Algorithm.
e) What is line clipping? Explain categories of lines.

Q.5 Attempt any Two. **16**

a) Explain Cohen-Sutherland line clipping algorithm.
b) Explain Bezier curve in detail along with its properties.
c) What is Curve? Explain B-spline curves.

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Graphics (BTN03304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives: **14**

1) A polygon in which the line segment joining any two points within the polygon lies completely inside the polygon, is called _____ polygon.
a) Convex b) Concave
c) Closed d) Complete

2) The centre region of the screen and the window can be represented as _____.
a) 0000 b) 1111
c) 0110 d) 1001

3) Which of the following is the purpose for using clipping in computer graphics?
a) copying b) zooming
c) adding graphics d) removing objects and lines

4) The shape of the Bezier curve is controlled by _____.
a) control points b) knots
c) end points d) All of the mentioned

5) What should be sequence of transformations that are required to perform rotation of an object around an arbitrary point?
a) Inverse Translation, Rotation, Translation
b) Scaling, Translation, Rotation
c) Translation, Rotation, Inverse Translation
d) Rotation, Translation, Scaling

6) Cohen-Sutherland clipping is an example of _____.
a) polygon clipping b) text clipping
c) line clipping d) curve clipping

7) Window Port In computer graphics Window Port is _____.
a) It represents real world coordinate system
b) A window port can be defined with the help of a GWINDOW statement
c) Window port is the coordinate area specially selected for the display
d) All of the above

8) The maximum number of Pixel gives us _____ image.
a) Better b) Worst
c) Smaller d) None of the above

9) Raster Scan and Random scan techniques are _____.
a) To display an image on the screen
b) Line drawing algorithms
c) Polygon drawing algorithms
d) None of the above

10) The process of selecting and viewing the picture with different views is called _____.
a) Clipping
b) Windowing
c) Segmenting
d) all of above

11) Which of the following ports resembles the coordinates from the real-world system?
a) Window port
b) View Port
c) Universal Port
d) None of the above

12) What is the disadvantage of DDA?
a) Round of error
b) Subtraction error
c) Addition error
d) Both (a) and (b)

13) What is the determinant of the pure reflection matrix?
a) 1
b) 0
c) -1
d) 2

14) Raster objects can also be anti-aliased by shifting the display location of pixel areas is known as _____.
a) Super-sampling
b) Pixel shaping
c) Pixel phasing
d) Any of these

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Graphics (BTN03304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Compare Raster Scan and Random Scan display?
b) Define:
i) Resolution
ii) Aspect ratio
c) Explain RLE.
d) Describe Rotation in 2D transformation.
e) Explain Rotation about an arbitrary point.

Q.3 Attempt any Two. **16**

a) Consider a line from (0,0) to (5,6). Use DDA line drawing algorithm to rasterize this line. (Assume suitable data)
b) Define Computer Graphics. List and explain the applications of computer graphics.
c) Explain Bresenham's Circle generation algorithm.

Section – II

Q.4 Attempt any Three. **12**

a) Write a note on Half toning.
b) Write note on Antialiasing.
c) State advantages and disadvantages of Z-Buffer.
d) Explain Warnock Algorithm.
e) What is line clipping? Explain categories of lines.

Q.5 Attempt any Two. **16**

a) Explain Cohen-Sutherland line clipping algorithm.
b) Explain Bezier curve in detail along with its properties.
c) What is Curve? Explain B-spline curves.

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Graphics (BTN03304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives: **14**

1) The shape of the Bezier curve is controlled by _____.
a) control points b) knots
c) end points d) All of the mentioned

2) What should be sequence of transformations that are required to perform rotation of an object around an arbitrary point?
a) Inverse Translation, Rotation, Translation
b) Scaling, Translation, Rotation
c) Translation, Rotation, Inverse Translation
d) Rotation, Translation, Scaling

3) Cohen-Sutherland clipping is an example of _____.
a) polygon clipping b) text clipping
c) line clipping d) curve clipping

4) Window Port In computer graphics Window Port is _____.
a) It represents real world coordinate system
b) A window port can be defined with the help of a GWINDOW statement
c) Window port is the coordinate area specially selected for the display
d) All of the above

5) The maximum number of Pixel gives us _____ image.
a) Better b) Worst
c) Smaller d) None of the above

6) Raster Scan and Random scan techniques are _____.
a) To display an image on the screen
b) Line drawing algorithms
c) Polygon drawing algorithms
d) None of the above

7) The process of selecting and viewing the picture with different views is called _____.
a) Clipping b) Windowing
c) Segmenting d) all of above

8) Which of the following ports resembles the coordinates from the real-world system?

a) Window port
b) View Port
c) Universal Port
d) None of the above

9) What is the disadvantage of DDA?

a) Round of error
b) Subtraction error
c) Addition error
d) Both (a) and (b)

10) What is the determinant of the pure reflection matrix?

a) 1
b) 0
c) -1
d) 2

11) Raster objects can also be anti-aliased by shifting the display location of pixel areas is known as _____.

a) Super-sampling
b) Pixel shaping
c) Pixel phasing
d) Any of these

12) A polygon in which the line segment joining any two points within the polygon lies completely inside the polygon, is called _____ polygon.

a) Convex
b) Concave
c) Closed
d) Complete

13) The centre region of the screen and the window can be represented as _____.

a) 0000
b) 1111
c) 0110
d) 1001

14) Which of the following is the purpose for using clipping in computer graphics?

a) copying
b) zooming
c) adding graphics
d) removing objects and lines

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Graphics (BTN03304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Compare Raster Scan and Random Scan display?
b) Define:
i) Resolution
ii) Aspect ratio
c) Explain RLE.
d) Describe Rotation in 2D transformation.
e) Explain Rotation about an arbitrary point.

Q.3 Attempt any Two. **16**

a) Consider a line from (0,0) to (5,6). Use DDA line drawing algorithm to rasterize this line. (Assume suitable data)
b) Define Computer Graphics. List and explain the applications of computer graphics.
c) Explain Bresenham's Circle generation algorithm.

Section – II

Q.4 Attempt any Three. **12**

a) Write a note on Half toning.
b) Write note on Antialiasing.
c) State advantages and disadvantages of Z-Buffer.
d) Explain Warnock Algorithm.
e) What is line clipping? Explain categories of lines.

Q.5 Attempt any Two. **16**

a) Explain Cohen-Sutherland line clipping algorithm.
b) Explain Bezier curve in detail along with its properties.
c) What is Curve? Explain B-spline curves.

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Graphics (BTN03304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives: **14**

1) What is the determinant of the pure reflection matrix?
a) 1 b) 0
c) -1 d) 2

2) Raster objects can also be anti-aliased by shifting the display location of pixel areas is known as _____.
a) Super-sampling b) Pixel shaping
c) Pixel phasing d) Any of these

3) A polygon in which the line segment joining any two points within the polygon lies completely inside the polygon, is called _____ polygon.
a) Convex b) Concave
c) Closed d) Complete

4) The centre region of the screen and the window can be represented as _____.
a) 0000 b) 1111
c) 0110 d) 1001

5) Which of the following is the purpose for using clipping in computer graphics?
a) copying b) zooming
c) adding graphics d) removing objects and lines

6) The shape of the Bezier curve is controlled by _____.
a) control points b) knots
c) end points d) All of the mentioned

7) What should be sequence of transformations that are required to perform rotation of an object around an arbitrary point?
a) Inverse Translation, Rotation, Translation
b) Scaling, Translation, Rotation
c) Translation, Rotation, Inverse Translation
d) Rotation, Translation, Scaling

8) Cohen-Sutherland clipping is an example of _____.
a) polygon clipping b) text clipping
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9) Window Port In computer graphics Window Port is _____.
a) It represents real world coordinate system
b) A window port can be defined with the help of a GWINDOW statement
c) Window port is the coordinate area specially selected for the display
d) All of the above

10) The maximum number of Pixel gives us _____ image.
a) Better
b) Worst
c) Smaller
d) None of the above

11) Raster Scan and Random scan techniques are _____.
a) To display an image on the screen
b) Line drawing algorithms
c) Polygon drawing algorithms
d) None of the above

12) The process of selecting and viewing the picture with different views is called _____.
a) Clipping
b) Windowing
c) Segmenting
d) all of above

13) Which of the following ports resembles the coordinates from the real-world system?
a) Window port
b) View Port
c) Universal Port
d) None of the above

14) What is the disadvantage of DDA?
a) Round of error
b) Subtraction error
c) Addition error
d) Both (a) and (b)

SLR-GF-766

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Graphics (BTN03304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any Three. **12**

a) Compare Raster Scan and Random Scan display?
b) Define:
i) Resolution
ii) Aspect ratio
c) Explain RLE.
d) Describe Rotation in 2D transformation.
e) Explain Rotation about an arbitrary point.

Q.3 Attempt any Two. **16**

a) Consider a line from (0,0) to (5,6). Use DDA line drawing algorithm to rasterize this line. (Assume suitable data)
b) Define Computer Graphics. List and explain the applications of computer graphics.
c) Explain Bresenham's Circle generation algorithm.

Section – II

Q.4 Attempt any Three. **12**

a) Write a note on Half toning.
b) Write note on Antialiasing.
c) State advantages and disadvantages of Z-Buffer.
d) Explain Warnock Algorithm.
e) What is line clipping? Explain categories of lines.

Q.5 Attempt any Two. **16**

a) Explain Cohen-Sutherland line clipping algorithm.
b) Explain Bezier curve in detail along with its properties.
c) What is Curve? Explain B-spline curves.

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Microprocessors (BTN03305)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Which of the following is not required in an 8086 based minimum mode system?
a) Bus controller b) Clock generator
c) Latches d) Transceivers

2) How many address lines are present in 8086 microprocessor?
a) 16 b) 20
c) 32 d) 40

3) What is the purpose of using ALE signal high?
a) To latch low order address from bus to separate A0-A7
b) To latch data D0-D7 from bus to separate data bus
c) To disable data bus latch
d) None of the above

4) The number of flags in 8085 are _____.
a) 8 b) 5
c) 10 d) 14

5) When the carry is generated from D3 to D4 then the _____ flag is set.
a) CY (Carry) b) AC (Auxiliary)
c) Z (Zero) d) P (Parity)

6) In PUSH instruction, after each execution of the instruction, the stack pointer is _____.
a) incremented by 1 b) decremented by 1
c) incremented by 2 d) decremented by 2

7) Microprocessor consists of?
a) ALU b) Control Unit
c) Register Array d) All

8) In a Microprocessor, the address of the new next instruction to be executed is stored in _____.
a) Program counter b) General purpose register
c) Stack pointer d) Address latch

9) 8085 and 8086 has how many pins?
a) 30 and 35 respectively
b) 40 and 40 respectively
c) 39 and 40 respectively
d) 40 and 45 respectively

10) The instruction, MOV AX, [2500H] is an example of _____.
a) direct addressing mode
b) register addressing mode
c) immediate addressing mode
d) indirect addressing mode

11) The flag that acts as Borrow flag in the instruction, SBB is _____.
a) direction flag
b) carry flag
c) parity flag
d) trap flag

12) From the 32 bit result generated after 16 bit multiplication using MUL instruction, 8086 stores the lower 16 bit result in register and upper 16 bit result in register.
a) DX, CX
b) DX, AX
c) AX, CX
d) AX, DX

13) The IOR (active low) input line acts as output in _____.
a) master mode
b) slave mode
c) master and slave mode
d) none of the mentioned

14) The pin that clears the control word register of 8255 when enabled is _____.
a) CLEAR
b) RESET
c) SET
d) CLK

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Microprocessors (BTN03305)

Day & Date: Friday, 12-01-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) What are basic features of 8086?
b) Explain flag register of 8085.
c) Write an 8086 program to find factorial of a number. (assume the number)
d) Differentiate minimum mode and maximum mode.
e) List type of instruction sets of 8086. Explain Bit Manipulation instruction set with example.

Q.3 Solve any ONE **06**

a) Draw the functional architecture of 8085 microprocessors neatly labelling the data paths, registers etc. Briefly explain function of each.
b) Draw and Explain Pin Diagram of 8086.

Q.4 Solve Following **06**

Explain following instructions with example.
a) LDS reg 16, memptr
b) LEA reg 16, memptr or variable
c) MUL BH
d) DIV CL
e) MOV dst,src
f) XCHG dst,src

Section – II

Q.5 Solve any Four **16**

a) Write a short note on interrupt service routine.
b) Explain control word format of I/O model of 8255.
c) Explain the datatypes of 8087 coprocessors.
d) List of features of the 80486 microprocessor.
e) Draw block diagram of 8259 PIC.

Q.6 Solve any ONE **06**

a) Define the term interrupt. What are the types of interrupts? Explain in details.
b) Draw and explain block diagram of 8257 DMA Controller.

Q.7 Solve Following **06**

Draw the architecture of 80286 microprocessors. List different features of it.

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Microprocessors (BTN03305)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) In a Microprocessor, the address of the new next instruction to be executed is stored in _____.
a) Program counter b) General purpose register
c) Stack pointer d) Address latch

2) 8085 and 8086 has how many pins?
a) 30 and 35 respectively b) 40 and 40 respectively
c) 39 and 40 respectively d) 40 and 45 respectively

3) The instruction, MOV AX, [2500H] is an example of _____.
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4) The flag that acts as Borrow flag in the instruction, SBB is _____.
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c) parity flag d) trap flag

5) From the 32 bit result generated after 16 bit multiplication using MUL instruction, 8086 stores the lower 16 bit result in register and upper 16 bit result in register.
a) DX, CX b) DX, AX
c) AX, CX d) AX, DX

6) The IOR (active low) input line acts as output in _____.
a) master mode b) slave mode
c) master and slave mode d) none of the mentioned

7) The pin that clears the control word register of 8255 when enabled is _____.
a) CLEAR b) RESET
c) SET d) CLK

8) Which of the following is not required in an 8086 based minimum mode system?
a) Bus controller b) Clock generator
c) Latches d) Transceivers

9) How many address lines are present in 8086 microprocessor?
a) 16 b) 20
c) 32 d) 40

10) What is the purpose of using ALE signal high?
a) To latch low order address from bus to separate A0-A7
b) To latch data D0-D7 from bus to separate data bus
c) To disable data bus latch
d) None of the above

11) The number of flags in 8085 are _____.
a) 8 b) 5
c) 10 d) 14

12) When the carry is generated from D3 to D4 then the _____ flag is set.
a) CY (Carry) b) AC (Auxiliary)
c) Z (Zero) d) P (Parity)

13) In PUSH instruction, after each execution of the instruction, the stack pointer is _____.
a) incremented by 1 b) decremented by 1
c) incremented by 2 d) decremented by 2

14) Microprocessor consists of?
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c) Register Array d) All

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Microprocessors (BTN03305)

Day & Date: Friday, 12-01-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) What are basic features of 8086?
b) Explain flag register of 8085.
c) Write an 8086 program to find factorial of a number. (assume the number)
d) Differentiate minimum mode and maximum mode.
e) List type of instruction sets of 8086. Explain Bit Manipulation instruction set with example.

Q.3 Solve any ONE **06**

a) Draw the functional architecture of 8085 microprocessors neatly labelling the data paths, registers etc. Briefly explain function of each.
b) Draw and Explain Pin Diagram of 8086.

Q.4 Solve Following **06**

Explain following instructions with example.
a) LDS reg 16, memptr
b) LEA reg 16, memptr or variable
c) MUL BH
d) DIV CL
e) MOV dst,src
f) XCHG dst,src

Section – II

Q.5 Solve any Four **16**

a) Write a short note on interrupt service routine.
b) Explain control word format of I/O model of 8255.
c) Explain the datatypes of 8087 coprocessors.
d) List of features of the 80486 microprocessor.
e) Draw block diagram of 8259 PIC.

Q.6 Solve any ONE **06**

a) Define the term interrupt. What are the types of interrupts? Explain in details.
b) Draw and explain block diagram of 8257 DMA Controller.

Q.7 Solve Following **06**

Draw the architecture of 80286 microprocessors. List different features of it.

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Microprocessors (BTN03305)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The flag that acts as Borrow flag in the instruction, SBB is _____.
a) direction flag b) carry flag
c) parity flag d) trap flag

2) From the 32 bit result generated after 16 bit multiplication using MUL instruction, 8086 stores the lower 16 bit result in register and upper 16 bit result in register.
a) DX, CX b) DX, AX
c) AX, CX d) AX, DX

3) The IOR (active low) input line acts as output in _____.
a) master mode b) slave mode
c) master and slave mode d) none of the mentioned

4) The pin that clears the control word register of 8255 when enabled is _____.
a) CLEAR b) RESET
c) SET d) CLK

5) Which of the following is not required in an 8086 based minimum mode system?
a) Bus controller b) Clock generator
c) Latches d) Transceivers

6) How many address lines are present in 8086 microprocessor?
a) 16 b) 20
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7) What is the purpose of using ALE signal high?
a) To latch low order address from bus to separate A0-A7
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c) To disable data bus latch
d) None of the above

8) The number of flags in 8085 are _____.
a) 8 b) 5
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9) When the carry is generated from D3 to D4 then the _____ flag is set.
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12) In a Microprocessor, the address of the new next instruction to be executed is stored in _____.
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13) 8085 and 8086 has how many pins?
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a) direct addressing mode b) register addressing mode
c) immediate addressing mode d) indirect addressing mode

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Microprocessors (BTN03305)

Day & Date: Friday, 12-01-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) What are basic features of 8086?
b) Explain flag register of 8085.
c) Write an 8086 program to find factorial of a number. (assume the number)
d) Differentiate minimum mode and maximum mode.
e) List type of instruction sets of 8086. Explain Bit Manipulation instruction set with example.

Q.3 Solve any ONE **06**

a) Draw the functional architecture of 8085 microprocessors neatly labelling the data paths, registers etc. Briefly explain function of each.
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Explain following instructions with example.
a) LDS reg 16, memptr
b) LEA reg 16, memptr or variable
c) MUL BH
d) DIV CL
e) MOV dst,src
f) XCHG dst,src

Section – II

Q.5 Solve any Four **16**

a) Write a short note on interrupt service routine.
b) Explain control word format of I/O model of 8255.
c) Explain the datatypes of 8087 coprocessors.
d) List of features of the 80486 microprocessor.
e) Draw block diagram of 8259 PIC.

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a) Define the term interrupt. What are the types of interrupts? Explain in details.
b) Draw and explain block diagram of 8257 DMA Controller.

Q.7 Solve Following **06**

Draw the architecture of 80286 microprocessors. List different features of it.

Seat No.	

Set | S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Microprocessors (BTN03305)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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c) SET d) CLK

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c) To disable data bus latch
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13) The number of flags in 8085 are _____.
a) 8 b) 5
c) 10 d) 14

14) When the carry is generated from D3 to D4 then the _____ flag is set.
a) CY (Carry) b) AC (Auxiliary)
c) Z (Zero) d) P (Parity)

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Microprocessors (BTN03305)

Day & Date: Friday, 12-01-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any Four **16**

a) What are basic features of 8086?
b) Explain flag register of 8085.
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c) MUL BH
d) DIV CL
e) MOV dst,src
f) XCHG dst,src

Section – II

Q.5 Solve any Four **16**

a) Write a short note on interrupt service routine.
b) Explain control word format of I/O model of 8255.
c) Explain the datatypes of 8087 coprocessors.
d) List of features of the 80486 microprocessor.
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Q.6 Solve any ONE **06**

a) Define the term interrupt. What are the types of interrupts? Explain in details.
b) Draw and explain block diagram of 8257 DMA Controller.

Q.7 Solve Following **06**

Draw the architecture of 80286 microprocessors. List different features of it.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Theory of Computation (BTN03402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is used to recognize regular language?
a) Finite Automata b) Push down automata
c) Turing Machine d) None of the above

2) If L1 and L2 are two regular languages then concatenation of L1 and L2 is _____.
a) L1, L2 b) L1.L2
c) L1 x L2 d) None

3) Pumping Lemma for context free grammar is used for _____.
a) To prove certain language as not context free
b) To prove language is infinite
c) both a and b
d) none of the above

4) Finite Automata can be used for _____.
a) string recognition b) arithmetic operation
c) both a and b d) none of the above

5) Complement of a DFA can be obtained by _____.
a) making starting state as final state
b) no trival method
c) making final states non-final and non-final to final
d) make final as a starting state

6) Which is not a part of the diagram a Turing machine?
a) Input tape b) Read - Write head
c) Finite control d) Stack

7) While applying Pumping lemma over a language, we consider a string w that belong to L and fragment it into _____ parts.
a) 2 b) 5
c) 3 d) 6

8) The set of all strings over the alphabet S={a, b} (including null) is denoted by _____.

a) (a + b)* b) (a + b)+
c) a + b+ d) a*b*

9) A grammar that produces more than one parse tree for some sentence is called _____.

a) Ambiguous b) Unambiguous
c) Regular d) None of these

10) The intersection of CFL and regular language _____.

a) Is always regular b) Is always context free
c) Both (a) and (b) d) Need not be regular

11) Which of the following conversion is not possible (algorithmically)?

a) Regular grammar to CFG b) NDFA to DFA
c) NDPDA to DPDA d) NDTM to DTM

12) The language recognized by Turing machine is: _____.

a) Context free language
b) Context sensitive language
c) Recursively enumerable language
d) Regular language

13) A Multitape Turing machine is _____ powerful than a single tape turing machine.

a) more b) less
c) equal d) None of the mentioned

14) A context free language is called ambiguous if there exists a string that can have?

a) only one parse tree b) more than one parse tree
c) no parse tree d) Partial parse tree

SLR-GF-768

Seat No.		Set	P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Theory of Computation (BTN03402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of Scientific calculator is allowed.

Section –I

Q.2 Attempt any four **16**

a) Construct the FA equivalent to the following regular sets.
1) ba+(a+bb) a * b
2) (b + ba + bba) * a

b) Explain eliminating useless variable from a CFG with example.

c) Define regular language with example.

d) Construct the DFA for (00)*(11)*

e) Define Mealy machine with example.

Q.3 Attempt any one. **06**

a) State and explain different type of grammar.

b) Given CFG G. find CFG G' in Chomsky normal form.
$S \rightarrow ABA$
$A \rightarrow aA \mid A$
$B \rightarrow bB \mid A$

Q.4 Explain minimization of DFA with suitable example. **06**

Section – II

Q.5 Attempt any four. **16**

a) Define PDA and state the difference between FA and PDA.

b) State and explain pumping lemma for Regular language.

c) Explain basic Turing machine model.

d) Explain Multiple Turing machine.

e) Define PDA. Develop a PDA to accept the language of palindromes.

Q.6 Attempt any one **06**

a) Explain the following with example.
1) Conversion of PDA to CFG
2) Conversion of CFG to PDA

b) Explain in detail the variations in Turing Machine.

Q.7 Design a Turing Machine that accepts the language $L = \{0^n 1^n | n >= 0\}$ **06**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Theory of Computation (BTN03402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The set of all strings over the alphabet S={a, b} (including null) is denoted by _____.
a) (a + b)* b) (a + b)+
c) a + b+ d) a*b*

2) A grammar that produces more than one parse tree for some sentence is called _____.
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3) The intersection of CFL and regular language _____.
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d) Regular language

6) A Multitape Turing machine is _____ powerful than a single tape turing machine.
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c) equal d) None of the mentioned

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9) If L1 and L2 are two regular languages then concatenation of L1 and L2 is _____.
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12) Complement of a DFA can be obtained by _____.
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c) making final states non-final and non-final to final
d) make final as a starting state

13) Which is not a part of the diagram a Turing machine?
a) Input tape b) Read - Write head
c) Finite control d) Stack

14) While applying Pumping lemma over a language, we consider a string w that belong to L and fragment it into _____ parts.
a) 2 b) 5
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Seat No.		Set	Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Theory of Computation (BTN03402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of Scientific calculator is allowed.

Section –I

Q.2 Attempt any four **16**

a) Construct the FA equivalent to the following regular sets.
1) ba+(a+bb) a * b
2) (b + ba + bba) * a

b) Explain eliminating useless variable from a CFG with example.

c) Define regular language with example.

d) Construct the DFA for (00)*(11)*

e) Define Mealy machine with example.

Q.3 Attempt any one. **06**

a) State and explain different type of grammar.

b) Given CFG G. find CFG G' in Chomsky normal form.
$S \rightarrow ABA$
$A \rightarrow aA \mid A$
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Q.4 Explain minimization of DFA with suitable example. **06**

Section – II

Q.5 Attempt any four. **16**

a) Define PDA and state the difference between FA and PDA.

b) State and explain pumping lemma for Regular language.

c) Explain basic Turing machine model.

d) Explain Multiple Turing machine.

e) Define PDA. Develop a PDA to accept the language of palindromes.

Q.6 Attempt any one **06**

a) Explain the following with example.
1) Conversion of PDA to CFG
2) Conversion of CFG to PDA

b) Explain in detail the variations in Turing Machine.

Q.7 Design a Turing Machine that accepts the language $L = \{0^n 1^n | n >= 0\}$ **06**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Theory of Computation (BTN03402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following conversion is not possible (algorithmically)?
a) Regular grammar to CFG b) NDFA to DFA
c) NDPDA to DPDA d) NDTM to DTM

2) The language recognized by Turing machine is: _____.
a) Context free language
b) Context sensitive language
c) Recursively enumerable language
d) Regular language

3) A Multitape Turing machine is _____ powerful than a single tape turing machine.
a) more b) less
c) equal d) None of the mentioned

4) A context free language is called ambiguous if there exists a string that can have?
a) only one parse tree b) more than one parse tree
c) no parse tree d) Partial parse tree

5) Which of the following is used to recognize regular language?
a) Finite Automata b) Push down automata
c) Turing Machine d) None of the above

6) If L1 and L2 are two regular languages then concatenation of L1 and L2 is _____.
a) L1, L2 b) L1.L2
c) L1 x L2 d) None

7) Pumping Lemma for context free grammar is used for _____.
a) To prove certain language as not context free
b) To prove language is infinite
c) both a and b
d) none of the above

8) Finite Automata can be used for _____.
a) string recognition b) arithmetic operation
c) both a and b d) none of the above

9) Complement of a DFA can be obtained by _____.
a) making starting state as final state
b) no trival method
c) making final states non-final and non-final to final
d) make final as a starting state

10) Which is not a part of the diagram a Turing machine?
a) Input tape b) Read - Write head
c) Finite control d) Stack

11) While applying Pumping lemma over a language, we consider a string w that belong to L and fragment it into _____ parts.
a) 2 b) 5
c) 3 d) 6

12) The set of all strings over the alphabet S={a, b} (including null) is denoted by _____.
a) (a + b)* b) (a + b)+
c) a + b+ d) a*b*

13) A grammar that produces more than one parse tree for some sentence is called _____.
a) Ambiguous b) Unambiguous
c) Regular d) None of these

14) The intersection of CFL and regular language _____.
a) Is always regular b) Is always context free
c) Both (a) and (b) d) Need not be regular

Seat No.		Set	R

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Theory of Computation (BTN03402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of Scientific calculator is allowed.

Section –I

Q.2 Attempt any four **16**

a) Construct the FA equivalent to the following regular sets.
1) ba+(a+bb) a * b
2) (b + ba + bba) * a

b) Explain eliminating useless variable from a CFG with example.

c) Define regular language with example.

d) Construct the DFA for (00)*(11)*

e) Define Mealy machine with example.

Q.3 Attempt any one. **06**

a) State and explain different type of grammar.

b) Given CFG G. find CFG G' in Chomsky normal form.
$S \rightarrow ABA$
$A \rightarrow aA \mid A$
$B \rightarrow bB \mid A$

Q.4 Explain minimization of DFA with suitable example. **06**

Section – II

Q.5 Attempt any four. **16**

a) Define PDA and state the difference between FA and PDA.

b) State and explain pumping lemma for Regular language.

c) Explain basic Turing machine model.

d) Explain Multiple Turing machine.

e) Define PDA. Develop a PDA to accept the language of palindromes.

Q.6 Attempt any one **06**

a) Explain the following with example.
1) Conversion of PDA to CFG
2) Conversion of CFG to PDA

b) Explain in detail the variations in Turing Machine.

Q.7 Design a Turing Machine that accepts the language $L = \{0^n 1^n | n >= 0\}$ **06**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Theory of Computation (BTN03402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which is not a part of the diagram a Turing machine?
a) Input tape b) Read - Write head
c) Finite control d) Stack

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b) Push down automata
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d) None of the above

11) If L1 and L2 are two regular languages then concatenation of L1 and L2 is _____.

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b) L1.L2
c) L1 x L2
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12) Pumping Lemma for context free grammar is used for _____.

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a) string recognition
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c) both a and b
d) none of the above

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c) making final states non-final and non-final to final
d) make final as a starting state

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Theory of Computation (BTN03402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of Scientific calculator is allowed.

Section –I

Q.2 Attempt any four **16**

a) Construct the FA equivalent to the following regular sets.
1) ba+(a+bb) a * b
2) (b + ba + bba) * a

b) Explain eliminating useless variable from a CFG with example.

c) Define regular language with example.

d) Construct the DFA for (00)*(11)*

e) Define Mealy machine with example.

Q.3 Attempt any one. **06**

a) State and explain different type of grammar.

b) Given CFG G. find CFG G' in Chomsky normal form.
$S \rightarrow ABA$
$A \rightarrow aA \mid A$
$B \rightarrow bB \mid A$

Q.4 Explain minimization of DFA with suitable example. **06**

Section – II

Q.5 Attempt any four. **16**

a) Define PDA and state the difference between FA and PDA.

b) State and explain pumping lemma for Regular language.

c) Explain basic Turing machine model.

d) Explain Multiple Turing machine.

e) Define PDA. Develop a PDA to accept the language of palindromes.

Q.6 Attempt any one **06**

a) Explain the following with example.
1) Conversion of PDA to CFG
2) Conversion of CFG to PDA

b) Explain in detail the variations in Turing Machine.

Q.7 Design a Turing Machine that accepts the language $L = \{0^n 1^n | n >= 0\}$ **06**

SLR-GF-769

Seat No.		Set	P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (BTN03403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The generation based on VLSI microprocessor _____.
a) 1st b) 2nd
c) 3rd d) 4th

2) ENIAC stands for _____.
a) Electrical Numerical Integrator and Computer
b) Electronic Numerical Integrator and Computer
c) Electronic and Electrical Numerical Integrator and Computer
d) None

3) A byte is a collection _____ bits.
a) 8 b) 16
c) 32 d) 64

4) In memory map the lower $2\text{^}11 = 2048$ addresses of the memory map are reserved for use by _____.
a) Operating System b) I/O Devices
c) System Stack d) None

5) MIPS has _____ general-purpose and floating-point registers.
a) 8 b) 16
c) 32 d) 64

6) _____ is the total amount of work done in a given time.
a) Latency b) Response time
c) Throughput d) None

7) I/O module is often responsible for _____ and for subsequently reporting errors to the processor.
a) Control and timing b) Processor communication
c) Device communication d) Error Detection

8) _____ converts data from electrical to other forms of energy during output and from other forms to electrical during input.
a) Compiler b) Transducer
c) Control logic d) Interpreter

9) Data flow between adjacent stages in an asynchronous pipeline is controlled by a _____.
a) Bus protocol b) Snoopy Protocol
c) Handshaking protocol d) None

10) In synchronous pipelines _____ are used to interface between stages.
a) Handshaking protocol b) Clocked latches
c) Snoopy protocol d) Bus protocol

11) VLIW stands for?
a) Very Long Instruction Word b) Very Long Instruction Width
c) Very Large Instruction Word d) Very Large Instruction Width

12) The simplest and most common way to increase the ILP is to exploit parallelism among iterations of a _____.
a) Program b) Function
c) Procedure d) Loop

13) _____ computers exploit thread-level parallelism, since multiple threads operate in parallel.
a) SISD b) SIMD
c) MISD d) MIMD

14) _____ computers exploit data-level parallelism by applying the same operations to multiple items of data in parallel.
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c) MISD d) MIMD

SLR-GF-769

Seat No.	

Set P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (BTN03403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three **12**

a) Write a note on Interconnection Network.
b) List and explain benefits of Message Passing Model.
c) Write a note on Addressing modes.
d) Write a note on Upward Compatibility.

Q.3 Attempt any two **16**

a) List & Explain the pseudo operations for the ARC assembly language. Write Assembly code for Addition of Two Numbers.
b) With neat block diagram explain the Function Architecture of Computer System.
c) Explain ISA in detail.

Section – II

Q.4 Attempt any three **12**

a) Compare Programmed I/O and Interrupt Driven I/O.
b) Explain major hurdles of Pipeline.
c) What is instruction level Parallelism?
d) Explain snooping protocol.

Q.5 Attempt any two **16**

a) What are the types of I/O channels? Explain with suitable example.
b) Explain MESI protocol.
c) Explain the concept of overcoming data hazards with dynamic scheduling.

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (BTN03403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) _____ converts data from electrical to other forms of energy during output and from other forms to electrical during input.
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c) Control logic d) Interpreter

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7) _____ computers exploit data-level parallelism by applying the same operations to multiple items of data in parallel.
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c) MISD d) MIMD

8) The generation based on VLSI microprocessor _____.
a) 1^{st} b) 2^{nd}
c) 3^{rd} d) 4^{th}

9) ENIAC stands for _____.
a) Electrical Numerical Integrator and Computer
b) Electronic Numerical Integrator and Computer
c) Electronic and Electrical Numerical Integrator and Computer
d) None

10) A byte is a collection _____ bits.
a) 8 b) 16
c) 32 d) 64

11) In memory map the lower $2\text{^}11 = 2048$ addresses of the memory map are reserved for use by _____.
a) Operating System b) I/O Devices
c) System Stack d) None

12) MIPS has _____ general-purpose and floating-point registers.
a) 8 b) 16
c) 32 d) 64

13) _____ is the total amount of work done in a given time.
a) Latency b) Response time
c) Throughput d) None

14) I/O module is often responsible for _____ and for subsequently reporting errors to the processor.
a) Control and timing b) Processor communication
c) Device communication d) Error Detection

SLR-GF-769

Seat No.	

Set Q

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (BTN03403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three **12**

a) Write a note on Interconnection Network.
b) List and explain benefits of Message Passing Model.
c) Write a note on Addressing modes.
d) Write a note on Upward Compatibility.

Q.3 Attempt any two **16**

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Section – II

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b) Explain major hurdles of Pipeline.
c) What is instruction level Parallelism?
d) Explain snooping protocol.

Q.5 Attempt any two **16**

a) What are the types of I/O channels? Explain with suitable example.
b) Explain MESI protocol.
c) Explain the concept of overcoming data hazards with dynamic scheduling.

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (BTN03403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) VLIW stands for?
a) Very Long Instruction Word b) Very Long Instruction Width
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SLR-GF-769

Seat No.	

Set R

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (BTN03403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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Section – II

Q.4 Attempt any three **12**

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Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (BTN03403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-GF-769

Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Computer Organization and Architecture (BTN03403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three **12**

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b) List and explain benefits of Message Passing Model.
c) Write a note on Addressing modes.
d) Write a note on Upward Compatibility.

Q.3 Attempt any two **16**

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c) Explain ISA in detail.

Section – II

Q.4 Attempt any three **12**

a) Compare Programmed I/O and Interrupt Driven I/O.
b) Explain major hurdles of Pipeline.
c) What is instruction level Parallelism?
d) Explain snooping protocol.

Q.5 Attempt any two **16**

a) What are the types of I/O channels? Explain with suitable example.
b) Explain MESI protocol.
c) Explain the concept of overcoming data hazards with dynamic scheduling.

SLR-GF-770

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Computer Networks (BTN03404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative **14**

1) For outgoing traffic NAT box converts private IP address to company's public IP address.
a) TRUE b) Can't say
c) FALSE d) None of the above

2) In TCP, one end can stop sending data while still receiving data. This is called a ____
a) Half-close b) One way termination
c) Half-open d) None of the above

3) Port addresses are _____ bits in length.
a) 32 Bits b) 64 Bits
c) 48 Bits d) 16 Bits

4) _____ converts a 16 bit integer from host byte order to network byte order.
a) htonl b) ntohl
c) htons d) ntohs

5) Which layers are absent in TCP/IP protocol suite?
a) Transport b) Session
c) Presentation d) Both b) and c)

6) Which of the following is an Application layer service?
a) NVT
b) File transfer, access and management
c) Mail service
d) All of these

7) First address in classless addressing can found as:
First address = (any address) ____ (network mask)
a) OR b) AND
c) NOT d) NOR

8) In TCP _____ timer is used during termination.
a) Keep alive b) TIME-WAIT
c) RTT d) Persistence

9) DHCP server issues a passive open command on its UDP port number _____ and waits for a client.
a) 65 b) 66
c) 67 d) 68

10) FTP uses two well-known TCP ports: port 20 is used for the _____ connection.
a) Control b) Data
c) Error d) All above

11) Which of the following statement is incorrect?
Statement 1: UDP is connectionless, unreliable transport protocol
Statement 2: UDP provide flow control.
Statement 3: UDP provide encapsulation and decapsulation service
a) Statement 1 and 2 b) Statement 1 and 3
c) Statement 2 and 3 d) Statement 2

12) After sending DHCPDISCOVER message to server, the client goes to the _____
a) Requesting State b) Bound State
c) Renewal State d) Selecting State

13) In _____ sequence of character is without structure.
a) Flat Name Space b) Zone Name Space
c) Hierarchical Name Space d) none of the above

14) When secondary server downloads information from primary server it is called _____ transfer.
a) Zone b) Domain
c) Data d) Zone and domain

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Computer Networks (BTN03404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) Write a short note on the TCP timers.
b) Explain in detail NAT.
c) What do you mean by Concurrency in client and server?
d) Explain Logical address with example.
e) Describe the following system calls :
i) bind
ii) listen
iii) accept
iv) send

Q.3 Attempt the following (Any Two) **16**

a) Explain in detail TCP/IP Protocol suite.
b) Explain TCP connection establishment and termination in detail.
c) Explain SCTP services in detail

Section – II

Q.4 Attempt the following (Any Three) **12**

a) What is SSH? Explain format of SSH Packet.
b) Write a short note on HTTP.
c) Explain POP3 with its modes.
d) Explain SMTP with diagram.
e) Explain Generic and Country Domains of DNS.

Q.5 Attempt the following (Any Two) **16**

a) Explain address allocation in DHCP. Draw & Explain DHCP client state transition diagram.
b) What is Remote Login? Explain the concept of NVT.
c) Draw and explain basic model of FTP. Explain how to create control connection and data connection in FTP.

SLR-GF-770

Seat No.	

Set Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Computer Networks (BTN03404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative **14**

1) In TCP _____ timer is used during termination.
a) Keep alive b) TIME-WAIT
c) RTT d) Persistence

2) DHCP server issues a passive open command on its UDP port number _____ and waits for a client.
a) 65 b) 66
c) 67 d) 68

3) FTP uses two well-known TCP ports: port 20 is used for the _____ connection.
a) Control b) Data
c) Error d) All above

4) Which of the following statement is incorrect?
Statement 1: UDP is connectionless, unreliable transport protocol
Statement 2: UDP provide flow control.
Statement 3: UDP provide encapsulation and decapsulation service
a) Statement 1 and 2 b) Statement 1 and 3
c) Statement 2 and 3 d) Statement 2

5) After sending DHCPDISCOVER message to server, the client goes to the _____
a) Requesting State b) Bound State
c) Renewal State d) Selecting State

6) In _____ sequence of character is without structure.
a) Flat Name Space b) Zone Name Space
c) Hierarchical Name Space d) none of the above

7) When secondary server downloads information from primary server it is called _____ transfer.
a) Zone b) Domain
c) Data d) Zone and domain

8) For outgoing traffic NAT box converts private IP address to company's public IP address.
a) TRUE b) Can't say
c) FALSE d) None of the above

9) In TCP, one end can stop sending data while still receiving data. This is called a ____

a) Half-close
b) One way termination
c) Half-open
d) None of the above

10) Port addresses are _____ bits in length.

a) 32 Bits
b) 64 Bits
c) 48 Bits
d) 16 Bits

11) _____ converts a 16 bit integer from host byte order to network byte order.

a) htonl
b) ntohl
c) htons
d) ntohs

12) Which layers are absent in TCP/IP protocol suite?

a) Transport
b) Session
c) Presentation
d) Both b) and c)

13) Which of the following is an Application layer service?

a) NVT
b) File transfer, access and management
c) Mail service
d) All of these

14) First address in classless addressing can found as:
First address = (any address) ____ (network mask)

a) OR
b) AND
c) NOT
d) NOR

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Computer Networks (BTN03404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) Write a short note on the TCP timers.
b) Explain in detail NAT.
c) What do you mean by Concurrency in client and server?
d) Explain Logical address with example.
e) Describe the following system calls :
i) bind
ii) listen
iii) accept
iv) send

Q.3 Attempt the following (Any Two) **16**

a) Explain in detail TCP/IP Protocol suite.
b) Explain TCP connection establishment and termination in detail.
c) Explain SCTP services in detail

Section – II

Q.4 Attempt the following (Any Three) **12**

a) What is SSH? Explain format of SSH Packet.
b) Write a short note on HTTP.
c) Explain POP3 with its modes.
d) Explain SMTP with diagram.
e) Explain Generic and Country Domains of DNS.

Q.5 Attempt the following (Any Two) **16**

a) Explain address allocation in DHCP. Draw & Explain DHCP client state transition diagram.
b) What is Remote Login? Explain the concept of NVT.
c) Draw and explain basic model of FTP. Explain how to create control connection and data connection in FTP.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Computer Networks (BTN03404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative **14**

1) Which of the following statement is incorrect?
Statement 1: UDP is connectionless, unreliable transport protocol
Statement 2: UDP provide flow control.
Statement 3: UDP provide encapsulation and decapsulation service
a) Statement 1 and 2 b) Statement 1 and 3
c) Statement 2 and 3 d) Statement 2

2) After sending DHCPDISCOVER message to server, the client goes to the _____
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c) Renewal State d) Selecting State

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a) Flat Name Space b) Zone Name Space
c) Hierarchical Name Space d) none of the above

4) When secondary server downloads information from primary server it is called _____ transfer.
a) Zone b) Domain
c) Data d) Zone and domain

5) For outgoing traffic NAT box converts private IP address to company's public IP address.
a) TRUE b) Can't say
c) FALSE d) None of the above

6) In TCP, one end can stop sending data while still receiving data. This is called a ____
a) Half-close b) One way termination
c) Half-open d) None of the above

7) Port addresses are _____ bits in length.
a) 32 Bits b) 64 Bits
c) 48 Bits d) 16 Bits

8) _____ converts a 16 bit integer from host byte order to network byte order.
a) htonl b) ntohl
c) htons d) ntohs

9) Which layers are absent in TCP/IP protocol suite?
a) Transport b) Session
c) Presentation d) Both b) and c)

10) Which of the following is an Application layer service?
a) NVT
b) File transfer, access and management
c) Mail service
d) All of these

11) First address in classless addressing can found as:
First address = (any address) ____ (network mask)
a) OR b) AND
c) NOT d) NOR

12) In TCP _____ timer is used during termination.
a) Keep alive b) TIME-WAIT
c) RTT d) Persistence

13) DHCP server issues a passive open command on its UDP port number _____ and waits for a client.
a) 65 b) 66
c) 67 d) 68

14) FTP uses two well-known TCP ports: port 20 is used for the _____ connection.
a) Control b) Data
c) Error d) All above

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Computer Networks (BTN03404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) Write a short note on the TCP timers.
b) Explain in detail NAT.
c) What do you mean by Concurrency in client and server?
d) Explain Logical address with example.
e) Describe the following system calls :
i) bind
ii) listen
iii) accept
iv) send

Q.3 Attempt the following (Any Two) **16**

a) Explain in detail TCP/IP Protocol suite.
b) Explain TCP connection establishment and termination in detail.
c) Explain SCTP services in detail

Section – II

Q.4 Attempt the following (Any Three) **12**

a) What is SSH? Explain format of SSH Packet.
b) Write a short note on HTTP.
c) Explain POP3 with its modes.
d) Explain SMTP with diagram.
e) Explain Generic and Country Domains of DNS.

Q.5 Attempt the following (Any Two) **16**

a) Explain address allocation in DHCP. Draw & Explain DHCP client state transition diagram.
b) What is Remote Login? Explain the concept of NVT.
c) Draw and explain basic model of FTP. Explain how to create control connection and data connection in FTP.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Computer Networks (BTN03404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative **14**

1) Which of the following is an Application layer service?
a) NVT
b) File transfer, access and management
c) Mail service
d) All of these

2) First address in classless addressing can found as:
First address = (any address) ____ (network mask)
a) OR b) AND
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3) In TCP _____ timer is used during termination.
a) Keep alive b) TIME-WAIT
c) RTT d) Persistence

4) DHCP server issues a passive open command on its UDP port number _____ and waits for a client.
a) 65 b) 66
c) 67 d) 68

5) FTP uses two well-known TCP ports: port 20 is used for the _____ connection.
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6) Which of the following statement is incorrect?
Statement 1: UDP is connectionless, unreliable transport protocol
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c) Renewal State d) Selecting State

8) In _____ sequence of character is without structure.
a) Flat Name Space b) Zone Name Space
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10) For outgoing traffic NAT box converts private IP address to company's public IP address.
a) TRUE b) Can't say
c) FALSE d) None of the above

11) In TCP, one end can stop sending data while still receiving data. This is called a ____
a) Half-close b) One way termination
c) Half-open d) None of the above

12) Port addresses are _____ bits in length.
a) 32 Bits b) 64 Bits
c) 48 Bits d) 16 Bits

13) _____ converts a 16 bit integer from host byte order to network byte order.
a) htonl b) ntohl
c) htons d) ntohs

14) Which layers are absent in TCP/IP protocol suite?
a) Transport b) Session
c) Presentation d) Both b) and c)

SLR-GF-770

Seat No.	

Set S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Computer Networks (BTN03404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Three) **12**

a) Write a short note on the TCP timers.
b) Explain in detail NAT.
c) What do you mean by Concurrency in client and server?
d) Explain Logical address with example.
e) Describe the following system calls :
i) bind
ii) listen
iii) accept
iv) send

Q.3 Attempt the following (Any Two) **16**

a) Explain in detail TCP/IP Protocol suite.
b) Explain TCP connection establishment and termination in detail.
c) Explain SCTP services in detail

Section – II

Q.4 Attempt the following (Any Three) **12**

a) What is SSH? Explain format of SSH Packet.
b) Write a short note on HTTP.
c) Explain POP3 with its modes.
d) Explain SMTP with diagram.
e) Explain Generic and Country Domains of DNS.

Q.5 Attempt the following (Any Two) **16**

a) Explain address allocation in DHCP. Draw & Explain DHCP client state transition diagram.
b) What is Remote Login? Explain the concept of NVT.
c) Draw and explain basic model of FTP. Explain how to create control connection and data connection in FTP.

SLR-GF-771

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Applied Mathematics - II (BTN03401)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The interval in which a real root of the equation $x^3 - x - 11 = 0$ lies is _____.
a) (0, 1) b) (1, 2)
c) (2, 3) d) (3, 4)

2) The Iterative formula for Newton Raphson method is given by _____.
a) $x_1 = x_0 - \frac{f(x_0)}{f'(x_0)}$ b) $x_1 = x_0 + \frac{f(x_0)}{f'(x_0)}$
c) $x_0 = x_1 - \frac{f(x_1)}{f'(x_1)}$ d) $x_0 = x_1 + \frac{f(x_1)}{f'(x_1)}$

3) The Power method is used to _____.
a) To fit the curve
b) To solve non-linear equations
c) To find the roots of transcendental equations
d) To find greatest Eigen value of the matrix

4) Gauss-Seidal method converges only, if the co-efficient matrix is _____.
a) A singular matrix b) Non-singular matrix
c) Upper triangular matrix d) Diagonally dominant

5) If $y_0 = 1, y_1 = 2, y_2 = 3$ and $h = 1$ then by Simpson's (1/3)rd rule $\int_{x_0}^{x_3} f(x)dx =$ _____.
a) 4 b) 3
c) 2 d) 1

6) The convergence in Gauss-Seidal method is _____ than that in Jacobi's method.
a) More fast b) More slow
c) Slow d) Equal

7) The process of evaluating a definite integral from a set of tabulated values of $f(x)$ is called _____.
a) Numerical differentiation b) Numerical integration
c) Interpolation d) Extrapolation

8) If two fuzzy sets A and B such that A is subset of B then _____.

a) Cardinality of A ≤ Cardinality of B
b) Cardinality of A ≥ Cardinality of B
c) Cardinality of A = Cardinality of B
d) None of these

9) Given fuzzy number $A(x) = \frac{x+1}{2}, -1 < x \leq 1$

$= \frac{3-x}{2}, 1 < x \leq 3$

$= 0$, Otherwise

The α-cut of $A(x)$ is _____.

a) $[2\alpha - 1, 3 - 2\alpha]$ b) $[1 - 2\alpha, 2\alpha - 3]$
c) $[1 + 2\alpha, 3 - 2\alpha]$ d) $[1 + 2\alpha, 3 + 2\alpha]$

10) The Multiplication of closed interval $[-3, 4].[-3, 5] =$ _____.

a) $\left[\frac{1}{15}, \frac{1}{20}\right]$ b) $[20, -15]$
c) $[-15, 20]$ d) $[9, 15]$

11) Which of the following is not fuzzy number?

a) MIN (A, B) b) $A + B$
c) $A.B$ d) $|A|$

12) Scalar cardinality of fuzzy set $A = \frac{0.4}{v} + \frac{0.2}{w} + \frac{0.6}{x} + \frac{0.8}{y}$ is _____.

a) 2.2 b) 2
c) 3.2 d) 3

13) For maximization LPP, the simplex method is terminated when all values

a) $cj - zj \leq 0$ b) $cj - zj \geq 0$
c) $cj - zj = 0$ d) $zj \leq 0$

14) _____ specifies the objective or goal of solving the LPP.

a) Decision Variables b) Constraints
c) Objective function d) Opportunity costs

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Applied Mathematics - II (BTN03401)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Solve any three questions. **09**

a) Find the Positive root of the equation $x^3 = 2x + 5$ correct up to four decimal places by using False Position method. Calculate first five approximations.

b) Solve the system of equations by using Gauss Elimination method.
$$3x + 4y + 5z = 18, 2x - y + 8z = 13, 5x - 2y + 7z = 20$$

c) Find the value of $\sqrt{17}$ by using Newton Raphson method. Correct up to four decimal places.

d) Evaluate $\int_{-3}^{3} x^4 dx$ by using Simpson's three-eighth rule.

e) Find first three approximations by using Gauss Jacobi method.
$$8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3y + 12z = 35$$

Q.3 Solve any three questions. **09**

a) Evaluate $\int_0^6 \frac{1}{1+x} dx$ by using Weddle's rule correct up to four decimal places.

b) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$. Which is near to 1.5 by using Newton Raphson method?

c) Find first five approximations of the Eigen values of the given matrix by using Power method $\begin{bmatrix} 1 & -3 & 2 \\ 4 & 4 & -1 \\ 6 & 3 & 5 \end{bmatrix}$

d) Apply Simpson's one-third rule to evaluate $\int_0^{\pi} \sin x \, dx$ by take $n = 10$. Verify answer with actual answer.

e) Solve the system of equations by using Gauss Jordan method.
$$x + y + 5z = 7, 2x + 10y + z = 13, 10x + y + z = 12$$

Q.4 Solve any two questions. **10**

a) Solve the system of equations by using L. U. Decomposition method.
$$2x - 6y + 8z = 24, 3x + y + 2z = 16, 5x + 4y - 3z = 2$$

b) Given $(x_0, y_0) = (2, 2.05)$ compute $(x_1, y_1), (x_2, y_2)$ by solving the equations $x^2 - 2x - y + 0.5 = 0$ and $x^2 + 4y^2 = 4$

c) Evaluate $\int_0^1 \int_0^1 e^{x+y} \, dxdy$ by using Trapezoidal rule take $n = 2$. Also evaluate directly.

Section – II

Q.5 Solve any three questions. **09**

a) If A and B are two fuzzy sets defined on universal set X by the membership function as,

$A(x) = \frac{2x}{x+5}, x \in X = \{0,1,2,3,4,5\}$ and $B(x) = \frac{x}{x+5}, \in X = \{0,1,2,3,4,5\}$ then find

i) $\overline{A \cup B}$

ii) $A \cap \bar{B}$

b) Find α-cut and strong α-cut for the values of $\alpha = 0.25, 0.5$ for the fuzzy set $\overline{A \cup B}$ where $A = \{\frac{0.25}{1} + \frac{0.35}{2} + \frac{0.13}{3} + \frac{0.27}{4} + \frac{1}{5}\}$ and $B(x) = \frac{x+1}{x+3}, x \in X = \{1,2,3,4,5\}$

c) Determine whether the following fuzzy set is a fuzzy number

$A)x) = x, 0 \leq x \leq \pi$

$= 0, \text{otherwise}$

d) Evaluate the folllowng

1) $[1,3] + [5,8]$
2) $[1,3] - [5,8]$
3) $[1,3].[5,8]$
4) $[1,3]/[5,8]$

e) A Department store has four subordinates and four tasks have to be performed. Subordinates differ in efficiency and tasks are differ in their intrinsic difficulty. Time each man would take to perform each task is given in the effectiveness matrix. How the task should be allocated to each person so as to minimise the total man hours?

Task	Subordinates			
	I	II	III	IV
A	8	26	17	11
B	13	28	4	26
C	38	19	18	15
D	19	26	24	10

Q.6 Solve any Three of the following. **09**

a) Prove that $|A| + |B| = |A \cup B| + |A \cap B|$

b) Compute $h(A), supp(A), core(A)$ where

$$A(x) = \frac{x+6}{4}, -6 \leq x \leq 2$$
$$= \frac{2-x}{4}, -2 < x \leq 2$$
$$= 0, \text{otherwise}$$

c) Calculate the fuzzy numbers $A + B$ for the given fuzzy numbers defined by the membership functions

$$A(x) = \frac{x+1}{2}, -1 < x \leq 1 \qquad B(x) = \frac{x+1}{2}, 1 < x \leq 3$$
$$= \frac{3-x}{2}, 1 < x \leq 3 \qquad = \frac{5-x}{2}, 3 < x \leq 5$$
$$= 0, \text{otherwise} \qquad = 0, \text{otherwise}$$

d) Max $Z = 3x_1 + 2x_2$ subject to

$$x_1 + x_2 \leq 4$$
$$x_1 - x_2 \leq 2$$

Here $x_1, x_2 \geq 0$

e) Prove that $\alpha_{A \cap B} = \alpha_A \cup \alpha_B$

Q.7 Solve Any Two of the following. **10**

a) Solve the fuzzy equation $A + X = B$, the membership function of two fuzzy numbers A and B are given by,

$$A(x) = x - 1, 1 < x \leq 2 \qquad B(x) = \frac{x-13}{27}, 13 < x \leq 40$$
$$= 3 - x, 2 < x \leq 3 \qquad = \frac{60-x}{20}, 40 < x \leq 60$$
$$= 0, \text{Otherwise} \qquad = 0, \text{Otherwise}$$

b) Find the assignment of mechanics to the job that will result in maximum profit.

Machines	Jobs				
	A	B	C	D	E
1	62	78	50	111	82
2	71	84	61	73	59
3	87	92	111	71	81
4	48	64	87	77	80

c) If A and B are two fuzzy sets defined on universal set X given by, $A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$ and $B = \frac{0.5}{-2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{2}$ and let if $f: X \times X \to Y$ be a crisp function given by $f(x_1, x_2 = x_1 + x_2)$, for all $x \in X$. Then by using extension principle find $f(A, B)$.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Applied Mathematics - II (BTN03401)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If two fuzzy sets A and B such that A is subset of B then _____.
a) Cardinality of A ≤ Cardinality of B
b) Cardinality of A ≥ Cardinality of B
c) Cardinality of A = Cardinality of B
d) None of these

2) Given fuzzy number $A(x) = \frac{x+1}{2}, -1 < x \leq 1$
$= \frac{3-x}{2}, 1 < x \leq 3$
$= 0$, Otherwise
The α-cut of $A(x)$ is _____.
a) $[2\alpha - 1, 3 - 2\alpha]$ b) $[1 - 2\alpha, 2\alpha - 3]$
c) $[1 + 2\alpha, 3 - 2\alpha]$ d) $[1 + 2\alpha, 3 + 2\alpha]$

3) The Multiplication of closed interval $[-3, 4].[-3, 5] =$ _____.
a) $\left[\frac{1}{15}, \frac{1}{20}\right]$ b) $[20, -15]$
c) $[-15, 20]$ d) $[9, 15]$

4) Which of the following is not fuzzy number?
a) MIN (A, B) b) $A + B$
c) $A.B$ d) $|A|$

5) Scalar cardinality of fuzzy set $A = \frac{0.4}{v} + \frac{0.2}{w} + \frac{0.6}{x} + \frac{0.8}{y}$ is _____.
a) 2.2 b) 2
c) 3.2 d) 3

6) For maximization LPP, the simplex method is terminated when all values
a) $cj - zj \leq 0$ b) $cj - zj \geq 0$
c) $cj - zj = 0$ d) $zj \leq 0$

7) _____ specifies the objective or goal of solving the LPP.
a) Decision Variables b) Constraints
c) Objective function d) Opportunity costs

8) The interval in which a real root of the equation $x^3 - x - 11 = 0$ lies is _____.

a) (0, 1) b) (1, 2)

c) (2, 3) d) (3, 4)

9) The Iterative formula for Newton Raphson method is given by _____.

a) $x_1 = x_0 - \frac{f(x_0)}{f'(x_0)}$ b) $x_1 = x_0 + \frac{f(x_0)}{f'(x_0)}$

c) $x_0 = x_1 - \frac{f(x_1)}{f'(x_1)}$ d) $x_0 = x_1 + \frac{f(x_1)}{f'(x_1)}$

10) The Power method is used to _____.

a) To fit the curve

b) To solve non-linear equations

c) To find the roots of transcendental equations

d) To find greatest Eigen value of the matrix

11) Gauss-Seidal method converges only, if the co-efficient matrix is _____.

a) A singular matrix b) Non-singular matrix

c) Upper triangular matrix d) Diagonally dominant

12) If $y_0 = 1, y_1 = 2, y_2 = 3$ and $h = 1$ then by Simpson's (1/3)rd rule $\int_{x_0}^{x_3} f(x)dx =$ _____.

a) 4 b) 3

c) 2 d) 1

13) The convergence in Gauss-Seidal method is _____ than that in Jacobi's method.

a) More fast b) More slow

c) Slow d) Equal

14) The process of evaluating a definite integral from a set of tabulated values of $f(x)$ is called _____.

a) Numerical differentiation b) Numerical integration

c) Interpolation d) Extrapolation

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Applied Mathematics - II (BTN03401)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Solve any three questions. **09**

a) Find the Positive root of the equation $x^3 = 2x + 5$ correct up to four decimal places by using False Position method. Calculate first five approximations.

b) Solve the system of equations by using Gauss Elimination method.
$$3x + 4y + 5z = 18, 2x - y + 8z = 13, 5x - 2y + 7z = 20$$

c) Find the value of $\sqrt{17}$ by using Newton Raphson method. Correct up to four decimal places.

d) Evaluate $\int_{-3}^{3} x^4 dx$ by using Simpson's three-eighth rule.

e) Find first three approximations by using Gauss Jacobi method.
$$8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3y + 12z = 35$$

Q.3 Solve any three questions. **09**

a) Evaluate $\int_0^6 \frac{1}{1+x} dx$ by using Weddle's rule correct up to four decimal places.

b) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$. Which is near to 1.5 by using Newton Raphson method?

c) Find first five approximations of the Eigen values of the given matrix by using Power method $\begin{bmatrix} 1 & -3 & 2 \\ 4 & 4 & -1 \\ 6 & 3 & 5 \end{bmatrix}$

d) Apply Simpson's one-third rule to evaluate $\int_0^{\pi} \sin x \, dx$ by take $n = 10$. Verify answer with actual answer.

e) Solve the system of equations by using Gauss Jordan method.
$$x + y + 5z = 7, 2x + 10y + z = 13, 10x + y + z = 12$$

Q.4 Solve any two questions. **10**

a) Solve the system of equations by using L. U. Decomposition method.
$$2x - 6y + 8z = 24, 3x + y + 2z = 16, 5x + 4y - 3z = 2$$

b) Given $(x_0, y_0) = (2, 2.05)$ compute $(x_1, y_1), (x_2, y_2)$ by solving the equations $x^2 - 2x - y + 0.5 = 0$ and $x^2 + 4y^2 = 4$

c) Evaluate $\int_0^1 \int_0^1 e^{x+y} \, dxdy$ by using Trapezoidal rule take $n = 2$. Also evaluate directly.

Section – II

Q.5 Solve any three questions. **09**

a) If A and B are two fuzzy sets defined on universal set X by the membership function as,

$A(x) = \frac{2x}{x+5}, x \in X = \{0,1,2,3,4,5\}$ and $B(x) = \frac{x}{x+5}, \in X = \{0,1,2,3,4,5\}$ then find

i) $\overline{A \cup B}$

ii) $A \cap \bar{B}$

b) Find α-cut and strong α-cut for the values of $\alpha = 0.25, 0.5$ for the fuzzy set $\overline{A \cup B}$ where $A = \{\frac{0.25}{1} + \frac{0.35}{2} + \frac{0.13}{3} + \frac{0.27}{4} + \frac{1}{5}\}$ and $B(x) = \frac{x+1}{x+3}, x \in X = \{1,2,3,4,5\}$

c) Determine whether the following fuzzy set is a fuzzy number

$A)x) = x, 0 \leq x \leq \pi$

$= 0, \text{otherwise}$

d) Evaluate the folllowng

1) $[1,3] + [5,8]$
2) $[1,3] - [5,8]$
3) $[1,3].[5,8]$
4) $[1,3]/[5,8]$

e) A Department store has four subordinates and four tasks have to be performed. Subordinates differ in efficiency and tasks are differ in their intrinsic difficulty. Time each man would take to perform each task is given in the effectiveness matrix. How the task should be allocated to each person so as to minimise the total man hours?

Task	Subordinates			
	I	II	III	IV
A	8	26	17	11
B	13	28	4	26
C	38	19	18	15
D	19	26	24	10

Q.6 Solve any Three of the following. **09**

a) Prove that $|A| + |B| = |A \cup B| + |A \cap B|$

b) Compute $h(A), supp(A), core(A)$ where

$$A(x) = \frac{x+6}{4}, -6 \leq x \leq 2$$
$$= \frac{2-x}{4}, -2 < x \leq 2$$
$$= 0, \text{otherwise}$$

c) Calculate the fuzzy numbers $A + B$ for the given fuzzy numbers defined by the membership functions

$$A(x) = \frac{x+1}{2}, -1 < x \leq 1 \qquad B(x) = \frac{x+1}{2}, 1 < x \leq 3$$
$$= \frac{3-x}{2}, 1 < x \leq 3 \qquad = \frac{5-x}{2}, 3 < x \leq 5$$
$$= 0, \text{otherwise} \qquad = 0, \text{otherwise}$$

d) Max $Z = 3x_1 + 2x_2$ subject to

$$x_1 + x_2 \leq 4$$
$$x_1 - x_2 \leq 2$$

Here $x_1, x_2 \geq 0$

e) Prove that $\alpha_{A \cap B} = \alpha_A \cup \alpha_B$

Q.7 Solve Any Two of the following. **10**

a) Solve the fuzzy equation $A + X = B$, the membership function of two fuzzy numbers A and B are given by,

$$A(x) = x - 1, 1 < x \leq 2 \qquad B(x) = \frac{x-13}{27}, 13 < x \leq 40$$
$$= 3 - x, 2 < x \leq 3 \qquad = \frac{60-x}{20}, 40 < x \leq 60$$
$$= 0, \text{Otherwise} \qquad = 0, \text{Otherwise}$$

b) Find the assignment of mechanics to the job that will result in maximum profit.

Machines	Jobs				
	A	B	C	D	E
1	62	78	50	111	82
2	71	84	61	73	59
3	87	92	111	71	81
4	48	64	87	77	80

c) If A and B are two fuzzy sets defined on universal set X given by, $A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$ and $B = \frac{0.5}{-2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{2}$ and let if $f: X \times X \to Y$ be a crisp function given by $f(x_1, x_2 = x_1 + x_2)$, for all $x \in X$. Then by using extension principle find $f(A, B)$.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Applied Mathematics - II (BTN03401)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Which of the following is not fuzzy number?
a) MIN (A, B) b) $A + B$
c) $A.B$ d) $|A|$

2) Scalar cardinality of fuzzy set $A = \frac{0.4}{v} + \frac{0.2}{w} + \frac{0.6}{x} + \frac{0.8}{y}$ is _____.
a) 2.2 b) 2
c) 3.2 d) 3

3) For maximization LPP, the simplex method is terminated when all values
a) $cj - zj \leq 0$ b) $cj - zj \geq 0$
c) $cj - zj = 0$ d) $zj \leq 0$

4) _____ specifies the objective or goal of solving the LPP.
a) Decision Variables b) Constraints
c) Objective function d) Opportunity costs

5) The interval in which a real root of the equation $x^3 - x - 11 = 0$ lies is _____.
a) (0, 1) b) (1, 2)
c) (2, 3) d) (3, 4)

6) The Iterative formula for Newton Raphson method is given by _____.
a) $x_1 = x_0 - \frac{f(x_0)}{f'(x_0)}$ b) $x_1 = x_0 + \frac{f(x_0)}{f'(x_0)}$
c) $x_0 = x_1 - \frac{f(x_1)}{f'(x_1)}$ d) $x_0 = x_1 + \frac{f(x_1)}{f'(x_1)}$

7) The Power method is used to _____.
a) To fit the curve
b) To solve non-linear equations
c) To find the roots of transcendental equations
d) To find greatest Eigen value of the matrix

8) Gauss-Seidal method converges only, if the co-efficient matrix is _____.
a) A singular matrix b) Non-singular matrix
c) Upper triangular matrix d) Diagonally dominant

9) If $y_0 = 1, y_1 = 2, y_2 = 3$ and $h = 1$ then by Simpson's (1/3)rd rule $\int_{x_0}^{x_3} f(x)dx =$ _____.

a) 4 b) 3
c) 2 d) 1

10) The convergence in Gauss-Seidal method is _____ than that in Jacobi's method.

a) More fast b) More slow
c) Slow d) Equal

11) The process of evaluating a definite integral from a set of tabulated values of $f(x)$ is called _____.

a) Numerical differentiation b) Numerical integration
c) Interpolation d) Extrapolation

12) If two fuzzy sets A and B such that A is subset of B then _____.

a) Cardinality of A ≤ Cardinality of B
b) Cardinality of A ≥ Cardinality of B
c) Cardinality of A = Cardinality of B
d) None of these

13) Given fuzzy number $A(x) = \frac{x+1}{2}, -1 < x \leq 1$

$= \frac{3-x}{2}, 1 < x \leq 3$

$= 0$, Otherwise

The α-cut of $A(x)$ is _____.

a) $[2\alpha - 1, 3 - 2\alpha]$ b) $[1 - 2\alpha, 2\alpha - 3]$
c) $[1 + 2\alpha, 3 - 2\alpha]$ d) $[1 + 2\alpha, 3 + 2\alpha]$

14) The Multiplication of closed interval $[-3, 4].[-3, 5] =$ _____.

a) $\left[\frac{1}{15}, \frac{1}{20}\right]$ b) $[20, -15]$
c) $[-15, 20]$ d) $[9, 15]$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Applied Mathematics - II (BTN03401)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Solve any three questions. **09**

a) Find the Positive root of the equation $x^3 = 2x + 5$ correct up to four decimal places by using False Position method. Calculate first five approximations.

b) Solve the system of equations by using Gauss Elimination method.
$$3x + 4y + 5z = 18, 2x - y + 8z = 13, 5x - 2y + 7z = 20$$

c) Find the value of $\sqrt{17}$ by using Newton Raphson method. Correct up to four decimal places.

d) Evaluate $\int_{-3}^{3} x^4 dx$ by using Simpson's three-eighth rule.

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$$8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3y + 12z = 35$$

Q.3 Solve any three questions. **09**

a) Evaluate $\int_0^6 \frac{1}{1+x} dx$ by using Weddle's rule correct up to four decimal places.

b) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$. Which is near to 1.5 by using Newton Raphson method?

c) Find first five approximations of the Eigen values of the given matrix by using Power method $\begin{bmatrix} 1 & -3 & 2 \\ 4 & 4 & -1 \\ 6 & 3 & 5 \end{bmatrix}$

d) Apply Simpson's one-third rule to evaluate $\int_0^{\pi} \sin x \, dx$ by take $n = 10$. Verify answer with actual answer.

e) Solve the system of equations by using Gauss Jordan method.
$$x + y + 5z = 7, 2x + 10y + z = 13, 10x + y + z = 12$$

Q.4 Solve any two questions. **10**

a) Solve the system of equations by using L. U. Decomposition method.
$$2x - 6y + 8z = 24, 3x + y + 2z = 16, 5x + 4y - 3z = 2$$

b) Given $(x_0, y_0) = (2, 2.05)$ compute $(x_1, y_1), (x_2, y_2)$ by solving the equations $x^2 - 2x - y + 0.5 = 0$ and $x^2 + 4y^2 = 4$

c) Evaluate $\int_0^1 \int_0^1 e^{x+y} \, dxdy$ by using Trapezoidal rule take $n = 2$. Also evaluate directly.

Section – II

Q.5 Solve any three questions. **09**

a) If A and B are two fuzzy sets defined on universal set X by the membership function as,

$A(x) = \frac{2x}{x+5}, x \in X = \{0,1,2,3,4,5\}$ and $B(x) = \frac{x}{x+5}, \in X = \{0,1,2,3,4,5\}$ then find

i) $\overline{A \cup B}$

ii) $A \cap \bar{B}$

b) Find α-cut and strong α-cut for the values of $\alpha = 0.25, 0.5$ for the fuzzy set $\overline{A \cup B}$ where $A = \{\frac{0.25}{1} + \frac{0.35}{2} + \frac{0.13}{3} + \frac{0.27}{4} + \frac{1}{5}\}$ and $B(x) = \frac{x+1}{x+3}, x \in X = \{1,2,3,4,5\}$

c) Determine whether the following fuzzy set is a fuzzy number

$A)x) = x, 0 \leq x \leq \pi$

$= 0, \text{otherwise}$

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1) $[1,3] + [5,8]$
2) $[1,3] - [5,8]$
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e) A Department store has four subordinates and four tasks have to be performed. Subordinates differ in efficiency and tasks are differ in their intrinsic difficulty. Time each man would take to perform each task is given in the effectiveness matrix. How the task should be allocated to each person so as to minimise the total man hours?

Task	Subordinates			
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B	13	28	4	26
C	38	19	18	15
D	19	26	24	10

Q.6 Solve any Three of the following. **09**

a) Prove that $|A| + |B| = |A \cup B| + |A \cap B|$

b) Compute $h(A), supp(A), core(A)$ where

$$A(x) = \frac{x+6}{4}, -6 \leq x \leq 2$$
$$= \frac{2-x}{4}, -2 < x \leq 2$$
$$= 0, \text{otherwise}$$

c) Calculate the fuzzy numbers $A + B$ for the given fuzzy numbers defined by the membership functions

$$A(x) = \frac{x+1}{2}, -1 < x \leq 1 \qquad B(x) = \frac{x+1}{2}, 1 < x \leq 3$$
$$= \frac{3-x}{2}, 1 < x \leq 3 \qquad = \frac{5-x}{2}, 3 < x \leq 5$$
$$= 0, \text{otherwise} \qquad = 0, \text{otherwise}$$

d) Max $Z = 3x_1 + 2x_2$ subject to

$$x_1 + x_2 \leq 4$$
$$x_1 - x_2 \leq 2$$

Here $x_1, x_2 \geq 0$

e) Prove that $\alpha_{A \cap B} = \alpha_A \cup \alpha_B$

Q.7 Solve Any Two of the following. **10**

a) Solve the fuzzy equation $A + X = B$, the membership function of two fuzzy numbers A and B are given by,

$$A(x) = x - 1, 1 < x \leq 2 \qquad B(x) = \frac{x-13}{27}, 13 < x \leq 40$$
$$= 3 - x, 2 < x \leq 3 \qquad = \frac{60-x}{20}, 40 < x \leq 60$$
$$= 0, \text{Otherwise} \qquad = 0, \text{Otherwise}$$

b) Find the assignment of mechanics to the job that will result in maximum profit.

Machines	Jobs				
	A	B	C	D	E
1	62	78	50	111	82
2	71	84	61	73	59
3	87	92	111	71	81
4	48	64	87	77	80

c) If A and B are two fuzzy sets defined on universal set X given by, $A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$ and $B = \frac{0.5}{-2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{2}$ and let if $f: X \times X \to Y$ be a crisp function given by $f(x_1, x_2 = x_1 + x_2)$, for all $x \in X$. Then by using extension principle find $f(A, B)$.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Applied Mathematics - II (BTN03401)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The convergence in Gauss-Seidal method is _____ than that in Jacobi's method.
a) More fast b) More slow
c) Slow d) Equal

2) The process of evaluating a definite integral from a set of tabulated values of $f(x)$ is called _____.
a) Numerical differentiation b) Numerical integration
c) Interpolation d) Extrapolation

3) If two fuzzy sets A and B such that A is subset of B then _____.
a) Cardinality of A ≤ Cardinality of B
b) Cardinality of A ≥ Cardinality of B
c) Cardinality of A = Cardinality of B
d) None of these

4) Given fuzzy number $A(x) = \frac{x+1}{2}, -1 < x \leq 1$
$= \frac{3-x}{2}, 1 < x \leq 3$
$= 0$, Otherwise
The α-cut of $A(x)$ is _____.
a) $[2\alpha - 1, 3 - 2\alpha]$ b) $[1 - 2\alpha, 2\alpha - 3]$
c) $[1 + 2\alpha, 3 - 2\alpha]$ d) $[1 + 2\alpha, 3 + 2\alpha]$

5) The Multiplication of closed interval $[-3, 4].[-3, 5] =$ _____.
a) $\left[\frac{1}{15}, \frac{1}{20}\right]$ b) $[20, -15]$
c) $[-15, 20]$ d) $[9, 15]$

6) Which of the following is not fuzzy number?
a) MIN (A, B) b) $A + B$
c) $A.B$ d) $|A|$

7) Scalar cardinality of fuzzy set $A = \frac{0.4}{v} + \frac{0.2}{w} + \frac{0.6}{x} + \frac{0.8}{y}$ is _____.

a) 2.2 b) 2
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8) For maximization LPP, the simplex method is terminated when all values
a) $cj - zj \leq 0$ b) $cj - zj \geq 0$
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9) _____ specifies the objective or goal of solving the LPP.
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11) The Iterative formula for Newton Raphson method is given by _____.
a) $x_1 = x_0 - \frac{f(x_0)}{f'(x_0)}$ b) $x_1 = x_0 + \frac{f(x_0)}{f'(x_0)}$
c) $x_0 = x_1 - \frac{f(x_1)}{f'(x_1)}$ d) $x_0 = x_1 + \frac{f(x_1)}{f'(x_1)}$

12) The Power method is used to _____.
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14) If $y_0 = 1, y_1 = 2, y_2 = 3$ and $h = 1$ then by Simpson's (1/3)rd rule $\int_{x_0}^{x_3} f(x)dx =$ _____.
a) 4 b) 3
c) 2 d) 1

Seat No.	

Set | S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE AND ENGINEERING
Applied Mathematics - II (BTN03401)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Solve any three questions. **09**

a) Find the Positive root of the equation $x^3 = 2x + 5$ correct up to four decimal places by using False Position method. Calculate first five approximations.

b) Solve the system of equations by using Gauss Elimination method.
$$3x + 4y + 5z = 18, 2x - y + 8z = 13, 5x - 2y + 7z = 20$$

c) Find the value of $\sqrt{17}$ by using Newton Raphson method. Correct up to four decimal places.

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e) Find first three approximations by using Gauss Jacobi method.
$$8x - 3y + 2z = 20, 4x + 11y - z = 33, 6x + 3y + 12z = 35$$

Q.3 Solve any three questions. **09**

a) Evaluate $\int_0^6 \frac{1}{1+x} dx$ by using Weddle's rule correct up to four decimal places.

b) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$. Which is near to 1.5 by using Newton Raphson method?

c) Find first five approximations of the Eigen values of the given matrix by using Power method $\begin{bmatrix} 1 & -3 & 2 \\ 4 & 4 & -1 \\ 6 & 3 & 5 \end{bmatrix}$

d) Apply Simpson's one-third rule to evaluate $\int_0^{\pi} \sin x \, dx$ by take $n = 10$. Verify answer with actual answer.

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$$x + y + 5z = 7, 2x + 10y + z = 13, 10x + y + z = 12$$

Q.4 Solve any two questions. **10**

a) Solve the system of equations by using L. U. Decomposition method.
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b) Given $(x_0, y_0) = (2, 2.05)$ compute $(x_1, y_1), (x_2, y_2)$ by solving the equations $x^2 - 2x - y + 0.5 = 0$ and $x^2 + 4y^2 = 4$

c) Evaluate $\int_0^1 \int_0^1 e^{x+y} \, dxdy$ by using Trapezoidal rule take $n = 2$. Also evaluate directly.

Section – II

Q.5 Solve any three questions. **09**

a) If A and B are two fuzzy sets defined on universal set X by the membership function as,

$A(x) = \frac{2x}{x+5}, x \in X = \{0,1,2,3,4,5\}$ and $B(x) = \frac{x}{x+5}, \in X = \{0,1,2,3,4,5\}$ then find

i) $\overline{A \cup B}$

ii) $A \cap \bar{B}$

b) Find α-cut and strong α-cut for the values of $\alpha = 0.25, 0.5$ for the fuzzy set $\overline{A \cup B}$ where $A = \{\frac{0.25}{1} + \frac{0.35}{2} + \frac{0.13}{3} + \frac{0.27}{4} + \frac{1}{5}\}$ and $B(x) = \frac{x+1}{x+3}, x \in X = \{1,2,3,4,5\}$

c) Determine whether the following fuzzy set is a fuzzy number

$A)x) = x, 0 \leq x \leq \pi$

$= 0, \text{otherwise}$

d) Evaluate the folllowng

1) $[1,3] + [5,8]$
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e) A Department store has four subordinates and four tasks have to be performed. Subordinates differ in efficiency and tasks are differ in their intrinsic difficulty. Time each man would take to perform each task is given in the effectiveness matrix. How the task should be allocated to each person so as to minimise the total man hours?

Task	Subordinates			
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C	38	19	18	15
D	19	26	24	10

Q.6 Solve any Three of the following. **09**

a) Prove that $|A| + |B| = |A \cup B| + |A \cap B|$

b) Compute $h(A), supp(A), core(A)$ where

$$A(x) = \frac{x+6}{4}, -6 \leq x \leq 2$$
$$= \frac{2-x}{4}, -2 < x \leq 2$$
$$= 0, \text{otherwise}$$

c) Calculate the fuzzy numbers $A + B$ for the given fuzzy numbers defined by the membership functions

$$A(x) = \frac{x+1}{2}, -1 < x \leq 1 \qquad B(x) = \frac{x+1}{2}, 1 < x \leq 3$$
$$= \frac{3-x}{2}, 1 < x \leq 3 \qquad = \frac{5-x}{2}, 3 < x \leq 5$$
$$= 0, \text{otherwise} \qquad = 0, \text{otherwise}$$

d) Max $Z = 3x_1 + 2x_2$ subject to

$$x_1 + x_2 \leq 4$$
$$x_1 - x_2 \leq 2$$

Here $x_1, x_2 \geq 0$

e) Prove that $\alpha_{A \cap B} = \alpha_A \cup \alpha_B$

Q.7 Solve Any Two of the following. **10**

a) Solve the fuzzy equation $A + X = B$, the membership function of two fuzzy numbers A and B are given by,

$$A(x) = x - 1, 1 < x \leq 2 \qquad B(x) = \frac{x-13}{27}, 13 < x \leq 40$$
$$= 3 - x, 2 < x \leq 3 \qquad = \frac{60-x}{20}, 40 < x \leq 60$$
$$= 0, \text{Otherwise} \qquad = 0, \text{Otherwise}$$

b) Find the assignment of mechanics to the job that will result in maximum profit.

Machines	Jobs				
	A	B	C	D	E
1	62	78	50	111	82
2	71	84	61	73	59
3	87	92	111	71	81
4	48	64	87	77	80

c) If A and B are two fuzzy sets defined on universal set X given by, $A = \frac{0.5}{-1} + \frac{1}{0} + \frac{0.5}{1} + \frac{0.3}{2}$ and $B = \frac{0.5}{-2} + \frac{1}{3} + \frac{0.5}{4} + \frac{0.3}{2}$ and let if $f: X \times X \to Y$ be a crisp function given by $f(x_1, x_2 = x_1 + x_2)$, for all $x \in X$. Then by using extension principle find $f(A, B)$.

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Seat No.		Set	P

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Machine Learning (BTN03406)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ is a form of Al that enables a system to learn from data rather than through explicit programming.
a) Deep Learning b) Collective intelligence
c) Machine Learning d) None of these

2) _____ is focused on primarily on making inferences and understanding the characteristics of the variable.
a) Data mining b) Statistics
c) Artificial Intelligence d) All

3) Predicting stock market price is an example of _____.
a) Unsupervised learning b) supervised learning
c) Reinforcement d) None

4) _____ are set of instructions for computer how to interact manipulate and transform data.
a) Programs b) Learning
c) Algorithm d) None

5) _____ Technique is used to group the similar types of objects with similar parameter.
a) Bayesian b) Clustering
c) Association d) None

6) Which of following steps are required to apply machine learning technique to support business strategy.
a) What is the business problem you are trying to solve
b) When are the hidden data resources that you can take advantage
c) How can you prepare to get your data
d) All

7) No matter what the information is, for a machine learning algorithm to correctly process it, it should always be transformed into a _____.
a) number b) text
c) images d) all of above

8) _____ occurs when your algorithm has learned too much from your data, up to the point of mapping curve shapes and rules that do not exist.
a) under fitting b) overfitting
c) cost function d) none

9) cross validation is based on _____ method.
a) under fitting b) overfitting
c) k-fold d) validation

10) The process goes on repetitively until there are no more chunks. Chunks can be small (depending on core memory), and the process is called _____.
a) mini-batch learning b) learning model
c) linear regression d) none

11) In _____ model you build your machine learning models in two (or sometimes even more) stages.
a) stacking b) averaging
c) testing multiple d) hyper parameter

12) _____ is the approach to machine learning that is based on neuroscience.
a) Connectionism b) Neuron
c) Deep learning d) All of above

13) _____ Model looks into the future analysis of data.
a) Descriptive b) Predictive
c) Business d) None of above

14) Relational database is an example of _____.
a) Semi structured data b) Structured data
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Seat No.	

Set **P**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
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Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**
- **a)** Define Machine Learning Explain Lear verging the power of machine learning.
- **b)** Write differences between supervised and unsupervised learning.
- **c)** Explain application of machine learning.
- **d)** Explain the impact of machine learning on application.
- **e)** Explain data preparation.

Q.3 Attempt Any One. **06**
- **a)** Explain Machine Learning Cycle.
- **b)** How to determine the best learning model explain it?

Q.4 Attempt the following. **06**
What is cost function explain its different types.

Section – II

Q.5 Attempt Any Four. **16**
- **a)** Write short note on Searching for the best hyper parameters.
- **b)** Write a short note on applying feature engineering.
- **c)** Explain the term bias.
- **d)** Explain averaging model.
- **e)** Explain stacking model.

Q.6 Attempt Any One. **06**
- **a)** Explain cross validation choices.
- **b)** Explain the discovering the Incredible perceptron.

Q.7 Attempt the following. **06**
Explain the following term
- **a)** Training
- **b)** Testing
- **c)** Validating

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Set Q

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ occurs when your algorithm has learned too much from your data, up to the point of mapping curve shapes and rules that do not exist.
a) under fitting b) overfitting
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2) cross validation is based on _____ method.
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9) _____ is focused on primarily on making inferences and understanding the characteristics of the variable.

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b) Statistics
c) Artificial Intelligence
d) All

10) Predicting stock market price is an example of _____.

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b) supervised learning
c) Reinforcement
d) None

11) _____ are set of instructions for computer how to interact manipulate and transform data.

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b) Learning
c) Algorithm
d) None

12) _____ Technique is used to group the similar types of objects with similar parameter.

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c) Association
d) None

13) Which of following steps are required to apply machine learning technique to support business strategy.

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b) When are the hidden data resources that you can take advantage
c) How can you prepare to get your data
d) All

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a) number
b) text
c) images
d) all of above

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Seat No.	

Set Q

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Section – I

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What is cost function explain its different types.

Section – II

Q.5 Attempt Any Four. **16**
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- **a)** Explain cross validation choices.
- **b)** Explain the discovering the Incredible perceptron.

Q.7 Attempt the following. **06**
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- **a)** Training
- **b)** Testing
- **c)** Validating

Seat No.	

Set **R**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Machine Learning (BTN03406)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) testing multiple d) hyper parameter

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d) none

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b) learning model
c) linear regression
d) none

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Set R

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Section – I

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Section – II

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Seat No.		Set	S

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) Association d) None

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Seat No.		Set	S

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Machine Learning (BTN03406)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
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Section – I

Q.2 Attempt Any Four. **16**
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- **b)** Write differences between supervised and unsupervised learning.
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- **d)** Explain the impact of machine learning on application.
- **e)** Explain data preparation.

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- **a)** Explain Machine Learning Cycle.
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Q.4 Attempt the following. **06**
What is cost function explain its different types.

Section – II

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- **a)** Explain cross validation choices.
- **b)** Explain the discovering the Incredible perceptron.

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Explain the following term
- **a)** Training
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SLR-GF-773

Seat No.		Set	P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Mathematics for Data Science (BTN03407)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

1) In optimization problem, f(x) is known as
a) Decision variable b) Constraint
c) objective function d) None of the above

2) If your problem is impossible to find a direct answer for, then it falls into the _____.
a) Obvious context b) complicated context
c) Complex context d) disorder

3) Which of the following is correct with respect to linear algebra?
a) Linear algebra can help you understand statistics better
b) Data science success is largely dependent on linear algebra.
c) Data Science and ML prediction
d) All of these

4) In cases where the constraint is missing we call them _____ problem.
a) Constrained optimization b) Unconstrained optimization
c) All of these d) None of the above

5) _____ is the method of finding a relationship between two seemingly unrelated data points.
a) Classification b) Regression
c) Clustering d) None of the above

6) The sum of the elements of the principal or main diagonal elements of a square matrix is known as
a) Rank b) Nullity
c) Trace of matrix d) None of the above

7) Length or magnitude of eigenvectors is equal to
a) 0 b) 1
c) -1 d) None of the above

8) _____ calculates the distance between real-valued vectors.
a) Cosine b) Manhattan
c) Euclidian d) None of the above

9) Mean obtained after chopping off values at the high and low extremes is known as

a) Weighted mean
b) Trimmed mean
c) Mean
d) None of the above

10) _____ means that one event causes another event to occur.

a) Correlation
b) Causation
c) Simpson's paradox
d) None of the above

11) If the correlation value is 0.25, then we say variable x & y have _____ between them.

a) Strong correlation
b) Poor correlation
c) No relation
d) None of the above

12) _____ of an event B is the probability that the event will occur given the knowledge that an event A has already occurred.

a) Sure event
b) Conditional probability
c) Dependent event
d) Independent event

13) _____ testing allows us to make probabilistic statements about population parameters.

a) Hypothesis
b) Parametric
c) Non parametric
d) None of these

14) The difference between the largest (max()) and smallest (min()) values is known as

a) Range
b) Standard deviation
c) Variance
d) Percentile

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Seat No.	

Set P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any three from the following questions. **12**

a) What is optimization? Explain components of optimization problem.
b) What is chaotic context?
c) Explain the concept of hamming distance.
d) Explain mean, median, mode.
e) What Is interquartile range? Explain.

Q.3 Answer any two from the following questions. **16**

a) What is correlation? Explain Correlation and Causation.
b) Write short note on Simpson's paradox.
c) Explain in detail quantile and dispersion.

Section – II

Q.4 Answer any three from the following questions. **12**

a) Explain P-hacking in detail.
b) Write short note on discrete random variables.
c) What is conditional probability? Explain.
d) What is type I and type II error?
e) Discuss in short least squares optimization.

Q.5 Answer any two from the following questions. **16**

a) Which are the necessary conditions for optima? Explain.
b) What is Bayes theorem? Explain in detail.
c) Explain statistical hypothesis testing with example.

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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MCQ/Objective Type Questions

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12) _____ is the method of finding a relationship between two seemingly unrelated data points.

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13) The sum of the elements of the principal or main diagonal elements of a square matrix is known as

a) Rank b) Nullity
c) Trace of matrix d) None of the above

14) Length or magnitude of eigenvectors is equal to

a) 0 b) 1
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Seat No.	

Set **Q**

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Section – I

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Q.4 Answer any three from the following questions. **12**

a) Explain P-hacking in detail.
b) Write short note on discrete random variables.
c) What is conditional probability? Explain.
d) What is type I and type II error?
e) Discuss in short least squares optimization.

Q.5 Answer any two from the following questions. **16**

a) Which are the necessary conditions for optima? Explain.
b) What is Bayes theorem? Explain in detail.
c) Explain statistical hypothesis testing with example.

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Mathematics for Data Science (BTN03407)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

1) If the correlation value is 0.25, then we say variable x & y have _____ between them.
a) Strong correlation b) Poor correlation
c) No relation d) None of the above

2) _____ of an event B is the probability that the event will occur given the knowledge that an event A has already occurred.
a) Sure event b) Conditional probability
c) Dependent event d) Independent event

3) _____ testing allows us to make probabilistic statements about population parameters.
a) Hypothesis b) Parametric
c) Non parametric d) None of these

4) The difference between the largest (max()) and smallest (min()) values is known as
a) Range b) Standard deviation
c) Variance d) Percentile

5) In optimization problem, f(x) is known as
a) Decision variable b) Constraint
c) objective function d) None of the above

6) If your problem is impossible to find a direct answer for, then it falls into the _____.
a) Obvious context b) complicated context
c) Complex context d) disorder

7) Which of the following is correct with respect to linear algebra?
a) Linear algebra can help you understand statistics better
b) Data science success is largely dependent on linear algebra.
c) Data Science and ML prediction
d) All of these

8) In cases where the constraint is missing we call them _____ problem.
a) Constrained optimization b) Unconstrained optimization
c) All of these d) None of the above

9) _____ is the method of finding a relationship between two seemingly unrelated data points.
a) Classification b) Regression
c) Clustering d) None of the above

10) The sum of the elements of the principal or main diagonal elements of a square matrix is known as
a) Rank b) Nullity
c) Trace of matrix d) None of the above

11) Length or magnitude of eigenvectors is equal to
a) 0 b) 1
c) -1 d) None of the above

12) _____ calculates the distance between real-valued vectors.
a) Cosine b) Manhattan
c) Euclidian d) None of the above

13) Mean obtained after chopping off values at the high and low extremes is known as
a) Weighted mean b) Trimmed mean
c) Mean d) None of the above

14) _____ means that one event causes another event to occur.
a) Correlation b) Causation
c) Simpson's paradox d) None of the above

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Mathematics for Data Science (BTN03407)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any three from the following questions. **12**

a) What is optimization? Explain components of optimization problem.
b) What is chaotic context?
c) Explain the concept of hamming distance.
d) Explain mean, median, mode.
e) What Is interquartile range? Explain.

Q.3 Answer any two from the following questions. **16**

a) What is correlation? Explain Correlation and Causation.
b) Write short note on Simpson's paradox.
c) Explain in detail quantile and dispersion.

Section – II

Q.4 Answer any three from the following questions. **12**

a) Explain P-hacking in detail.
b) Write short note on discrete random variables.
c) What is conditional probability? Explain.
d) What is type I and type II error?
e) Discuss in short least squares optimization.

Q.5 Answer any two from the following questions. **16**

a) Which are the necessary conditions for optima? Explain.
b) What is Bayes theorem? Explain in detail.
c) Explain statistical hypothesis testing with example.

Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Mathematics for Data Science (BTN03407)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options and rewrite the sentence. 14

1) The sum of the elements of the principal or main diagonal elements of a square matrix is known as
a) Rank b) Nullity
c) Trace of matrix d) None of the above

2) Length or magnitude of eigenvectors is equal to
a) 0 b) 1
c) -1 d) None of the above

3) _____ calculates the distance between real-valued vectors.
a) Cosine b) Manhattan
c) Euclidian d) None of the above

4) Mean obtained after chopping off values at the high and low extremes is known as
a) Weighted mean b) Trimmed mean
c) Mean d) None of the above

5) _____ means that one event causes another event to occur.
a) Correlation b) Causation
c) Simpson's paradox d) None of the above

6) If the correlation value is 0.25, then we say variable x & y have _____ between them.
a) Strong correlation b) Poor correlation
c) No relation d) None of the above

7) _____ of an event B is the probability that the event will occur given the knowledge that an event A has already occurred.
a) Sure event b) Conditional probability
c) Dependent event d) Independent event

8) _____ testing allows us to make probabilistic statements about population parameters.
a) Hypothesis b) Parametric
c) Non parametric d) None of these

9) The difference between the largest (max()) and smallest (min()) values is known as

a) Range
b) Standard deviation
c) Variance
d) Percentile

10) In optimization problem, f(x) is known as

a) Decision variable
b) Constraint
c) objective function
d) None of the above

11) If your problem is impossible to find a direct answer for, then it falls into the _____.

a) Obvious context
b) complicated context
c) Complex context
d) disorder

12) Which of the following is correct with respect to linear algebra?

a) Linear algebra can help you understand statistics better
b) Data science success is largely dependent on linear algebra.
c) Data Science and ML prediction
d) All of these

13) In cases where the constraint is missing we call them _____ problem.

a) Constrained optimization
b) Unconstrained optimization
c) All of these
d) None of the above

14) _____ is the method of finding a relationship between two seemingly unrelated data points.

a) Classification
b) Regression
c) Clustering
d) None of the above

SLR-GF-773

Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Mathematics for Data Science (BTN03407)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer any three from the following questions. **12**

a) What is optimization? Explain components of optimization problem.
b) What is chaotic context?
c) Explain the concept of hamming distance.
d) Explain mean, median, mode.
e) What Is interquartile range? Explain.

Q.3 Answer any two from the following questions. **16**

a) What is correlation? Explain Correlation and Causation.
b) Write short note on Simpson's paradox.
c) Explain in detail quantile and dispersion.

Section – II

Q.4 Answer any three from the following questions. **12**

a) Explain P-hacking in detail.
b) Write short note on discrete random variables.
c) What is conditional probability? Explain.
d) What is type I and type II error?
e) Discuss in short least squares optimization.

Q.5 Answer any two from the following questions. **16**

a) Which are the necessary conditions for optima? Explain.
b) What is Bayes theorem? Explain in detail.
c) Explain statistical hypothesis testing with example.

SLR-GF-774

Seat No.	

Set P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Cryptography (BTN04410)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following is not a type of encryption?
a) Symmetric encryption b) Asymmetric encryption
c) hashing d) Compression

2) _____ ciphers encrypt uniformly sized blooks of data.
a) Set b) Block
c) Rack d) All of the mentioned above

3) Among the following given options, chose the strongest encryption technique?
a) DES b) Double DES
c) AES d) SHA

4) What is the block size of plain text in SHA-512 algorithm?
a) 512 bits b) 1024 bits
c) 2048 bits d) None of the above

5) _____ is the process of communicating confidential information in an unreadable format between legitimate users?
a) Cryptography b) Symmentricity
c) Asymmentricity d) All the above

6) Encryption algorithms are divided into two categories based on the _____.
a) Output type b) Input type
c) Process type d) All of the mentioned above

7) AES stands for Advanced Encryption Standard,
a) True b) False

8) Which of the following is not a characteristic of a good encryption algorithm?
a) Confidentiality b) Integrity
c) Availability d) Authentication

9) Which of the following is not a type of attack on encryption?
a) Brute force attack b) Dictionary attack
c) Collision attack d) Compression attack

10) Which of the following are the applications of cryptography?
a) Digital signature b) Authentication
c) Key generation d) All of the above

11) A cryptographic hash function is an equation used to verify the _____ of data.
a) Variety b) Validity
c) Veracity d) None of the mentioned above

12) MAC is a _____.
a) one-to-one mapping b) many-to-one mapping
c) onto mapping d) none of the mentioned

13) Which of the following protocol is used in security token crypto tool?
a) TTL b) HTTP
c) HTTPS d) SSL

14) Which encryption algorithm is used in Kerberos?
a) DES b) RSA
c) Blowfish d) AES

Seat No.	

Set | P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Cryptography (BTN04410)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary

Section – I

Q.2 Attempt any four. **16**

a) Explain symmetrical cipher model.
b) Explain Caesar cipher substitution technique with example.
c) Explain different security mechanisms.
d) Explain stream cipher and block cipher in detail
e) Explain transposition technique with example.

Q.3 Attempt any two. **12**

a) Explain AES key expansion algorithm.
b) What is DES? Explain DES encryption in detail with example.
c) What are aspects of block cipher design?

Section – II

Q.4 Attempt any four. **16**

a) Explain Diffie-Hellman key exchange algorithm.
b) Explain security requirement for a cryptographic hash function.
c) Write hash functions based on using a cipher block chaining technique.
d) What basic arithmetical and logical functions are used in SHA?
e) Write a note on Simplified Depiction of Essential Elements of Digital Signature Process

Q.5 Attempt any two. **12**

a) Explain techniques for remote user authentication using Symmetric encryption.
b) Alice and Bob use the Diffie-Hellman key exchange technique with a common prime
q = 1 5 7 and a primitive root a = 5.
a) If Alice has a private key XA = 15, find her public key YA.
b) If Bob has a private key XB = 27, find his public key YB.
c) What is the shared secret key between Alice and Bob?
c) Explain RSA algorithm in detail

SLR-GF-774

Seat No.		Set	Q

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Cryptography (BTN04410)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following is not a characteristic of a good encryption algorithm?
a) Confidentiality b) Integrity
c) Availability d) Authentication

2) Which of the following is not a type of attack on encryption?
a) Brute force attack b) Dictionary attack
c) Collision attack d) Compression attack

3) Which of the following are the applications of cryptography?
a) Digital signature b) Authentication
c) Key generation d) All of the above

4) A cryptographic hash function is an equation used to verify the _____ of data.
a) Variety b) Validity
c) Veracity d) None of the mentioned above

5) MAC is a _____.
a) one-to-one mapping b) many-to-one mapping
c) onto mapping d) none of the mentioned

6) Which of the following protocol is used in security token crypto tool?
a) TTL b) HTTP
c) HTTPS d) SSL

7) Which encryption algorithm is used in Kerberos?
a) DES b) RSA
c) Blowfish d) AES

8) Which of the following is not a type of encryption?
a) Symmetric encryption b) Asymmetric encryption
c) hashing d) Compression

9) _____ ciphers encrypt uniformly sized blooks of data.
a) Set b) Block
c) Rack d) All of the mentioned above

10) Among the following given options, chose the strongest encryption technique?

a) DES b) Double DES
c) AES d) SHA

11) What is the block size of plain text in SHA-512 algorithm?

a) 512 bits b) 1024 bits
c) 2048 bits d) None of the above

12) _____ is the process of communicating confidential information in an unreadable format between legitimate users?

a) Cryptography b) Symmentricity
c) Asymmentricity d) All the above

13) Encryption algorithms are divided into two categories based on the _____.

a) Output type b) Input type
c) Process type d) All of the mentioned above

14) AES stands for Advanced Encryption Standard,

a) True b) False

Seat No.	

Set | Q

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Cryptography (BTN04410)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary

Section – I

Q.2 Attempt any four. **16**

a) Explain symmetrical cipher model.
b) Explain Caesar cipher substitution technique with example.
c) Explain different security mechanisms.
d) Explain stream cipher and block cipher in detail
e) Explain transposition technique with example.

Q.3 Attempt any two. **12**

a) Explain AES key expansion algorithm.
b) What is DES? Explain DES encryption in detail with example.
c) What are aspects of block cipher design?

Section – II

Q.4 Attempt any four. **16**

a) Explain Diffie-Hellman key exchange algorithm.
b) Explain security requirement for a cryptographic hash function.
c) Write hash functions based on using a cipher block chaining technique.
d) What basic arithmetical and logical functions are used in SHA?
e) Write a note on Simplified Depiction of Essential Elements of Digital Signature Process

Q.5 Attempt any two. **12**

a) Explain techniques for remote user authentication using Symmetric encryption.
b) Alice and Bob use the Diffie-Hellman key exchange technique with a common prime
q = 1 5 7 and a primitive root a = 5.
a) If Alice has a private key XA = 15, find her public key YA.
b) If Bob has a private key XB = 27, find his public key YB.
c) What is the shared secret key between Alice and Bob?
c) Explain RSA algorithm in detail

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Cryptography (BTN04410)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) A cryptographic hash function is an equation used to verify the _____ of data.
a) Variety b) Validity
c) Veracity d) None of the mentioned above

2) MAC is a _____.
a) one-to-one mapping b) many-to-one mapping
c) onto mapping d) none of the mentioned

3) Which of the following protocol is used in security token crypto tool?
a) TTL b) HTTP
c) HTTPS d) SSL

4) Which encryption algorithm is used in Kerberos?
a) DES b) RSA
c) Blowfish d) AES

5) Which of the following is not a type of encryption?
a) Symmetric encryption b) Asymmetric encryption
c) hashing d) Compression

6) _____ ciphers encrypt uniformly sized blooks of data.
a) Set b) Block
c) Rack d) All of the mentioned above

7) Among the following given options, chose the strongest encryption technique?
a) DES b) Double DES
c) AES d) SHA

8) What is the block size of plain text in SHA-512 algorithm?
a) 512 bits b) 1024 bits
c) 2048 bits d) None of the above

9) _____ is the process of communicating confidential information in an unreadable format between legitimate users?
a) Cryptography b) Symmentricity
c) Asymmentricity d) All the above

10) Encryption algorithms are divided into two categories based on the _____.
a) Output type b) Input type
c) Process type d) All of the mentioned above

11) AES stands for Advanced Encryption Standard,
a) True b) False

12) Which of the following is not a characteristic of a good encryption algorithm?
a) Confidentiality b) Integrity
c) Availability d) Authentication

13) Which of the following is not a type of attack on encryption?
a) Brute force attack b) Dictionary attack
c) Collision attack d) Compression attack

14) Which of the following are the applications of cryptography?
a) Digital signature b) Authentication
c) Key generation d) All of the above

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Cryptography (BTN04410)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary

Section – I

Q.2 Attempt any four. **16**

a) Explain symmetrical cipher model.
b) Explain Caesar cipher substitution technique with example.
c) Explain different security mechanisms.
d) Explain stream cipher and block cipher in detail
e) Explain transposition technique with example.

Q.3 Attempt any two. **12**

a) Explain AES key expansion algorithm.
b) What is DES? Explain DES encryption in detail with example.
c) What are aspects of block cipher design?

Section – II

Q.4 Attempt any four. **16**

a) Explain Diffie-Hellman key exchange algorithm.
b) Explain security requirement for a cryptographic hash function.
c) Write hash functions based on using a cipher block chaining technique.
d) What basic arithmetical and logical functions are used in SHA?
e) Write a note on Simplified Depiction of Essential Elements of Digital Signature Process

Q.5 Attempt any two. **12**

a) Explain techniques for remote user authentication using Symmetric encryption.
b) Alice and Bob use the Diffie-Hellman key exchange technique with a common prime
q = 1 5 7 and a primitive root a = 5.
a) If Alice has a private key XA = 15, find her public key YA.
b) If Bob has a private key XB = 27, find his public key YB.
c) What is the shared secret key between Alice and Bob?
c) Explain RSA algorithm in detail

Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Cryptography (BTN04410)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Encryption algorithms are divided into two categories based on the _____.
a) Output type b) Input type
c) Process type d) All of the mentioned above

2) AES stands for Advanced Encryption Standard,
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3) Which of the following is not a characteristic of a good encryption algorithm?
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6) A cryptographic hash function is an equation used to verify the _____ of data.
a) Variety b) Validity
c) Veracity d) None of the mentioned above

7) MAC is a _____.
a) one-to-one mapping b) many-to-one mapping
c) onto mapping d) none of the mentioned

8) Which of the following protocol is used in security token crypto tool?
a) TTL b) HTTP
c) HTTPS d) SSL

9) Which encryption algorithm is used in Kerberos?
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11) _____ ciphers encrypt uniformly sized blooks of data.

a) Set
b) Block
c) Rack
d) All of the mentioned above

12) Among the following given options, chose the strongest encryption technique?

a) DES
b) Double DES
c) AES
d) SHA

13) What is the block size of plain text in SHA-512 algorithm?

a) 512 bits
b) 1024 bits
c) 2048 bits
d) None of the above

14) _____ is the process of communicating confidential information in an unreadable format between legitimate users?

a) Cryptography
b) Symmentricity
c) Asymmentricity
d) All the above

Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
COMPUTER SCIENCE & ENGINEERING
Cryptography (BTN04410)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary

Section – I

Q.2 Attempt any four. **16**
- **a)** Explain symmetrical cipher model.
- **b)** Explain Caesar cipher substitution technique with example.
- **c)** Explain different security mechanisms.
- **d)** Explain stream cipher and block cipher in detail
- **e)** Explain transposition technique with example.

Q.3 Attempt any two. **12**
- **a)** Explain AES key expansion algorithm.
- **b)** What is DES? Explain DES encryption in detail with example.
- **c)** What are aspects of block cipher design?

Section – II

Q.4 Attempt any four. **16**
- **a)** Explain Diffie-Hellman key exchange algorithm.
- **b)** Explain security requirement for a cryptographic hash function.
- **c)** Write hash functions based on using a cipher block chaining technique.
- **d)** What basic arithmetical and logical functions are used in SHA?
- **e)** Write a note on Simplified Depiction of Essential Elements of Digital Signature Process

Q.5 Attempt any two. **12**
- **a)** Explain techniques for remote user authentication using Symmetric encryption.
- **b)** Alice and Bob use the Diffie-Hellman key exchange technique with a common prime
  q = 1 5 7 and a primitive root a = 5.
  a) If Alice has a private key XA = 15, find her public key YA.
  b) If Bob has a private key XB = 27, find his public key YB.
  c) What is the shared secret key between Alice and Bob?
- **c)** Explain RSA algorithm in detail

SLR-GF-775

Seat No.	

Set P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Engineering Mathematics – III (BTN06301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which one of the following is true?

a) $\frac{1}{f(D)}e^{ax}V = e^{ax}\frac{1}{f(D-a)}V$ b) $\frac{1}{f(D)}e^{ax}V = e^{ax}\frac{1}{f(D+a)}V$

c) $\frac{1}{f(D)}e^{ax}V = e^{ax}\frac{1}{f(a)}V$ d) $\frac{1}{f(D)}e^{ax}V = e^{ax}\frac{1}{f(-a)}V$

2) The complementary function of the differential equation $(D^3-1)y = x$ is _____

a) $c_1e^x + c_2e^{-x}$

b) $(c_1 + c_2x + c_3x^2)e^x$

c) $e^{x/2}\left[c_1\cos\frac{\sqrt{3}}{2}x + c_2\sin\frac{\sqrt{3}}{2}x\right] + c_3e^x$

d) $e^{-x/2}\left[c_1\cos\frac{\sqrt{3}}{2}x + c_2\sin\frac{\sqrt{3}}{2}x\right] + c_3e^x$

3) Which of the following is not a Dirichlet's condition?

a) $f(x)$ is periodic b) $f(x)$ is single valued

c) $f(x)$ is even function d) $f(x)$ is finite

4) The Fourier expansion of $f(x) = \frac{\pi^2}{12} - \frac{x^2}{4}$ in $(-\pi, \pi)$ contains _____.

a) sine terms only b) cosine terms only

c) both cosine and sine terms d) None of these

5) If a Poisson distribution is such that $P(x=0) = 0.6065$ then $m =$

a) 0.5 b) 1.5

c) 1 d) -0.5

6) A continuous random variable has following probability density function $F(x) = kx(1-x^2) \quad 0 \le x \le 1$ then $k =$ _____

a) 2 b) 3

c) 4 d) 6

7) The value of Karl Pearson's coefficient of correlation r lies between ____.

a) -2 and -1 b) -1 and 1

c) 1 and 2 d) 2 and 3

8) $L^{-1}\left\{\dfrac{s-2}{(s-2)^2-6^2)}\right\} =$

a) $e^{2t}\cosh 6t$ b) $e^{-2t}\cosh 36t$

c) $e^{2t}\sinh 6t$ d) $e^{-2t}\cosh 6t$

9) If $L\{f(t)\} = \frac{2}{s^3}e^{-s}$ then $L\{f(2t)\} =$

a) $\dfrac{16}{s^3}e^{-s/2}$ b) $\dfrac{4}{s^3}e^{-s}$

c) $\dfrac{8}{s^3}e^{-s/2}$ d) $\dfrac{8}{s^3}e^{s/2}$

10) The number of strips required to Simpson's three eighth rule is _____.

a) Multiple of 4 b) Multiple of 2

c) Multiple of 6 d) Multiple of 3

11) If $\int_{-1}^{1} f(x)dx = a_1\, f(x_1) + a_2\, f(x_2) + a_3\, f(x_3)$ by Gaussian 3-point formula, the values of a_1, a_2, a_3 are _____.

a) $5/8, 9/8, 5/8$ b) $-\sqrt{3/5}\,, 0, \sqrt{3/5}$

c) $-5/8, 8/9, 5/8$ d) $5/9, 8/9\,, 5/9$

12) The positive real root of $x^3 - 3x - 5 = 0$ lies between _____.

a) 2 and 3 b) 1 and 3

c) 1 and 2 d) None of these

13) The Fourier sine integral form of $f(x)$ is _____.

a) $\sqrt{\dfrac{2}{\pi}}\int_0^{\infty} f(t)\sin st\, dt$

b) $\dfrac{2}{\pi}\int_{-\infty}^{\infty}\sin sx\int_0^{\infty} f(t)\sin st\, dtds$

c) $\dfrac{2}{\pi}\int_0^{\infty}\sin wx\int_0^{\infty} f(s)\sin ws\, dsdw$

d) None

14) The Inverse Fourier transform of $f(x) =$ ____.

a) $\dfrac{1}{2\pi}\int_{-\infty}^{\infty} f\,(w)e^{-iwx}dw$ b) $\dfrac{1}{2\pi}\int_{-\infty}^{\infty} f\,(w)e^{-iwx}dx$

c) $\dfrac{1}{2\pi}\int_{-\infty}^{\infty} f\,(w)e^{iwx}dw$ d) None

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Engineering Mathematics – III (BTN06301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt the following questions. (Any Three) **09**

a) Solve $(D^3 - 2D^2 - 5D + 6)y = e^{4x}$

b) Solve $(D^2 + D)y = x^2 + 2x + 4$

c) Calculate Karl Pearson's coefficient of correlation
$\Sigma x = 80, \Sigma y = 70, \Sigma x^2 = 900, \Sigma y^2 = 800, \Sigma xy = 700, N = 20$

d) Find the Fourier half range cosine series of $f(x) = x - x^2 \quad 0 \le x \le 1$

e) The probability that a student in an evening college will graduate is 0.4. Determine the probability that out of 5 students at least one will graduate.

Q.3 Attempt the following questions. (Any Three) **09**

a) Solve $(D^2 + 4)y = x\cos x$

b) Find the Fourier half range sine series of $f(x) = \pi x - x^2 \quad 0 \le x \le \pi$

c)

x :	0	1	2	3	4	
f :	112	63	20	4	1	Fit a Poisson distribution

d)

	x-series	y-series
Mean	18	100
Standard deviation	14	20

Coefficient of correlation between x and y is 0.8. Find both equations of line of regression.

e) Find the Fourier expansion of $f(x) = x$ in $(-1,1)$

Q.4 Attempt the following questions. (Any Two) **10**

a) The customer accounts of a certain departmental store have an average balance of Rs. 120 and standard deviation of Rs. 40. Assuming the distribution to be normal, find the proportion of accounts i) over Rs.150 ii) between Rs.100 and Rs.150.
(For $S.N.V.Z$ area between $z = 0$ and $z = 0.75$ is 0.2734, For $z = 0$ and $z = 0.5$ is 0.1915)

b) Find the Fourier expansion of
$f(x) \quad = \pi x \quad 0 < x \le \pi$
$\quad\quad = 0 \quad \pi < x \le 2\pi$

c) Solve $(D^2 + 2D + 1)y = 4e^{-x}\log x$

Section – II

Q.5 Attempt the following questions. (Any Three) **09**

a) Find Laplace transform of $e^{-2t}t\cos 3t$

b) Find $L^{-1}\left(\frac{s+2}{s^2-4s+13}\right)$

c) Find $\sqrt{35}$ by Newton Raphson method correct to four decimal places. Take initial approximation $x_0 = 5.8$

d) Find Inverse Fourier cosine transform of e^{-s}

e) Find positive real root of $x\log_{10}x = 1.2$ (Perform 2 iterations) by Regula Falsi method.

Q.6 Attempt the following questions. (Any Three) **09**

a) Evaluate inverse Laplace transform of $\frac{s^2+s-2}{s(s+3)(s-2)}$

b) Find Laplace transform of $f(t) = \frac{2t}{3} \quad 0 < t < 3$ where $f(t)$ is a periodic function with period 3

c) Express the function

$f(x) = \pi/2 \quad 0 < x < \pi$
$= 0 \quad x > \pi$ as a Fourier cosine integral

d) Evaluate $\int_0^5 \frac{1}{4x+5}dx$ using $n = 6$ by Simpson's $1/3^{rd}$ rule.

e) Find Fourier sine transfer of $f(x) = \frac{1}{x}$

Q.7 Attempt the following questions. (Any Two) **10**

a) Solve $(D^2 - D - 2)y = 20\sin 3t$ with $y(0) = 1, y'(0) = 2$ by using Laplace Transform.

b) Evaluate $\int_5^{12}\frac{dx}{x}$ using Gaussian quadrature method $n = 2$

c) Find Fourier transform of

$f(x) = 1 \quad |x| < k$
$= 0 \quad |x| > k$ and hence evaluate

i) $\int_{-\infty}^{\infty}\frac{\sin sk\,.\cos sx}{s}ds$

ii) $\int_{-\infty}^{\infty}\frac{\sin ks}{s}ds$

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Engineering Mathematics – III (BTN06301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) $L^{-1}\left\{\frac{s-2}{(s-2)^2-6^2)}\right\} =$

a) $e^{2t}\cosh 6t$ b) $e^{-2t}\cosh 36t$
c) $e^{2t}\sinh 6t$ d) $e^{-2t}\cosh 6t$

2) If $L\{f(t)\} = \frac{2}{s^3}e^{-s}$ then $L\{f(2t)\} =$

a) $\frac{16}{s^3}e^{-s/2}$ b) $\frac{4}{s^3}e^{-s}$
c) $\frac{8}{s^3}e^{-s/2}$ d) $\frac{8}{s^3}e^{s/2}$

3) The number of strips required to Simpson's three eighth rule is _____.
a) Multiple of 4 b) Multiple of 2
c) Multiple of 6 d) Multiple of 3

4) If $\int_{-1}^{1} f(x)dx = a_1 f(x_1) + a_2 f(x_2) + a_3 f(x_3)$ by Gaussian 3-point formula, the values of a_1, a_2, a_3 are _____.
a) $5/8, 9/8, 5/8$ b) $-\sqrt{3/5}, 0, \sqrt{3/5}$
c) $-5/8, 8/9, 5/8$ d) $5/9, 8/9, 5/9$

5) The positive real root of $x^3 - 3x - 5 = 0$ lies between _____.
a) 2 and 3 b) 1 and 3
c) 1 and 2 d) None of these

6) The Fourier sine integral form of $f(x)$ is _____.

a) $\sqrt{\frac{2}{\pi}}\int_0^\infty f(t)\sin st\,dt$

b) $\frac{2}{\pi}\int_{-\infty}^{\infty}\sin sx\int_0^\infty f(t)\sin st\,dtds$

c) $\frac{2}{\pi}\int_0^\infty \sin wx\int_0^\infty f(s)\sin ws\,dsdw$

d) None

7) The Inverse Fourier transform of $f(x) =$ ____.

a) $\frac{1}{2\pi}\int_{-\infty}^{\infty} f(w)e^{-iwx}dw$

b) $\frac{1}{2\pi}\int_{-\infty}^{\infty} f(w)e^{-iwx}dx$

c) $\frac{1}{2\pi}\int_{-\infty}^{\infty} f(w)e^{iwx}dw$

d) None

8) Which one of the following is true?

a) $\frac{1}{f(D)}e^{ax}V = e^{ax}\frac{1}{f(D-a)}V$

b) $\frac{1}{f(D)}e^{ax}V = e^{ax}\frac{1}{f(D+a)}V$

c) $\frac{1}{f(D)}e^{ax}V = e^{ax}\frac{1}{f(a)}V$

d) $\frac{1}{f(D)}e^{ax}V = e^{ax}\frac{1}{f(-a)}V$

9) The complementary function of the differential equation $(D^3-1)y = x$ is _____

a) $c_1e^x + c_2e^{-x}$

b) $(c_1 + c_2x + c_3x^2)e^x$

c) $e^{x/2}\left[c_1\cos\frac{\sqrt{3}}{2}x + c_2\sin\frac{\sqrt{3}}{2}x\right] + c_3e^x$

d) $e^{-x/2}\left[c_1\cos\frac{\sqrt{3}}{2}x + c_2\sin\frac{\sqrt{3}}{2}x\right] + c_3e^x$

10) Which of the following is not a Dirichlet's condition?

a) $f(x)$ is periodic

b) $f(x)$ is single valued

c) $f(x)$ is even function

d) $f(x)$ is finite

11) The Fourier expansion of $f(x) = \frac{\pi^2}{12} - \frac{x^2}{4}$ in $(-\pi, \pi)$ contains _____.

a) sine terms only

b) cosine terms only

c) both cosine and sine terms

d) None of these

12) If a Poisson distribution is such that $P(x=0) = 0.6065$ then $m =$

a) 0.5

b) 1.5

c) 1

d) -0.5

13) A continuous random variable has following probability density function $F(x) = kx(1-x^2) \quad 0 \le x \le 1$ then $k =$ _____

a) 2

b) 3

c) 4

d) 6

14) The value of Karl Pearson's coefficient of correlation r lies between ____.

a) -2 and -1

b) -1 and 1

c) 1 and 2

d) 2 and 3

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Engineering Mathematics – III (BTN06301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt the following questions. (Any Three) **09**

a) Solve $(D^3 - 2D^2 - 5D + 6)y = e^{4x}$

b) Solve $(D^2 + D)y = x^2 + 2x + 4$

c) Calculate Karl Pearson's coefficient of correlation
$\Sigma x = 80, \Sigma y = 70, \Sigma x^2 = 900, \Sigma y^2 = 800, \Sigma xy = 700, N = 20$

d) Find the Fourier half range cosine series of $f(x) = x - x^2 \quad 0 \le x \le 1$

e) The probability that a student in an evening college will graduate is 0.4. Determine the probability that out of 5 students at least one will graduate.

Q.3 Attempt the following questions. (Any Three) **09**

a) Solve $(D^2 + 4)y = x\cos x$

b) Find the Fourier half range sine series of $f(x) = \pi x - x^2 \quad 0 \le x \le \pi$

c)

x :	0	1	2	3	4
f :	112	63	20	4	1

Fit a Poisson distribution

d)

	x-series	y-series
Mean	18	100
Standard deviation	14	20

Coefficient of correlation between x and y is 0.8. Find both equations of line of regression.

e) Find the Fourier expansion of $f(x) = x$ in $(-1,1)$

Q.4 Attempt the following questions. (Any Two) **10**

a) The customer accounts of a certain departmental store have an average balance of Rs. 120 and standard deviation of Rs. 40. Assuming the distribution to be normal, find the proportion of accounts i) over Rs.150 ii) between Rs.100 and Rs.150.
(For $S.N.V.Z$ area between $z = 0$ and $z = 0.75$ is 0.2734, For $z = 0$ and $z = 0.5$ is 0.1915)

b) Find the Fourier expansion of
$f(x) \quad = \pi x \quad 0 < x \le \pi$
$\quad\quad = 0 \quad \pi < x \le 2\pi$

c) Solve $(D^2 + 2D + 1)y = 4e^{-x}\log x$

Section – II

Q.5 Attempt the following questions. (Any Three) **09**

a) Find Laplace transform of $e^{-2t}t\cos 3t$

b) Find $L^{-1}\left(\frac{s+2}{s^2-4s+13}\right)$

c) Find $\sqrt{35}$ by Newton Raphson method correct to four decimal places. Take initial approximation $x_0 = 5.8$

d) Find Inverse Fourier cosine transform of e^{-s}

e) Find positive real root of $x\log_{10}x = 1.2$ (Perform 2 iterations) by Regula Falsi method.

Q.6 Attempt the following questions. (Any Three) **09**

a) Evaluate inverse Laplace transform of $\frac{s^2+s-2}{s(s+3)(s-2)}$

b) Find Laplace transform of $f(t) = \frac{2t}{3} \quad 0 < t < 3$ where $f(t)$ is a periodic function with period 3

c) Express the function

$f(x) = \pi/2 \quad 0 < x < \pi$
$= 0 \quad x > \pi$ as a Fourier cosine integral

d) Evaluate $\int_0^5 \frac{1}{4x+5}dx$ using $n = 6$ by Simpson's $1/3^{rd}$ rule.

e) Find Fourier sine transfer of $f(x) = \frac{1}{x}$

Q.7 Attempt the following questions. (Any Two) **10**

a) Solve $(D^2 - D - 2)y = 20\sin 3t$ with $y(0) = 1, y'(0) = 2$ by using Laplace Transform.

b) Evaluate $\int_5^{12}\frac{dx}{x}$ using Gaussian quadrature method $n = 2$

c) Find Fourier transform of

$f(x) = 1 \quad |x| < k$
$= 0 \quad |x| > k$ and hence evaluate

i) $\int_{-\infty}^{\infty}\frac{\sin sk\,.\cos sx}{s}ds$

ii) $\int_{-\infty}^{\infty}\frac{\sin ks}{s}ds$

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Engineering Mathematics – III (BTN06301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If $\int_{-1}^{1} f(x)dx = a_1 f(x_1) + a_2 f(x_2) + a_3 f(x_3)$ by Gaussian 3-point formula, the values of a_1, a_2, a_3 are _____.

a) $5/8, 9/8, 5/8$ b) $-\sqrt{3/5}, 0, \sqrt{3/5}$

c) $-5/8, 8/9, 5/8$ d) $5/9, 8/9, 5/9$

2) The positive real root of $x^3 - 3x - 5 = 0$ lies between _____.

a) 2 and 3 b) 1 and 3

c) 1 and 2 d) None of these

3) The Fourier sine integral form of $f(x)$ is _____.

a) $\sqrt{\frac{2}{\pi}} \int_0^{\infty} f(t) \sin st \, dt$

b) $\frac{2}{\pi} \int_{-\infty}^{\infty} \sin sx \int_0^{\infty} f(t) \sin st \, dt ds$

c) $\frac{2}{\pi} \int_0^{\infty} \sin wx \int_0^{\infty} f(s) \sin ws \, ds dw$

d) None

4) The Inverse Fourier transform of $f(x) =$ ____.

a) $\frac{1}{2\pi} \int_{-\infty}^{\infty} f(w) e^{-iwx} dw$ b) $\frac{1}{2\pi} \int_{-\infty}^{\infty} f(w) e^{-iwx} dx$

c) $\frac{1}{2\pi} \int_{-\infty}^{\infty} f(w) e^{iwx} dw$ d) None

5) Which one of the following is true?

a) $\frac{1}{f(D)} e^{ax} V = e^{ax} \frac{1}{f(D-a)} V$ b) $\frac{1}{f(D)} e^{ax} V = e^{ax} \frac{1}{f(D+a)} V$

c) $\frac{1}{f(D)} e^{ax} V = e^{ax} \frac{1}{f(a)} V$ d) $\frac{1}{f(D)} e^{ax} V = e^{ax} \frac{1}{f(-a)} V$

6) The complementary function of the differential equation $(D^3-1)y=x$ is _____

a) $c_1e^x+c_2e^{-x}$

b) $(c_1+c_2x+c_3x^2)e^x$

c) $e^{x/2}\left[c_1\cos\frac{\sqrt{3}}{2}x+c_2\sin\frac{\sqrt{3}}{2}x\right]+c_3e^x$

d) $e^{-x/2}\left[c_1\cos\frac{\sqrt{3}}{2}x+c_2\sin\frac{\sqrt{3}}{2}x\right]+c_3e^x$

7) Which of the following is not a Dirichlet's condition?

a) $f(x)$ is periodic b) $f(x)$ is single valued

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a) sine terms only b) cosine terms only

c) both cosine and sine terms d) None of these

9) If a Poisson distribution is such that $P(x=0)=0.6065$ then $m=$

a) 0.5 b) 1.5

c) 1 d) -0.5

10) A continuous random variable has following probability density function $F(x)=kx(1-x^2)\quad 0\le x\le 1$ then $k=$ _____

a) 2 b) 3

c) 4 d) 6

11) The value of Karl Pearson's coefficient of correlation r lies between ____.

a) -2 and -1 b) -1 and 1

c) 1 and 2 d) 2 and 3

12) $L^{-1}\left\{\frac{s-2}{(s-2)^2-6^2)}\right\}=$

a) $e^{2t}\cosh 6t$ b) $e^{-2t}\cosh 36t$

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13) If $L\{f(t)\}=\frac{2}{s^3}e^{-s}$ then $L\{f(2t)\}=$

a) $\frac{16}{s^3}e^{-s/2}$ b) $\frac{4}{s^3}e^{-s}$

c) $\frac{8}{s^3}e^{-s/2}$ d) $\frac{8}{s^3}e^{s/2}$

14) The number of strips required to Simpson's three eighth rule is _____.

a) Multiple of 4 b) Multiple of 2

c) Multiple of 6 d) Multiple of 3

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Engineering Mathematics – III (BTN06301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt the following questions. (Any Three) **09**

a) Solve $(D^3 - 2D^2 - 5D + 6)y = e^{4x}$

b) Solve $(D^2 + D)y = x^2 + 2x + 4$

c) Calculate Karl Pearson's coefficient of correlation
$\Sigma x = 80, \Sigma y = 70, \Sigma x^2 = 900, \Sigma y^2 = 800, \Sigma xy = 700, N = 20$

d) Find the Fourier half range cosine series of $f(x) = x - x^2 \quad 0 \le x \le 1$

e) The probability that a student in an evening college will graduate is 0.4. Determine the probability that out of 5 students at least one will graduate.

Q.3 Attempt the following questions. (Any Three) **09**

a) Solve $(D^2 + 4)y = x\cos x$

b) Find the Fourier half range sine series of $f(x) = \pi x - x^2 \quad 0 \le x \le \pi$

c)

x :	0	1	2	3	4
f :	112	63	20	4	1

Fit a Poisson distribution

d)

	x-series	y-series
Mean	18	100
Standard deviation	14	20

Coefficient of correlation between x and y is 0.8. Find both equations of line of regression.

e) Find the Fourier expansion of $f(x) = x$ in $(-1,1)$

Q.4 Attempt the following questions. (Any Two) **10**

a) The customer accounts of a certain departmental store have an average balance of Rs. 120 and standard deviation of Rs. 40. Assuming the distribution to be normal, find the proportion of accounts i) over Rs.150 ii) between Rs.100 and Rs.150.
(For $S.N.V.Z$ area between $z = 0$ and $z = 0.75$ is 0.2734, For $z = 0$ and $z = 0.5$ is 0.1915)

b) Find the Fourier expansion of
$f(x) \quad = \pi x \quad 0 < x \le \pi$
$\quad\quad = 0 \quad \pi < x \le 2\pi$

c) Solve $(D^2 + 2D + 1)y = 4e^{-x}\log x$

Section – II

Q.5 Attempt the following questions. (Any Three) **09**

a) Find Laplace transform of $e^{-2t}t\cos 3t$

b) Find $L^{-1}\left(\frac{s+2}{s^2-4s+13}\right)$

c) Find $\sqrt{35}$ by Newton Raphson method correct to four decimal places. Take initial approximation $x_0 = 5.8$

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e) Find positive real root of $x\log_{10}x = 1.2$ (Perform 2 iterations) by Regula Falsi method.

Q.6 Attempt the following questions. (Any Three) **09**

a) Evaluate inverse Laplace transform of $\frac{s^2+s-2}{s(s+3)(s-2)}$

b) Find Laplace transform of $f(t) = \frac{2t}{3} \quad 0 < t < 3$ where $f(t)$ is a periodic function with period 3

c) Express the function

$f(x) = \pi/2 \quad 0 < x < \pi$
$= 0 \quad x > \pi$ as a Fourier cosine integral

d) Evaluate $\int_0^5 \frac{1}{4x+5}dx$ using $n = 6$ by Simpson's $1/3^{rd}$ rule.

e) Find Fourier sine transfer of $f(x) = \frac{1}{x}$

Q.7 Attempt the following questions. (Any Two) **10**

a) Solve $(D^2 - D - 2)y = 20\sin 3t$ with $y(0) = 1, y'(0) = 2$ by using Laplace Transform.

b) Evaluate $\int_5^{12}\frac{dx}{x}$ using Gaussian quadrature method $n = 2$

c) Find Fourier transform of

$f(x) = 1 \quad |x| < k$
$= 0 \quad |x| > k$ and hence evaluate

i) $\int_{-\infty}^{\infty}\frac{\sin sk\,.\cos sx}{s}ds$

ii) $\int_{-\infty}^{\infty}\frac{\sin ks}{s}ds$

Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Engineering Mathematics – III (BTN06301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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4) Use of non-programmable calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A continuous random variable has following probability density function $F(x) = kx(1-x^2) \quad 0 \le x \le 1$ then $k =$ _____

a) 2 b) 3
c) 4 d) 6

2) The value of Karl Pearson's coefficient of correlation r lies between ____.

a) -2 and -1 b) -1 and 1
c) 1 and 2 d) 2 and 3

3) $L^{-1}\left\{\dfrac{s-2}{(s-2)^2-6^2)}\right\} =$

a) $e^{2t}\cosh 6t$ b) $e^{-2t}\cosh 36t$
c) $e^{2t}\sinh 6t$ d) $e^{-2t}\cosh 6t$

4) If $L\{f(t)\} = \frac{2}{s^3}e^{-s}$ then $L\{f(2t)\} =$

a) $\dfrac{16}{s^3}e^{-s/2}$ b) $\dfrac{4}{s^3}e^{-s}$
c) $\dfrac{8}{s^3}e^{-s/2}$ d) $\dfrac{8}{s^3}e^{s/2}$

5) The number of strips required to Simpson's three eighth rule is _____.

a) Multiple of 4 b) Multiple of 2
c) Multiple of 6 d) Multiple of 3

6) If $\int_{-1}^{1} f(x)dx = a_1 f(x_1) + a_2 f(x_2) + a_3 f(x_3)$ by Gaussian 3-point formula, the values of a_1, a_2, a_3 are _____.

a) $5/8, 9/8, 5/8$ b) $-\sqrt{3/5}, 0, \sqrt{3/5}$
c) $-5/8, 8/9, 5/8$ d) $5/9, 8/9, 5/9$

7) The positive real root of $x^3 - 3x - 5 = 0$ lies between _____.

a) 2 and 3 b) 1 and 3

c) 1 and 2 d) None of these

8) The Fourier sine integral form of $f(x)$ is _____.

a) $\sqrt{\frac{2}{\pi}}\int_0^\infty f(t)\sin st\,dt$

b) $\frac{2}{\pi}\int_{-\infty}^{\infty}\sin sx\int_0^\infty f(t)\sin st\,dtds$

c) $\frac{2}{\pi}\int_0^\infty \sin wx\int_0^\infty f(s)\sin ws\,dsdw$

d) None

9) The Inverse Fourier transform of $f(x) =$ ____.

a) $\frac{1}{2\pi}\int_{-\infty}^{\infty} f(w)e^{-iwx}dw$ b) $\frac{1}{2\pi}\int_{-\infty}^{\infty} f(w)e^{-iwx}dx$

c) $\frac{1}{2\pi}\int_{-\infty}^{\infty} f(w)e^{iwx}dw$ d) None

10) Which one of the following is true?

a) $\frac{1}{f(D)}e^{ax}V = e^{ax}\frac{1}{f(D-a)}V$ b) $\frac{1}{f(D)}e^{ax}V = e^{ax}\frac{1}{f(D+a)}V$

c) $\frac{1}{f(D)}e^{ax}V = e^{ax}\frac{1}{f(a)}V$ d) $\frac{1}{f(D)}e^{ax}V = e^{ax}\frac{1}{f(-a)}V$

11) The complementary function of the differential equation $(D^3 - 1)y = x$ is _____

a) $c_1e^x + c_2e^{-x}$

b) $(c_1 + c_2x + c_3x^2)e^x$

c) $e^{x/2}\left[c_1\cos\frac{\sqrt{3}}{2}x + c_2\sin\frac{\sqrt{3}}{2}x\right] + c_3e^x$

d) $e^{-x/2}\left[c_1\cos\frac{\sqrt{3}}{2}x + c_2\sin\frac{\sqrt{3}}{2}x\right] + c_3e^x$

12) Which of the following is not a Dirichlet's condition?

a) $f(x)$ is periodic b) $f(x)$ is single valued

c) $f(x)$ is even function d) $f(x)$ is finite

13) The Fourier expansion of $f(x) = \frac{\pi^2}{12} - \frac{x^2}{4}$ in $(-\pi, \pi)$ contains _____.

a) sine terms only b) cosine terms only

c) both cosine and sine terms d) None of these

14) If a Poisson distribution is such that $P(x = 0) = 0.6065$ then $m =$

a) 0.5 b) 1.5

c) 1 d) -0.5

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Engineering Mathematics – III (BTN06301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt the following questions. (Any Three) **09**

a) Solve $(D^3 - 2D^2 - 5D + 6)y = e^{4x}$

b) Solve $(D^2 + D)y = x^2 + 2x + 4$

c) Calculate Karl Pearson's coefficient of correlation
$\Sigma x = 80, \Sigma y = 70, \Sigma x^2 = 900, \Sigma y^2 = 800, \Sigma xy = 700, N = 20$

d) Find the Fourier half range cosine series of $f(x) = x - x^2 \quad 0 \le x \le 1$

e) The probability that a student in an evening college will graduate is 0.4. Determine the probability that out of 5 students at least one will graduate.

Q.3 Attempt the following questions. (Any Three) **09**

a) Solve $(D^2 + 4)y = x\cos x$

b) Find the Fourier half range sine series of $f(x) = \pi x - x^2 \quad 0 \le x \le \pi$

c)

x :	0	1	2	3	4	
f :	112	63	20	4	1	Fit a Poisson distribution

d)

	x-series	y-series
Mean	18	100
Standard deviation	14	20

Coefficient of correlation between x and y is 0.8. Find both equations of line of regression.

e) Find the Fourier expansion of $f(x) = x$ in $(-1,1)$

Q.4 Attempt the following questions. (Any Two) **10**

a) The customer accounts of a certain departmental store have an average balance of Rs. 120 and standard deviation of Rs. 40. Assuming the distribution to be normal, find the proportion of accounts i) over Rs.150 ii) between Rs.100 and Rs.150.
(For S. N. V. Z area between $z = 0$ and $z = 0.75$ is 0.2734, For $z = 0$ and $z = 0.5$ is 0.1915)

b) Find the Fourier expansion of
$f(x) \quad = \pi x \quad 0 < x \le \pi$
$\quad\quad = 0 \quad \pi < x \le 2\pi$

c) Solve $(D^2 + 2D + 1)y = 4e^{-x}\log x$

Section – II

Q.5 Attempt the following questions. (Any Three) **09**

a) Find Laplace transform of $e^{-2t}t\cos 3t$

b) Find $L^{-1}\left(\frac{s+2}{s^2-4s+13}\right)$

c) Find $\sqrt{35}$ by Newton Raphson method correct to four decimal places. Take initial approximation $x_0 = 5.8$

d) Find Inverse Fourier cosine transform of e^{-s}

e) Find positive real root of $x\log_{10}x = 1.2$ (Perform 2 iterations) by Regula Falsi method.

Q.6 Attempt the following questions. (Any Three) **09**

a) Evaluate inverse Laplace transform of $\frac{s^2+s-2}{s(s+3)(s-2)}$

b) Find Laplace transform of $f(t) = \frac{2t}{3} \quad 0 < t < 3$ where $f(t)$ is a periodic function with period 3

c) Express the function

$f(x) = \pi/2 \quad 0 < x < \pi$
$= 0 \quad x > \pi$ as a Fourier cosine integral

d) Evaluate $\int_0^5 \frac{1}{4x+5}dx$ using $n = 6$ by Simpson's $1/3^{rd}$ rule.

e) Find Fourier sine transfer of $f(x) = \frac{1}{x}$

Q.7 Attempt the following questions. (Any Two) **10**

a) Solve $(D^2 - D - 2)y = 20\sin 3t$ with $y(0) = 1, y'(0) = 2$ by using Laplace Transform.

b) Evaluate $\int_5^{12}\frac{dx}{x}$ using Gaussian quadrature method $n = 2$

c) Find Fourier transform of

$f(x) = 1 \quad |x| < k$
$= 0 \quad |x| > k$ and hence evaluate

i) $\int_{-\infty}^{\infty}\frac{\sin sk\,.\cos sx}{s}ds$

ii) $\int_{-\infty}^{\infty}\frac{\sin ks}{s}ds$

Seat No.	

Set **P**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Electronic Circuit Analysis and Design (BTN06302)

Day & Date: Saturday,06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.
5) Use of calculator and electronic component datasheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The JFET is also known as square law device because it's _____.
a) Drain current varies as square of the gate source voltage
b) Transconductance curve is parabolic
c) Reverse gate leakage current varies as square of reverse gate voltage
d) Drain current varies as square of its drain voltage for a fixed Vgs

2) D-MOSFET will work for _____ gate to source voltage.
a) Negative b) Positive
c) Both a and b d) None of these

3) In FET, the np region between source and gate is: _____.
a) forward biased b) reverse biased
c) both a & b d) none of these

4) Voltage gain of each stage in a 3-stage amplifier is 11dB, 5dB, 15dB. Overall voltage gain in dB is _____.
a) 600dB b) 24dB
c) 14dB d) 31dB

5) Darlington connection is _____ amplifier.
a) CE-CB b) CC-CC
c) CC-CE d) CE-CC

6) The emitter-base junction of transistor is _____ and base-collector junction is _____.
a) Reverse biased, forward biased
b) forward biased, Reverse biased
c) Reverse biased, Reverse biased
d) forward biased, forward biased

7) An amplifier has a voltage gain of 120. To reduce distortion, 10% of negative feedback is employed. The gain of the amplifier with feedback is _____.
a) 141 b) 92.3
c) 9.23 d) 1.41

8) The hybrid hf parameter is _____.
a) resistance b) admittance
c) forward current gain d) reverse voltage gain

9) The gain with negative feedback is _____.
a) $\frac{A}{1+A\beta}$ b) $\frac{A}{1-A\beta}$
c) $A(1+A\beta)$ d) $A(A\beta)$

10) Which one of the following is the most stable oscillator?
a) phase shift oscillator b) crystal oscillator
c) Colpitts oscillator d) Wien bridge oscillator

11) Power amplifiers are also called as _____.
a) Large signal amplifiers b) feedback amplifiers
c) voltage amplifiers d) small signal amplifiers

12) In a power amplifier, if a transistor is operated in such a way that the output current flows for more than 180° and less than 360° of the input signals then it is _____ power amplifier.
a) class A b) class B
c) class AB d) none of these

13) Barkhausen criteria for oscillator stability is _____.
a) $A\beta = 1$ b) $A\beta = 0$
c) $A\beta < 1$ d) none of these

14) Hartley oscillator feedback circuit consists of _____.
a) an amplifier and a tank circuit
b) an amplifier and voltage divider network
c) an amplifier and negative feedback
d) none of these

Seat No.	

Set **P**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Electronic Circuit Analysis and Design (BTN06302)

Day & Date: Saturday,06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if required.
4) Use of calculator and electronic component datasheet is allowed.

Section – I

Q.2 Attempt any Four: **16**

a) Explain direct coupling scheme to couple multistage transistor amplifiers with the help of circuit diagram, advantages and disadvantages.

b) An amplifier has midfrequency gain of 150 and bandwidth of 500KHz.
i) Find new bandwidth and gain if 5% of negative feedback is introduced.
ii) Find feedback factor value to provide bandwidth of negative feedback amplifier to 1MHz?

c) Explain the Darlington pain connection. How does the current gain increase with the help of Darlington pair connection?

d) Draw h-model of BJT. Define all the h-parameters of BJT configured in Common Emitter Configuration. Draw h-equivalent circuit of CE amplifier with proper labels.

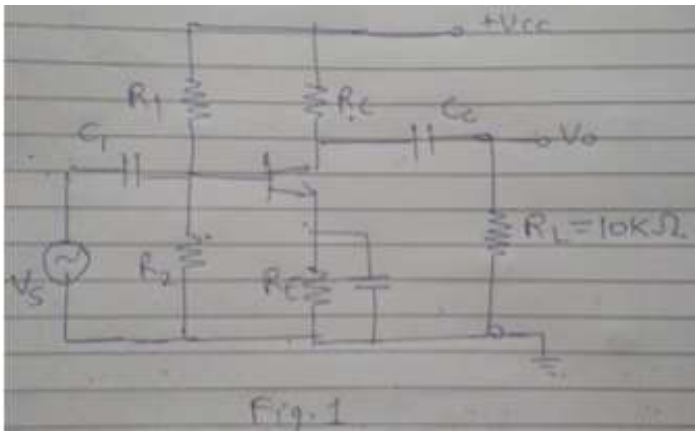
e) Explain widely used transistor biasing circuit with the help of circuit diagram.

Q.3 Attempt any Two: **12**

a) Design a single stage CE amplifier to provide an output voltage of 6Vp-p across a 5KΩ load. Assume source resistor of 600Ω, supply voltage = 12V. Lower 3dB frequency of 60Hz. Select transistor BC 146 with P_{Dmax} = 50mW, V_{CEmax} = 20V, h_{FE} = 80

b) Find voltage gain, input resistance and output resistance of the following circuit (Fig.1). Also draw h-model of the circuit. Assume R1 = 120K, R2 = 56K, R_C = 3.9K, R_E = 1K, hfe = 50, hie = 1K. Neglect hre and hoe.

c) Derive the expression for bandwidth of negative feedback amplifier.



Section – II

Q.4 Attempt any Four: **16**

a) Explain Hartley oscillator and derive the expression for its oscillating frequency.

b) Explain V-I characteristics of n-channel JFET.

c) Explain the construction of E-MOSFET in detail.

d) Explain UJT relaxation oscillator.

e) Explain the following terms related to power amplifier.

i) Cross over distortion

ii) Efficiency

Q.5 Attempt any Two: **12**

a) Design an RC phase shift oscillator to provide an output voltage of 5Vp-p and a frequency of 300Hz.

b) Explain the power amplifier which has lowest collector efficiency. Also derive the expression for its efficiency.

c) Design a transformer coupled Class B Push Pull power amplifier for the maximum output voltage of 5Vrms at 4Ω load with transformer efficiency of 75%. Also calculate efficiency of the amplifier.

Seat No.	

Set **Q**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Electronic Circuit Analysis and Design (BTN06302)

Day & Date: Saturday,06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.
5) Use of calculator and electronic component datasheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The hybrid hf parameter is _____.
a) resistance b) admittance
c) forward current gain d) reverse voltage gain

2) The gain with negative feedback is _____.
a) $\frac{A}{1+A\beta}$ b) $\frac{A}{1-A\beta}$
c) $A(1+A\beta)$ d) $A(A\beta)$

3) Which one of the following is the most stable oscillator?
a) phase shift oscillator b) crystal oscillator
c) Colpitts oscillator d) Wien bridge oscillator

4) Power amplifiers are also called as _____.
a) Large signal amplifiers b) feedback amplifiers
c) voltage amplifiers d) small signal amplifiers

5) In a power amplifier, if a transistor is operated in such a way that the output current flows for more than 180° and less than 360° of the input signals then it is _____ power amplifier.
a) class A b) class B
c) class AB d) none of these

6) Barkhausen criteria for oscillator stability is _____.
a) $A\beta = 1$ b) $A\beta = 0$
c) $A\beta < 1$ d) none of these

7) Hartley oscillator feedback circuit consists of _____.
a) an amplifier and a tank circuit
b) an amplifier and voltage divider network
c) an amplifier and negative feedback
d) none of these

8) The JFET is also known as square law device because it's _____.
a) Drain current varies as square of the gate source voltage
b) Transconductance curve is parabolic
c) Reverse gate leakage current varies as square of reverse gate voltage
d) Drain current varies as square of its drain voltage for a fixed Vgs

9) D-MOSFET will work for _____ gate to source voltage.
a) Negative b) Positive
c) Both a and b d) None of these

10) In FET, the np region between source and gate is: _____.
a) forward biased b) reverse biased
c) both a & b d) none of these

11) Voltage gain of each stage in a 3-stage amplifier is 11dB, 5dB, 15dB. Overall voltage gain in dB is _____.
a) 600dB b) 24dB
c) 14dB d) 31dB

12) Darlington connection is _____ amplifier.
a) CE-CB b) CC-CC
c) CC-CE d) CE-CC

13) The emitter-base junction of transistor is _____ and base-collector junction is _____.
a) Reverse biased, forward biased
b) forward biased, Reverse biased
c) Reverse biased, Reverse biased
d) forward biased, forward biased

14) An amplifier has a voltage gain of 120. To reduce distortion, 10% of negative feedback is employed. The gain of the amplifier with feedback is _____.
a) 141 b) 92.3
c) 9.23 d) 1.41

Seat No.	

Set **Q**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Electronic Circuit Analysis and Design (BTN06302)

Day & Date: Saturday,06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if required.
4) Use of calculator and electronic component datasheet is allowed.

Section – I

Q.2 Attempt any Four: **16**

a) Explain direct coupling scheme to couple multistage transistor amplifiers with the help of circuit diagram, advantages and disadvantages.

b) An amplifier has midfrequency gain of 150 and bandwidth of 500KHz.
i) Find new bandwidth and gain if 5% of negative feedback is introduced.
ii) Find feedback factor value to provide bandwidth of negative feedback amplifier to 1MHz?

c) Explain the Darlington pain connection. How does the current gain increase with the help of Darlington pair connection?

d) Draw h-model of BJT. Define all the h-parameters of BJT configured in Common Emitter Configuration. Draw h-equivalent circuit of CE amplifier with proper labels.

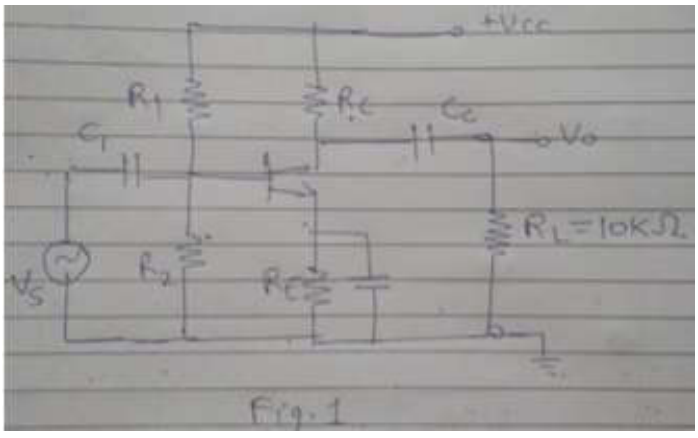
e) Explain widely used transistor biasing circuit with the help of circuit diagram.

Q.3 Attempt any Two: **12**

a) Design a single stage CE amplifier to provide an output voltage of 6Vp-p across a 5KΩ load. Assume source resistor of 600Ω, supply voltage = 12V. Lower 3dB frequency of 60Hz. Select transistor BC 146 with P_{Dmax} = 50mW, V_{CEmax} = 20V, h_{FE} = 80

b) Find voltage gain, input resistance and output resistance of the following circuit (Fig.1). Also draw h-model of the circuit. Assume R1 = 120K, R2 = 56K, R_C = 3.9K, R_E = 1K, hfe = 50, hie = 1K. Neglect hre and hoe.

c) Derive the expression for bandwidth of negative feedback amplifier.



Section – II

Q.4 Attempt any Four: **16**

a) Explain Hartley oscillator and derive the expression for its oscillating frequency.

b) Explain V-I characteristics of n-channel JFET.

c) Explain the construction of E-MOSFET in detail.

d) Explain UJT relaxation oscillator.

e) Explain the following terms related to power amplifier.

i) Cross over distortion

ii) Efficiency

Q.5 Attempt any Two: **12**

a) Design an RC phase shift oscillator to provide an output voltage of 5Vp-p and a frequency of 300Hz.

b) Explain the power amplifier which has lowest collector efficiency. Also derive the expression for its efficiency.

c) Design a transformer coupled Class B Push Pull power amplifier for the maximum output voltage of 5Vrms at 4Ω load with transformer efficiency of 75%. Also calculate efficiency of the amplifier.

Seat No.	

Set **R**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Electronic Circuit Analysis and Design (BTN06302)

Day & Date: Saturday,06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.
5) Use of calculator and electronic component datasheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) Power amplifiers are also called as _____.
a) Large signal amplifiers b) feedback amplifiers
c) voltage amplifiers d) small signal amplifiers

2) In a power amplifier, if a transistor is operated in such a way that the output current flows for more than 180° and less than 360° of the input signals then it is _____ power amplifier.
a) class A b) class B
c) class AB d) none of these

3) Barkhausen criteria for oscillator stability is _____.
a) $A\beta = 1$ b) $A\beta = 0$
c) $A\beta < 1$ d) none of these

4) Hartley oscillator feedback circuit consists of _____.
a) an amplifier and a tank circuit
b) an amplifier and voltage divider network
c) an amplifier and negative feedback
d) none of these

5) The JFET is also known as square law device because it's _____.
a) Drain current varies as square of the gate source voltage
b) Transconductance curve is parabolic
c) Reverse gate leakage current varies as square of reverse gate voltage
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6) D-MOSFET will work for _____ gate to source voltage.
a) Negative b) Positive
c) Both a and b d) None of these

7) In FET, the np region between source and gate is: _____.
a) forward biased b) reverse biased
c) both a & b d) none of these

8) Voltage gain of each stage in a 3-stage amplifier is 11dB, 5dB, 15dB. Overall voltage gain in dB is _____.

a) 600dB b) 24dB
c) 14dB d) 31dB

9) Darlington connection is _____ amplifier.

a) CE-CB b) CC-CC
c) CC-CE d) CE-CC

10) The emitter-base junction of transistor is _____ and base-collector junction is _____.

a) Reverse biased, forward biased
b) forward biased, Reverse biased
c) Reverse biased, Reverse biased
d) forward biased, forward biased

11) An amplifier has a voltage gain of 120. To reduce distortion, 10% of negative feedback is employed. The gain of the amplifier with feedback is _____.

a) 141 b) 92.3
c) 9.23 d) 1.41

12) The hybrid hf parameter is _____.

a) resistance b) admittance
c) forward current gain d) reverse voltage gain

13) The gain with negative feedback is _____.

a) $\frac{A}{1+A\beta}$ b) $\frac{A}{1-A\beta}$
c) $A(1+A\beta)$ d) $A(A\beta)$

14) Which one of the following is the most stable oscillator?

a) phase shift oscillator b) crystal oscillator
c) Colpitts oscillator d) Wien bridge oscillator

Seat No.	

Set **R**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Electronic Circuit Analysis and Design (BTN06302)

Day & Date: Saturday,06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if required.
4) Use of calculator and electronic component datasheet is allowed.

Section – I

Q.2 Attempt any Four: **16**

a) Explain direct coupling scheme to couple multistage transistor amplifiers with the help of circuit diagram, advantages and disadvantages.

b) An amplifier has midfrequency gain of 150 and bandwidth of 500KHz.
i) Find new bandwidth and gain if 5% of negative feedback is introduced.
ii) Find feedback factor value to provide bandwidth of negative feedback amplifier to 1MHz?

c) Explain the Darlington pain connection. How does the current gain increase with the help of Darlington pair connection?

d) Draw h-model of BJT. Define all the h-parameters of BJT configured in Common Emitter Configuration. Draw h-equivalent circuit of CE amplifier with proper labels.

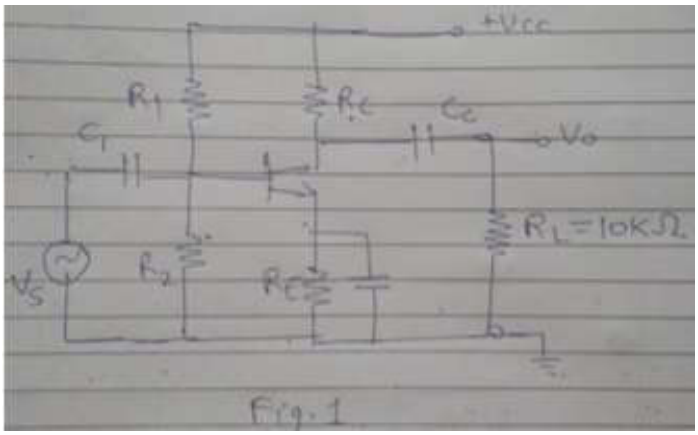
e) Explain widely used transistor biasing circuit with the help of circuit diagram.

Q.3 Attempt any Two: **12**

a) Design a single stage CE amplifier to provide an output voltage of 6Vp-p across a 5KΩ load. Assume source resistor of 600Ω, supply voltage = 12V. Lower 3dB frequency of 60Hz. Select transistor BC 146 with P_{Dmax} = 50mW, V_{CEmax} = 20V, h_{FE} = 80

b) Find voltage gain, input resistance and output resistance of the following circuit (Fig.1). Also draw h-model of the circuit. Assume R1 = 120K, R2 = 56K, R_C = 3.9K, R_E = 1K, hfe = 50, hie = 1K. Neglect hre and hoe.

c) Derive the expression for bandwidth of negative feedback amplifier.



Section – II

Q.4 Attempt any Four: **16**

a) Explain Hartley oscillator and derive the expression for its oscillating frequency.

b) Explain V-I characteristics of n-channel JFET.

c) Explain the construction of E-MOSFET in detail.

d) Explain UJT relaxation oscillator.

e) Explain the following terms related to power amplifier.

i) Cross over distortion

ii) Efficiency

Q.5 Attempt any Two: **12**

a) Design an RC phase shift oscillator to provide an output voltage of 5Vp-p and a frequency of 300Hz.

b) Explain the power amplifier which has lowest collector efficiency. Also derive the expression for its efficiency.

c) Design a transformer coupled Class B Push Pull power amplifier for the maximum output voltage of 5Vrms at 4Ω load with transformer efficiency of 75%. Also calculate efficiency of the amplifier.

Seat No.	

Set **S**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Electronic Circuit Analysis and Design (BTN06302)

Day & Date: Saturday,06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.
5) Use of calculator and electronic component datasheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) The emitter-base junction of transistor is _____ and base-collector junction is _____.
a) Reverse biased, forward biased
b) forward biased, Reverse biased
c) Reverse biased, Reverse biased
d) forward biased, forward biased

2) An amplifier has a voltage gain of 120. To reduce distortion, 10% of negative feedback is employed. The gain of the amplifier with feedback is _____.
a) 141 b) 92.3
c) 9.23 d) 1.41

3) The hybrid hf parameter is _____.
a) resistance b) admittance
c) forward current gain d) reverse voltage gain

4) The gain with negative feedback is _____.
a) $\frac{A}{1+A\beta}$ b) $\frac{A}{1-A\beta}$
c) $A(1+A\beta)$ d) $A(A\beta)$

5) Which one of the following is the most stable oscillator?
a) phase shift oscillator b) crystal oscillator
c) Colpitts oscillator d) Wien bridge oscillator

6) Power amplifiers are also called as _____.
a) Large signal amplifiers b) feedback amplifiers
c) voltage amplifiers d) small signal amplifiers

7) In a power amplifier, if a transistor is operated in such a way that the output current flows for more than 180° and less than 360° of the input signals then it is _____ power amplifier.
a) class A b) class B
c) class AB d) none of these

8) Barkhausen criteria for oscillator stability is _____.

a) $A\beta = 1$ b) $A\beta = 0$

c) $A\beta < 1$ d) none of these

9) Hartley oscillator feedback circuit consists of _____.

a) an amplifier and a tank circuit

b) an amplifier and voltage divider network

c) an amplifier and negative feedback

d) none of these

10) The JFET is also known as square law device because it's _____.

a) Drain current varies as square of the gate source voltage

b) Transconductance curve is parabolic

c) Reverse gate leakage current varies as square of reverse gate voltage

d) Drain current varies as square of its drain voltage for a fixed Vgs

11) D-MOSFET will work for _____ gate to source voltage.

a) Negative b) Positive

c) Both a and b d) None of these

12) In FET, the np region between source and gate is: _____.

a) forward biased b) reverse biased

c) both a & b d) none of these

13) Voltage gain of each stage in a 3-stage amplifier is 11dB, 5dB, 15dB. Overall voltage gain in dB is _____.

a) 600dB b) 24dB

c) 14dB d) 31dB

14) Darlington connection is _____ amplifier.

a) CE-CB b) CC-CC

c) CC-CE d) CE-CC

Seat No.		Set	S

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Electronic Circuit Analysis and Design (BTN06302)

Day & Date: Saturday,06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if required.
4) Use of calculator and electronic component datasheet is allowed.

Section – I

Q.2 Attempt any Four: **16**

a) Explain direct coupling scheme to couple multistage transistor amplifiers with the help of circuit diagram, advantages and disadvantages.

b) An amplifier has midfrequency gain of 150 and bandwidth of 500KHz.
i) Find new bandwidth and gain if 5% of negative feedback is introduced.
ii) Find feedback factor value to provide bandwidth of negative feedback amplifier to 1MHz?

c) Explain the Darlington pain connection. How does the current gain increase with the help of Darlington pair connection?

d) Draw h-model of BJT. Define all the h-parameters of BJT configured in Common Emitter Configuration. Draw h-equivalent circuit of CE amplifier with proper labels.

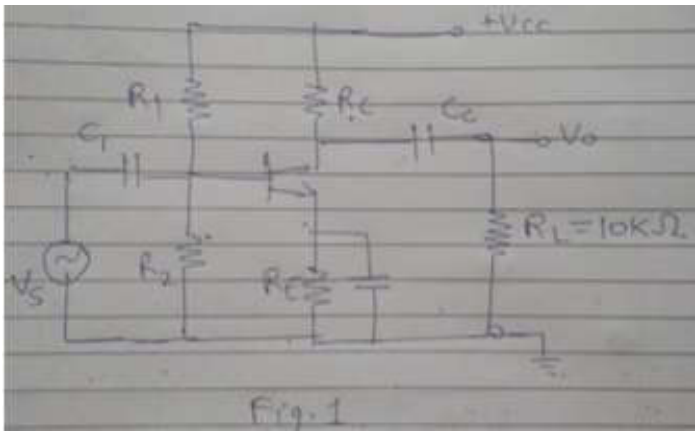
e) Explain widely used transistor biasing circuit with the help of circuit diagram.

Q.3 Attempt any Two: **12**

a) Design a single stage CE amplifier to provide an output voltage of 6Vp-p across a 5KΩ load. Assume source resistor of 600Ω, supply voltage = 12V. Lower 3dB frequency of 60Hz. Select transistor BC 146 with P_{Dmax} = 50mW, V_{CEmax} = 20V, h_{FE} = 80

b) Find voltage gain, input resistance and output resistance of the following circuit (Fig.1). Also draw h-model of the circuit. Assume R1 = 120K, R2 = 56K, R_C = 3.9K, R_E = 1K, hfe = 50, hie = 1K. Neglect hre and hoe.

c) Derive the expression for bandwidth of negative feedback amplifier.



Section – II

Q.4 Attempt any Four: **16**

a) Explain Hartley oscillator and derive the expression for its oscillating frequency.

b) Explain V-I characteristics of n-channel JFET.

c) Explain the construction of E-MOSFET in detail.

d) Explain UJT relaxation oscillator.

e) Explain the following terms related to power amplifier.

i) Cross over distortion

ii) Efficiency

Q.5 Attempt any Two: **12**

a) Design an RC phase shift oscillator to provide an output voltage of 5Vp-p and a frequency of 300Hz.

b) Explain the power amplifier which has lowest collector efficiency. Also derive the expression for its efficiency.

c) Design a transformer coupled Class B Push Pull power amplifier for the maximum output voltage of 5Vrms at 4Ω load with transformer efficiency of 75%. Also calculate efficiency of the amplifier.

SLR-GF-777

Seat No.	

Set P

S.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Network Theory and Analysis (BTN06303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

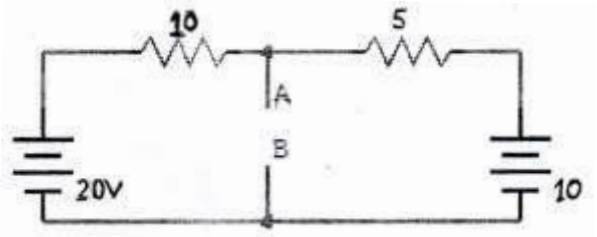
MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) Superposition theorem is not applicable to network of _____.
a) Nonlinear elements b) Dependent voltage sources
c) dependent current sources d) All of the above

2) Find the equivalent resistance between terminals A and B in the following circuit. All values are in ohms.



a) $3\ \Omega$ b) $15\ \Omega$
c) $3.33\ \Omega$ d) $3.63\ \Omega$

3) The maximum power transfer theorem can be applied to _____.
a) Only DC circuit b) both AC & DC circuit
c) Only AC circuit d) None of above

4) In parallel resonance, resonance occurs when susceptance part of admittance is _____.
a) Infinite b) $X_L > X_c$
c) $X_c > X_L$ d) Zero

5) In a series circuit of L=50mH, C=0.2μF and R=50Ω what is the impedance at the resonant frequency _____.
a) $50\ \Omega$ b) $100\ \Omega$
c) $50 + j50\ \Omega$ d) $50 + j0.2\ \Omega$

6) The h parameters h_{11} and h_{21} are obtained by _____.
a) Shorting input terminals b) Opening input terminals
c) Shorting output terminals d) Opening output terminals

7) A two-port network is said to be reciprocal if _____.

a) $h_{12} = -h_{21}$ b) $AD - BC = 1$

c) $Y_{12} = Y_{21}$ d) all of the above

8) The time constant of a series RL circuit is _____.

a) L/R b) LR

c) R/L d) $e^{-R/L}$

9) The transient response occurs _____.

a) Only in resistive circuits b) Only in inductive circuits

c) Only in capacitive circuits d) both b & c

10) The real part of the complex frequency is called _____.

a) radian frequency b) angular frequency

c) sampling frequency d) neper frequency

11) For π type attenuator with an attenuation of 24 dB and characteristic impedance of $150\ \Omega$, the shunt arm resistance R_2 is _____.

a) $1083.36\ \Omega$ b) $1183.26\ \Omega$

c) $170.21\ \Omega$ d) $340.42\ \Omega$

12) In the m-derived high pass filter the resonant frequency is to be chosen so that it is _____.

a) Equal to cut-off frequencies b) Above the cut-off frequencies

c) below the cut-off frequencies d) None of the above

13) In T type attenuator the series arm resistance is given by _____.

a) $R_1 = R_0(N-1)/(N+1)$ b) $R_1 = R_0(N^2-1)/2N$

c) $R_0 = R_1.R_2$ d) None of above

14) Capacitor does not allow sudden changes _____.

a) In currents b) In voltage

c) In both a & b d) none of the above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Network Theory and Analysis (BTN06303)

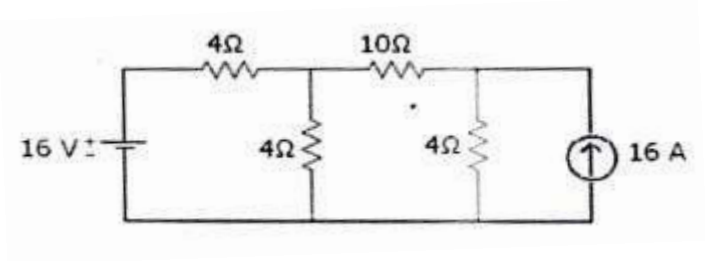
Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

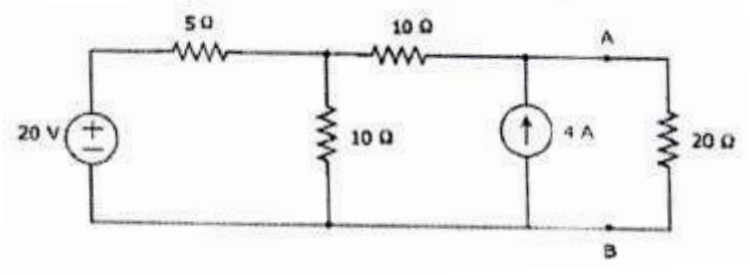
Section – I

Q.2 Answer any four of the following. **16**

a) Determine current flowing through 10Ω resistor of the following circuit using superposition theorem.



b) Determine the current flowing through $20\ \Omega$ resistor of the following circuit using Norton's theorem.



c) Prove that $(f_2 - f_1)/f_r = 1/Q$ for series resonant circuit.

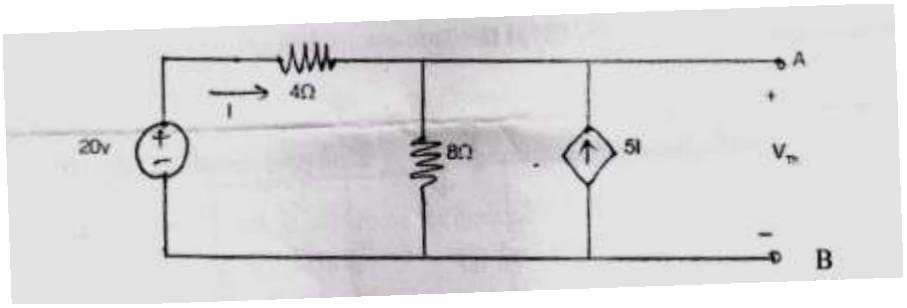
d) Derive h parameters in terms of Z parameters.

e) The Z-parameters of the two-port network are $Z_{11} = 20\ \Omega$, $Z_{12} = Z_{21} = 10\ \Omega$ and $Z_{22} = 25\ \Omega$

Calculate the equivalent T network and ABCD parameters.

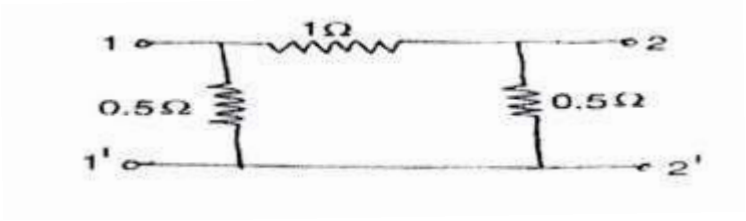
Q.3 **Answer any two of the following.** **12**

a) Find the Thevenin's equivalent circuit for the circuit shown between the points A and B.



b) $V(t) = 10 \sin wt$ is applied to a series RLC circuit. At resonant frequency maximum Voltage across capacitor is 500V. The bandwidth is 400 rad/sec & impedance at resonance is 100 Ω. Determine resonant frequency, Quality factor. Also Determine L and C.

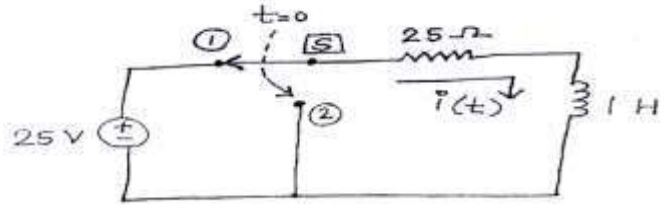
c) Determine ABCD parameter for the ∏- network shown. Is this network bilateral or not?



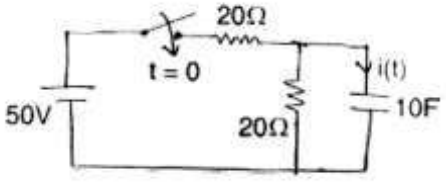
Section – II

Q.4 **Answer any four of the following.** **16**

a) Determine current i(t) for t>0 when switch S is moved from position 1 to position 2 at t=0. The switch S is at position 1 for long time.



b) Calculate voltage across capacitor for t > 0 for the given circuit.



c) Design π type attenuator having 20 dB attenuation with load impedance of 100 Ω.

d) Design constant k type low pass filter $(T\ and\ \pi)$ having cut off frequency of 5 kHz with load resistance of $1k\Omega$.

e) Explain concept of complex frequency.

Q.5 **Answer any Two of the following.** **12**

a) Give the significance of pole and zero of the network. Draw pole zero diagram for given network Function and hence obtain time domain response i(t).

$$I\ (S) = 4\ S(S+2)/(S+1)(S+3)$$

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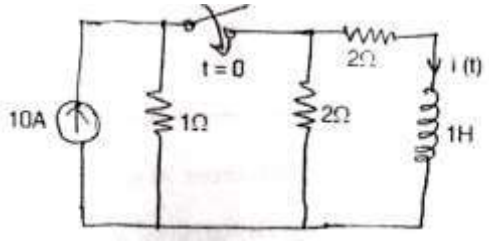

c) Design constant K Band stop filter T and $\prod$ Section having cut off frequency of 2 kHz and 6 kHz and a normal impedance of 600 Ω. Also draw attenuation characteristics.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Network Theory and Analysis (BTN06303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) The time constant of a series RL circuit is _____.
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4) For π type attenuator with an attenuation of 24 dB and characteristic impedance of $150\ \Omega$, the shunt arm resistance R_2 is _____.
a) $1083.36\ \Omega$ b) $1183.26\ \Omega$
c) $170.21\ \Omega$ d) $340.42\ \Omega$

5) In the m-derived high pass filter the resonant frequency is to be chosen so that it is _____.
a) Equal to cut-off frequencies b) Above the cut-off frequencies
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6) In T type attenuator the series arm resistance is given by _____.
a) $R_1 = R_0(N-1)/(N+1)$ b) $R_1 = R_0(N^2-1)/2N$
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7) Capacitor does not allow sudden changes _____.
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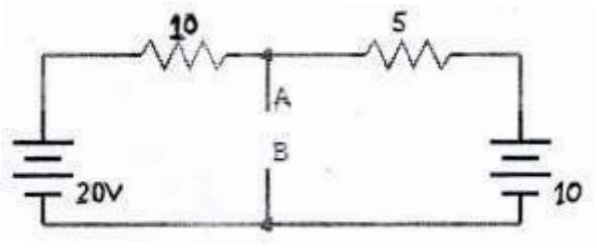
9) Find the equivalent resistance between terminals A and B in the following circuit. All values are in ohms.



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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Network Theory and Analysis (BTN06303)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

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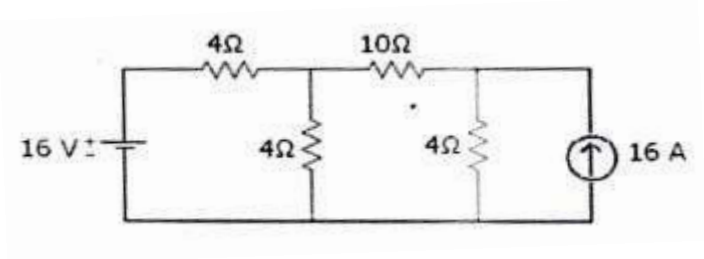

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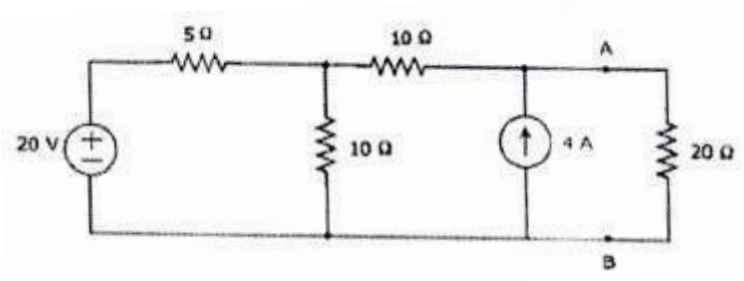

c) Prove that $(f_2 - f_1)/f_r = 1/Q$ for series resonant circuit.

d) Derive h parameters in terms of Z parameters.

e) The Z-parameters of the two-port network are $Z_{11} = 20\ \Omega$, $Z_{12} = Z_{21} = 10\ \Omega$ and $Z_{22} = 25\ \Omega$

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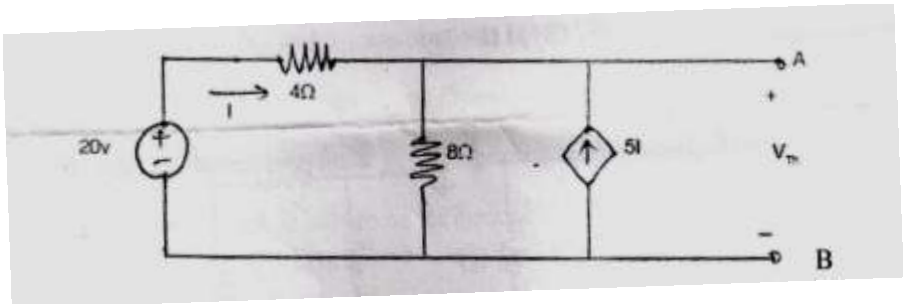

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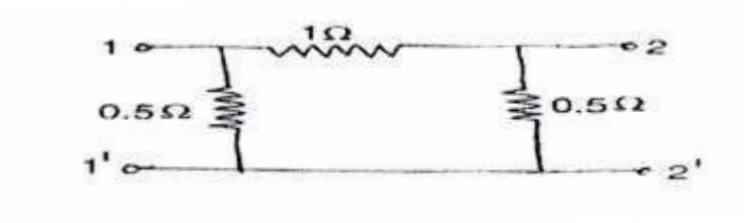
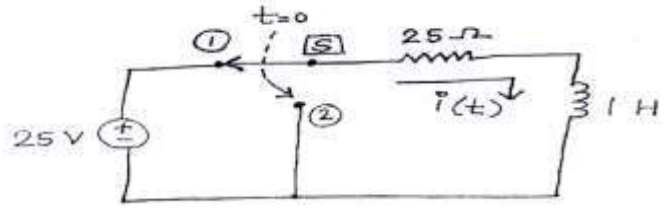


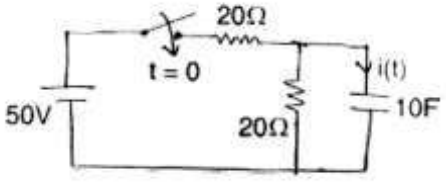
Section – II

Q.4 **Answer any four of the following.** **16**

a) Determine current i(t) for t>0 when switch S is moved from position 1 to position 2 at t=0. The switch S is at position 1 for long time.



b) Calculate voltage across capacitor for t > 0 for the given circuit.



c) Design π type attenuator having 20 dB attenuation with load impedance of 100 Ω.

d) Design constant k type low pass filter $(T\ and\ \pi)$ having cut off frequency of 5 kHz with load resistance of $1k\Omega$.

e) Explain concept of complex frequency.

Q.5 **Answer any Two of the following.** **12**

a) Give the significance of pole and zero of the network. Draw pole zero diagram for given network Function and hence obtain time domain response i(t).

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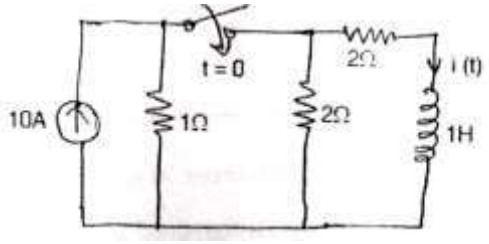

c) Design constant K Band stop filter T and $\prod$ Section having cut off frequency of 2 kHz and 6 kHz and a normal impedance of 600 Ω. Also draw attenuation characteristics.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Network Theory and Analysis (BTN06303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) For π type attenuator with an attenuation of 24 dB and characteristic impedance of $150\ \Omega$, the shunt arm resistance R_2 is _____.
a) $1083.36\ \Omega$ b) $1183.26\ \Omega$
c) $170.21\ \Omega$ d) $340.42\ \Omega$

2) In the m-derived high pass filter the resonant frequency is to be chosen so that it is _____.
a) Equal to cut-off frequencies b) Above the cut-off frequencies
c) below the cut-off frequencies d) None of the above

3) In T type attenuator the series arm resistance is given by _____.
a) $R_1 = R_0(N-1)/(N+1)$ b) $R_1 = R_0(N^2-1)/2N$
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4) Capacitor does not allow sudden changes _____.
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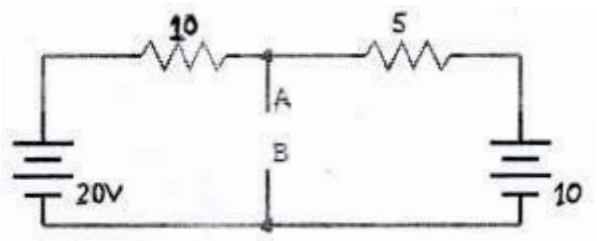
6) Find the equivalent resistance between terminals A and B in the following circuit. All values are in ohms.



a) $3\ \Omega$ b) $15\ \Omega$
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8) In parallel resonance, resonance occurs when susceptance part of admittance is _____.
a) Infinite b) $X_L > X_c$
c) $X_c > X_L$ d) Zero

9) In a series circuit of L=50mH, C=0.2μF and R=50Ω what is the impedance at the resonant frequency _____.
a) $50\ \Omega$ b) $100\ \Omega$
c) $50 + j50\ \Omega$ d) $50 + j0.2\ \Omega$

10) The h parameters h_{11} and h_{21} are obtained by _____.
a) Shorting input terminals b) Opening input terminals
c) Shorting output terminals d) Opening output terminals

11) A two-port network is said to be reciprocal if _____.
a) $h_{12} = -h_{21}$ b) $AD - BC = 1$
c) $Y_{12} = Y_{21}$ d) all of the above

12) The time constant of a series RL circuit is _____.
a) L/R b) LR
c) R/L d) $e^{-R/L}$

13) The transient response occurs _____.
a) Only in resistive circuits b) Only in inductive circuits
c) Only in capacitive circuits d) both b & c

14) The real part of the complex frequency is called _____.
a) radian frequency b) angular frequency
c) sampling frequency d) neper frequency

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Network Theory and Analysis (BTN06303)

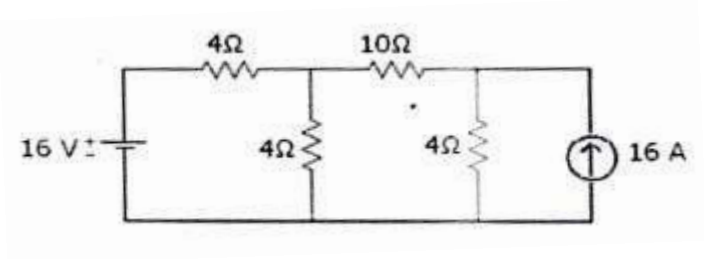
Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

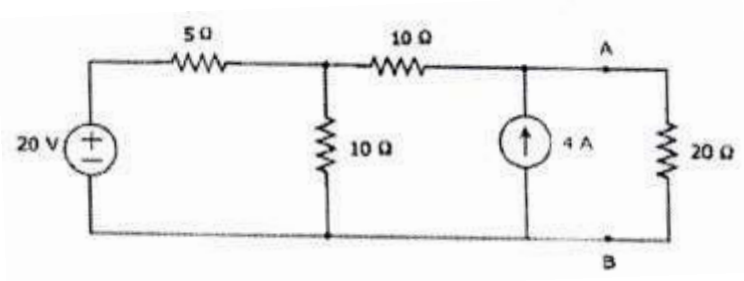
Section – I

Q.2 Answer any four of the following. **16**

a) Determine current flowing through 10Ω resistor of the following circuit using superposition theorem.



b) Determine the current flowing through $20\ \Omega$ resistor of the following circuit using Norton's theorem.



c) Prove that $(f_2 - f_1)/f_r = 1/Q$ for series resonant circuit.

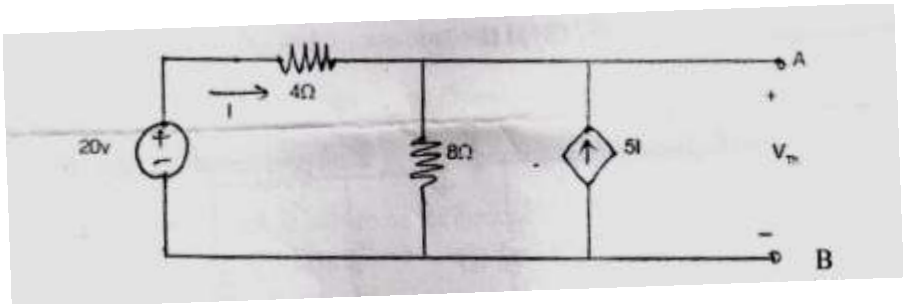
d) Derive h parameters in terms of Z parameters.

e) The Z-parameters of the two-port network are $Z_{11} = 20\ \Omega$, $Z_{12} = Z_{21} = 10\ \Omega$ and $Z_{22} = 25\ \Omega$

Calculate the equivalent T network and ABCD parameters.

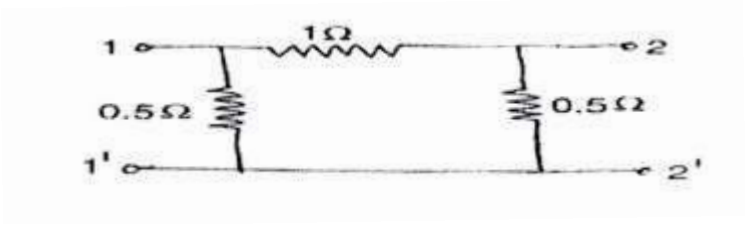
Q.3 **Answer any two of the following.** **12**

a) Find the Thevenin's equivalent circuit for the circuit shown between the points A and B.



b) $V(t) = 10 \sin wt$ is applied to a series RLC circuit. At resonant frequency maximum Voltage across capacitor is 500V. The bandwidth is 400 rad/sec & impedance at resonance is 100 Ω. Determine resonant frequency, Quality factor. Also Determine L and C.

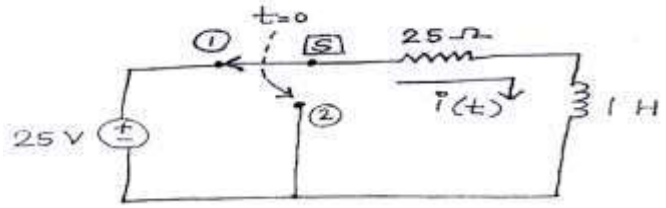
c) Determine ABCD parameter for the ∏- network shown. Is this network bilateral or not?



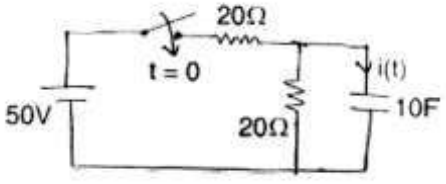
Section – II

Q.4 **Answer any four of the following.** **16**

a) Determine current i(t) for t>0 when switch S is moved from position 1 to position 2 at t=0. The switch S is at position 1 for long time.



b) Calculate voltage across capacitor for t > 0 for the given circuit.



c) Design π type attenuator having 20 dB attenuation with load impedance of 100 Ω.

d) Design constant k type low pass filter $(T\ and\ \pi)$ having cut off frequency of 5 kHz with load resistance of $1k\Omega$.

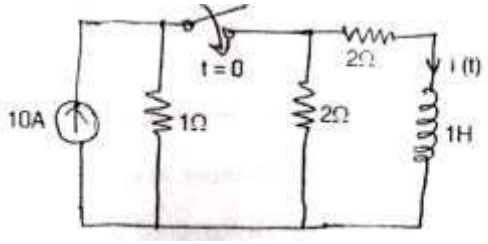
e) Explain concept of complex frequency.

Q.5 **Answer any Two of the following.** **12**

a) Give the significance of pole and zero of the network. Draw pole zero diagram for given network Function and hence obtain time domain response i(t).

$$I\ (S) = 4\ S(S+2)/(S+1)(S+3)$$

b) Find current i(t) for t > 0 for the given circuit.



c) Design constant K Band stop filter T and $\prod$ Section having cut off frequency of 2 kHz and 6 kHz and a normal impedance of 600 Ω. Also draw attenuation characteristics.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Network Theory and Analysis (BTN06303)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct answer: **14**

1) The h parameters h_{11} and h_{21} are obtained by _____.
a) Shorting input terminals b) Opening input terminals
c) Shorting output terminals d) Opening output terminals

2) A two-port network is said to be reciprocal if _____.
a) $h_{12} = -h_{21}$ b) $AD - BC = 1$
c) $Y_{12} = Y_{21}$ d) all of the above

3) The time constant of a series RL circuit is _____.
a) L/R b) LR
c) R/L d) $e^{-R/L}$

4) The transient response occurs _____.
a) Only in resistive circuits b) Only in inductive circuits
c) Only in capacitive circuits d) both b & c

5) The real part of the complex frequency is called _____.
a) radian frequency b) angular frequency
c) sampling frequency d) neper frequency

6) For π type attenuator with an attenuation of 24 dB and characteristic impedance of $150\ \Omega$, the shunt arm resistance R_2 is _____.
a) $1083.36\ \Omega$ b) $1183.26\ \Omega$
c) $170.21\ \Omega$ d) $340.42\ \Omega$

7) In the m-derived high pass filter the resonant frequency is to be chosen so that it is _____.
a) Equal to cut-off frequencies b) Above the cut-off frequencies
c) below the cut-off frequencies d) None of the above

8) In T type attenuator the series arm resistance is given by _____.
a) $R_1 = R_0(N-1)/(N+1)$ b) $R_1 = R_0(N^2-1)/2N$
c) $R_0 = R_1.R_2$ d) None of above

9) Capacitor does not allow sudden changes _____.

a) In currents b) In voltage

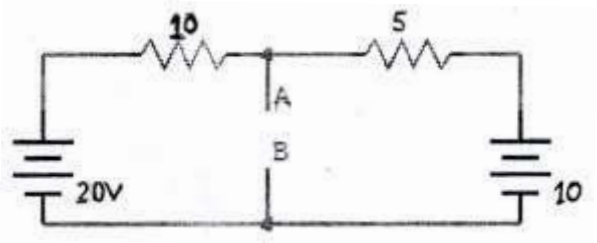
c) In both a & b d) none of the above

10) Superposition theorem is not applicable to network of _____.

a) Nonlinear elements b) Dependent voltage sources

c) dependent current sources d) All of the above

11) Find the equivalent resistance between terminals A and B in the following circuit. All values are in ohms.



a) $3\ \Omega$ b) $15\ \Omega$

c) $3.33\ \Omega$ d) $3.63\ \Omega$

12) The maximum power transfer theorem can be applied to _____.

a) Only DC circuit b) both AC & DC circuit

c) Only AC circuit d) None of above

13) In parallel resonance, resonance occurs when susceptance part of admittance is _____.

a) Infinite b) $X_L > X_c$

c) $X_c > X_L$ d) Zero

14) In a series circuit of L=50mH, C=0.2μF and R=50Ω what is the impedance at the resonant frequency _____.

a) $50\ \Omega$ b) $100\ \Omega$

c) $50 + j50\ \Omega$ d) $50 + j0.2\ \Omega$

Seat No.	

Set | S

S.Y. (B.Tech.) (Sem-I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Network Theory and Analysis (BTN06303)

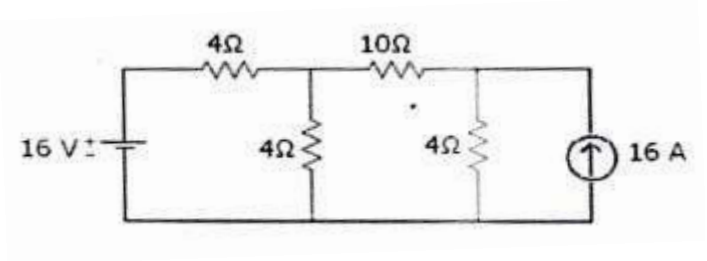
Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

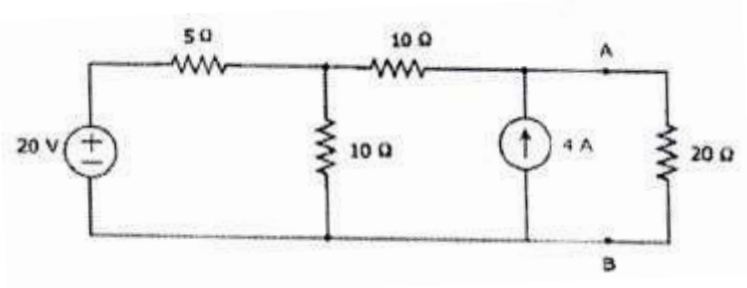
Section – I

Q.2 Answer any four of the following. **16**

a) Determine current flowing through 10Ω resistor of the following circuit using superposition theorem.



b) Determine the current flowing through $20\ \Omega$ resistor of the following circuit using Norton's theorem.



c) Prove that $(f_2 - f_1)/f_r = 1/Q$ for series resonant circuit.

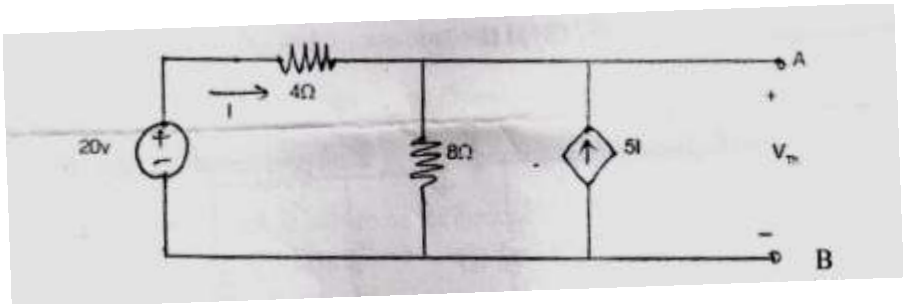
d) Derive h parameters in terms of Z parameters.

e) The Z-parameters of the two-port network are $Z_{11} = 20\ \Omega$, $Z_{12} = Z_{21} = 10\ \Omega$ and $Z_{22} = 25\ \Omega$

Calculate the equivalent T network and ABCD parameters.

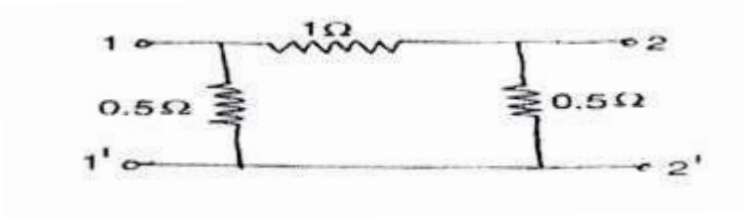
Q.3 **Answer any two of the following.** **12**

a) Find the Thevenin's equivalent circuit for the circuit shown between the points A and B.



b) $V(t) = 10 \sin wt$ is applied to a series RLC circuit. At resonant frequency maximum Voltage across capacitor is 500V. The bandwidth is 400 rad/sec & impedance at resonance is 100 Ω. Determine resonant frequency, Quality factor. Also Determine L and C.

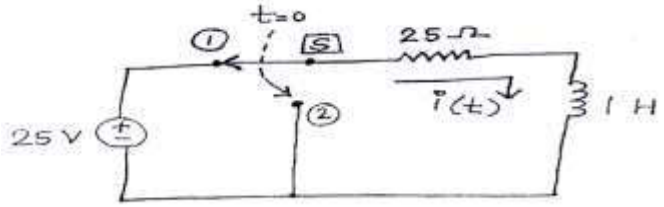
c) Determine ABCD parameter for the ∏- network shown. Is this network bilateral or not?



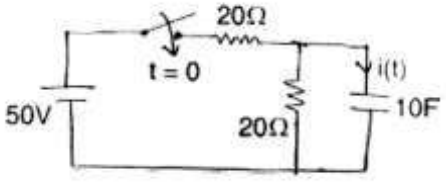
Section – II

Q.4 **Answer any four of the following.** **16**

a) Determine current i(t) for t>0 when switch S is moved from position 1 to position 2 at t=0. The switch S is at position 1 for long time.



b) Calculate voltage across capacitor for t > 0 for the given circuit.



c) Design π type attenuator having 20 dB attenuation with load impedance of 100 Ω.

d) Design constant k type low pass filter $(T\ and\ \pi)$ having cut off frequency of 5 kHz with load resistance of $1k\Omega$.

e) Explain concept of complex frequency.

Q.5 **Answer any Two of the following.** **12**

a) Give the significance of pole and zero of the network. Draw pole zero diagram for given network Function and hence obtain time domain response i(t).

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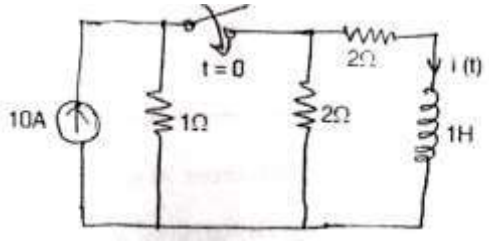
b) Find current i(t) for t > 0 for the given circuit.



c) Design constant K Band stop filter T and $\prod$ Section having cut off frequency of 2 kHz and 6 kHz and a normal impedance of 600 Ω. Also draw attenuation characteristics.

SLR-GF-778

Seat No.	

Set P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Digital Techniques (BTN06304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select an appropriate option: **14**

1) IC 7483 work as _____.
a) Comparator b) Adder
c) Decoder d) Shift Register

2) The general representation of an encoder is _____.
a) 2^m: m b) n: 2^n
c) m: 2^m d) 2^n: 1

3) How many natural states will there be in a 4-bit ripple counter?
a) 4 b) 16
c) 8 d) 32

4) A positive edge-triggered D flip-flop will store a 1 when _____.
a) the D input is HIGH and the clock transitions from HIGH to LOW
b) the D input is HIGH and the clock transitions from LOW to HIGH
c) the D input is HIGH and the clock is LOW
d) the D input is HIGH and the clock is HIGH

5) A J- flip-flop is in a "no change" condition when _____. .
a) J = 1, K = 1 b) J = 0, K = 1
c) J= 1, K = 0 d) J = 0, K = 0

6) The output of the Moore machine is the function of _____.
a) Next state
b) Present state
c) Present state and present inputs
d) Present state and Next State

7) What is one disadvantage of an S-R flip-flop?
a) It has no enable input. b) It has an invalid state.
c) It has no clock input. d) It has only a single output.

8) How many flip-flops are required to make a MOD-32 binary counter?
a) 3 b) 5
c) 31 d) 16

9) A counter with a modulus of 16 acts as a _____.
a) divide-by-8 counter
b) divide-by-16 counter
c) divide-by-32 counter
d) divide-by-64 counter

10) Master Slave Configuration is used in flip flops to _____.
a) Increase its clocking rate
b) Eliminate race around condition
c) Reduce power dissipation
d) Improves its reliability

11) A flip-flop has two outputs which must be _____.
a) Always 0
b) Always complementary
c) Always 1
d) All of these

12) What are the symbols used to represent digits in the binary number system?
a) 0,1
b) 0,1,2
c) 0 through 8
d) 1,2

13) A demultiplexer has _____.
a) one input and several outputs
b) one input and one output
c) several inputs and several outputs
d) several inputs and one output

14) If Comparator has two inputs A=1001 and B=0101 the its output is _____.
a) $Y_{(A=B)} = 1, Y_{(A<B)} = 0, Y_{(A>B)} = 0$
b) $Y_{(A=B)} = 1, Y_{(A<B)} = 0, Y_{(A>B)} = 1$
c) $Y_{(A=B)} = 1, Y_{(A<B)} = 1, Y_{(A>B)} = 0$
d) $Y_{(A=B)} = 0, Y_{(A<B)} = 0, Y_{(A>B)} = 1$

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Digital Techniques (BTN06304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four: **16**

a) Explain static hazards.
b) Design 1bit comparator.
c) Design Full Subtractor using Logic Gates.
d) Implement the Boolean function F using NAND gates.

$$F = A\bar{B} + \bar{A}\bar{C}$$

e) Design SR flip flop using JK flip flop.

Q.3 Attempt any two: **12**

a) Design 3 bit Binary to Gray code converter.
b) Design 16:1 MUX using 4:1 MUX.
c) What is race around condition? How to avoid it? Explain Master Slave JK flip flop.

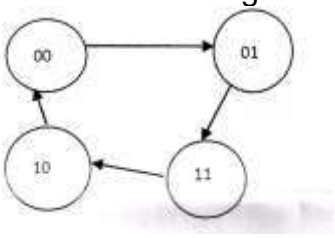
Section – II

Q.4 Attempt any four: **16**

a) Draw and explain Universal shift register.
b) Draw and explain 4 bit Ring counter.
c) Compare Moore and Mealy state machine.
d) Differentiate between combinational and sequential circuits.
e) Implement mod 6 counter using IC 7490.

Q.5 Attempt any two: **12**

a) Design synchronous counter for the following state diagram.



b) Design 4 bit ripple counter.
c) Draw and explain Bidirectional Shift Register.

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Digital Techniques (BTN06304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select an appropriate option: **14**

1) How many flip-flops are required to make a MOD-32 binary counter?
a) 3 b) 5
c) 31 d) 16

2) A counter with a modulus of 16 acts as a _____.
a) divide-by-8 counter b) divide-by-16 counter
c) divide-by-32 counter d) divide-by-64 counter

3) Master Slave Configuration is used in flip flops to _____.
a) Increase its clocking rate
b) Eliminate race around condition
c) Reduce power dissipation
d) Improves its reliability

4) A flip-flop has two outputs which must be _____.
a) Always 0 b) Always complementary
c) Always 1 d) All of these

5) What are the symbols used to represent digits in the binary number system?
a) 0,1 b) 0,1,2
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6) A demultiplexer has _____.
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a) $Y_{(A=B)} = 1, Y_{(A<B)} = 0, Y_{(A>B)} = 0$
b) $Y_{(A=B)} = 1, Y_{(A<B)} = 0, Y_{(A>B)} = 1$
c) $Y_{(A=B)} = 1, Y_{(A<B)} = 1, Y_{(A>B)} = 0$
d) $Y_{(A=B)} = 0, Y_{(A<B)} = 0, Y_{(A>B)} = 1$

8) IC 7483 work as _____.
a) Comparator b) Adder
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9) The general representation of an encoder is _____.
a) 2^m: m b) n: 2^n
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10) How many natural states will there be in a 4-bit ripple counter?
a) 4 b) 16
c) 8 d) 32

11) A positive edge-triggered D flip-flop will store a 1 when _____.
a) the D input is HIGH and the clock transitions from HIGH to LOW
b) the D input is HIGH and the clock transitions from LOW to HIGH
c) the D input is HIGH and the clock is LOW
d) the D input is HIGH and the clock is HIGH

12) A J- flip-flop is in a "no change" condition when _____. .
a) J = 1, K = 1 b) J = 0, K = 1
c) J= 1, K = 0 d) J = 0, K = 0

13) The output of the Moore machine is the function of _____.
a) Next state
b) Present state
c) Present state and present inputs
d) Present state and Next State

14) What is one disadvantage of an S-R flip-flop?
a) It has no enable input. b) It has an invalid state.
c) It has no clock input. d) It has only a single output.

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Digital Techniques (BTN06304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four: **16**

a) Explain static hazards.
b) Design 1bit comparator.
c) Design Full Subtractor using Logic Gates.
d) Implement the Boolean function F using NAND gates.

$$F = A\bar{B} + \bar{A}\bar{C}$$

e) Design SR flip flop using JK flip flop.

Q.3 Attempt any two: **12**

a) Design 3 bit Binary to Gray code converter.
b) Design 16:1 MUX using 4:1 MUX.
c) What is race around condition? How to avoid it? Explain Master Slave JK flip flop.

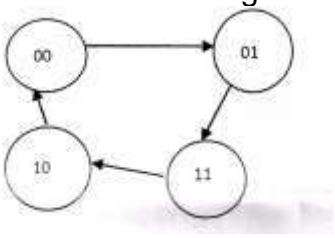
Section – II

Q.4 Attempt any four: **16**

a) Draw and explain Universal shift register.
b) Draw and explain 4 bit Ring counter.
c) Compare Moore and Mealy state machine.
d) Differentiate between combinational and sequential circuits.
e) Implement mod 6 counter using IC 7490.

Q.5 Attempt any two: **12**

a) Design synchronous counter for the following state diagram.



b) Design 4 bit ripple counter.
c) Draw and explain Bidirectional Shift Register.

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Digital Techniques (BTN06304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select an appropriate option: **14**

1) A flip-flop has two outputs which must be _____.
a) Always 0 b) Always complementary
c) Always 1 d) All of these

2) What are the symbols used to represent digits in the binary number system?
a) 0,1 b) 0,1,2
c) 0 through 8 d) 1,2

3) A demultiplexer has _____.
a) one input and several outputs
b) one input and one output
c) several inputs and several outputs
d) several inputs and one output

4) If Comparator has two inputs A=1001 and B=0101 the its output is _____.
a) $Y_{(A=B)} = 1, Y_{(A<B)} = 0, Y_{(A>B)} = 0$
b) $Y_{(A=B)} = 1, Y_{(A<B)} = 0, Y_{(A>B)} = 1$
c) $Y_{(A=B)} = 1, Y_{(A<B)} = 1, Y_{(A>B)} = 0$
d) $Y_{(A=B)} = 0, Y_{(A<B)} = 0, Y_{(A>B)} = 1$

5) IC 7483 work as _____.
a) Comparator b) Adder
c) Decoder d) Shift Register

6) The general representation of an encoder is _____.
a) 2^m: m b) n: 2^n
c) m: 2^m d) 2^n: 1

7) How many natural states will there be in a 4-bit ripple counter?
a) 4 b) 16
c) 8 d) 32

8) A positive edge-triggered D flip-flop will store a 1 when _____.
a) the D input is HIGH and the clock transitions from HIGH to LOW
b) the D input is HIGH and the clock transitions from LOW to HIGH
c) the D input is HIGH and the clock is LOW
d) the D input is HIGH and the clock is HIGH

9) A J- flip-flop is in a "no change" condition when _____. .
a) J = 1, K = 1
b) J = 0, K = 1
c) J= 1, K = 0
d) J = 0, K = 0

10) The output of the Moore machine is the function of _____.
a) Next state
b) Present state
c) Present state and present inputs
d) Present state and Next State

11) What is one disadvantage of an S-R flip-flop?
a) It has no enable input.
b) It has an invalid state.
c) It has no clock input.
d) It has only a single output.

12) How many flip-flops are required to make a MOD-32 binary counter?
a) 3
b) 5
c) 31
d) 16

13) A counter with a modulus of 16 acts as a _____.
a) divide-by-8 counter
b) divide-by-16 counter
c) divide-by-32 counter
d) divide-by-64 counter

14) Master Slave Configuration is used in flip flops to _____.
a) Increase its clocking rate
b) Eliminate race around condition
c) Reduce power dissipation
d) Improves its reliability

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Digital Techniques (BTN06304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four: **16**

a) Explain static hazards.
b) Design 1bit comparator.
c) Design Full Subtractor using Logic Gates.
d) Implement the Boolean function F using NAND gates.

$$F = A\bar{B} + \bar{A}\bar{C}$$

e) Design SR flip flop using JK flip flop.

Q.3 Attempt any two: **12**

a) Design 3 bit Binary to Gray code converter.
b) Design 16:1 MUX using 4:1 MUX.
c) What is race around condition? How to avoid it? Explain Master Slave JK flip flop.

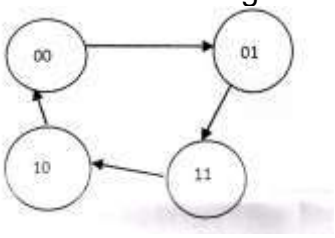
Section – II

Q.4 Attempt any four: **16**

a) Draw and explain Universal shift register.
b) Draw and explain 4 bit Ring counter.
c) Compare Moore and Mealy state machine.
d) Differentiate between combinational and sequential circuits.
e) Implement mod 6 counter using IC 7490.

Q.5 Attempt any two: **12**

a) Design synchronous counter for the following state diagram.



b) Design 4 bit ripple counter.
c) Draw and explain Bidirectional Shift Register.

Seat No.	

Set | S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Digital Techniques (BTN06304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select an appropriate option: **14**

1) The output of the Moore machine is the function of _____.
a) Next state
b) Present state
c) Present state and present inputs
d) Present state and Next State

2) What is one disadvantage of an S-R flip-flop?
a) It has no enable input. b) It has an invalid state.
c) It has no clock input. d) It has only a single output.

3) How many flip-flops are required to make a MOD-32 binary counter?
a) 3 b) 5
c) 31 d) 16

4) A counter with a modulus of 16 acts as a _____.
a) divide-by-8 counter b) divide-by-16 counter
c) divide-by-32 counter d) divide-by-64 counter

5) Master Slave Configuration is used in flip flops to _____.
a) Increase its clocking rate
b) Eliminate race around condition
c) Reduce power dissipation
d) Improves its reliability

6) A flip-flop has two outputs which must be _____.
a) Always 0 b) Always complementary
c) Always 1 d) All of these

7) What are the symbols used to represent digits in the binary number system?
a) 0,1 b) 0,1,2
c) 0 through 8 d) 1,2

8) A demultiplexer has _____.
- a) one input and several outputs
- b) one input and one output
- c) several inputs and several outputs
- d) several inputs and one output

9) If Comparator has two inputs A=1001 and B=0101 the its output is _____.
- a) $Y_{(A=B)} = 1, Y_{(A<B)} = 0, Y_{(A>B)} = 0$
- b) $Y_{(A=B)} = 1, Y_{(A<B)} = 0, Y_{(A>B)} = 1$
- c) $Y_{(A=B)} = 1, Y_{(A<B)} = 1, Y_{(A>B)} = 0$
- d) $Y_{(A=B)} = 0, Y_{(A<B)} = 0, Y_{(A>B)} = 1$

10) IC 7483 work as _____.
- a) Comparator
- b) Adder
- c) Decoder
- d) Shift Register

11) The general representation of an encoder is _____.
- a) 2^m: m
- b) n: 2^n
- c) m: 2^m
- d) 2^n: 1

12) How many natural states will there be in a 4-bit ripple counter?
- a) 4
- b) 16
- c) 8
- d) 32

13) A positive edge-triggered D flip-flop will store a 1 when _____.
- a) the D input is HIGH and the clock transitions from HIGH to LOW
- b) the D input is HIGH and the clock transitions from LOW to HIGH
- c) the D input is HIGH and the clock is LOW
- d) the D input is HIGH and the clock is HIGH

14) A J- flip-flop is in a "no change" condition when _____. .
- a) J = 1, K = 1
- b) J = 0, K = 1
- c) J= 1, K = 0
- d) J = 0, K = 0

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS AND TELECOMMUNICATION ENGINEERING
Digital Techniques (BTN06304)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four: **16**

a) Explain static hazards.
b) Design 1bit comparator.
c) Design Full Subtractor using Logic Gates.
d) Implement the Boolean function F using NAND gates.

$$F = A\bar{B} + \bar{A}\bar{C}$$

e) Design SR flip flop using JK flip flop.

Q.3 Attempt any two: **12**

a) Design 3 bit Binary to Gray code converter.
b) Design 16:1 MUX using 4:1 MUX.
c) What is race around condition? How to avoid it? Explain Master Slave JK flip flop.

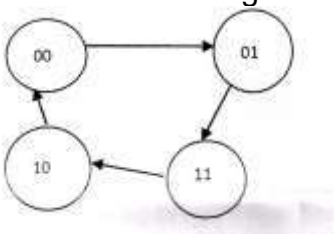
Section – II

Q.4 Attempt any four: **16**

a) Draw and explain Universal shift register.
b) Draw and explain 4 bit Ring counter.
c) Compare Moore and Mealy state machine.
d) Differentiate between combinational and sequential circuits.
e) Implement mod 6 counter using IC 7490.

Q.5 Attempt any two: **12**

a) Design synchronous counter for the following state diagram.



b) Design 4 bit ripple counter.
c) Draw and explain Bidirectional Shift Register.

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Seat No.		Set	P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Communication (BTN06305)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In a communications system noise is most likely to affect the signal _____.
a) at the transmitter b) in the channel
c) in the information source d) at the destination

2) Modulation is done in _____.
a) Transmitter
b) Radio receiver
c) Between transmitter and radio receiver
d) None of the above

3) In an AM wave useful power is carrier by _____.
a) Carrier b) Sidebands
c) Both sidebands and carrier d) None of the above

4) One of the following types of noise -becomes of great importance at high frequencies. It is the _____.
a) shot noise b) random noise
c) impulse noise d) transit-time noise

5) Noise is _____.
a) an unwanted noise b) an irritant
c) a source of stress d) all of the above

6) Ring Modulator is _____.
a) used for DSB-SC generation b) used for SSB-SC generation
c) used for VSB generation d) used for AM generation

7) What is the role of transmitter in communication system?
a) to decode a signal to be transmitted
b) to convert one form of energy into other
c) to detect and amplify information signal from the carrier
d) to produce radio waves to transmit data

8) The ability of the receiver to select the wanted signals among the various incoming signals is termed as _____.
a) Sensitivity b) Selectivity
c) Stability d) None of the above

9) Super heterodyne receivers _____.
a) Have better sensitivity
b) Have high selectivity
c) Need extra circuitry for frequency conversion
d) All of the above

10) Standard intermediate frequency used for AM receiver is _____.
a) 455 MHz b) 455 KHz
c) 455 Hz d) None of the above

11) What is the role of Amplitude limiter in FM receiver?
a) Filtration b) Adjust the gain of receiver
c) Amplify a weaker signal d) Demodulate a signal

12) The amount of data transmitted for a given amount of time is called _____.
a) Bandwidth b) Frequency
c) Noise d) Signal power

13) In Pulse Position Modulation, the drawbacks are _____.
a) Synchronization is required between transmitter and receiver
b) Large bandwidth is required as compared to PAM
c) None of the above
d) Both a and b

14) In PWM signal reception, the Schmitt trigger circuit is used _____.
a) To remove noise b) To produce ramp signal
c) For synchronization d) None of the above

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Communication (BTN06305)

Day & Date: Friday, 12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following **16**
- **a)** Explain the basic elements of communication system.
- **b)** Explain the different types of modulation.
- **c)** State and explain different sources of noise.
- **d)** Explain the Friss formula for noise temperature.
- **e)** What are different types of SSB generation? Explain any one in detail.

Q.3 Attempt any two of the following **12**
- **a)** What are different types of communication channels? Explain in brief.
- **b)** What are different steps for calculation of noise figure.
- **c)** Derive the expression for AM Power.

Section – II

Q.4 Attempt any four of the following **16**
- **a)** Explain the performance parameters of AM Receiver.
- **b)** Explain envelope detector for DSB-SC Demodulation.
- **c)** Compare AM, FM.
- **d)** Explain ratio detector.
- **e)** Explain sampling theorem.

Q.5 Attempt any two of the following **12**
- **a)** With block diagram explain superheterodyne receiver.
- **b)** Explain need for pre-emphasis & de-emphasis.
- **c)** Explain PAM Generation.

Seat No.		Set	Q

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Communication (BTN06305)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The ability of the receiver to select the wanted signals among the various incoming signals is termed as _____.
a) Sensitivity b) Selectivity
c) Stability d) None of the above

2) Super heterodyne receivers _____.
a) Have better sensitivity
b) Have high selectivity
c) Need extra circuitry for frequency conversion
d) All of the above

3) Standard intermediate frequency used for AM receiver is _____.
a) 455 MHz b) 455 KHz
c) 455 Hz d) None of the above

4) What is the role of Amplitude limiter in FM receiver?
a) Filtration b) Adjust the gain of receiver
c) Amplify a weaker signal d) Demodulate a signal

5) The amount of data transmitted for a given amount of time is called _____.
a) Bandwidth b) Frequency
c) Noise d) Signal power

6) In Pulse Position Modulation, the drawbacks are _____.
a) Synchronization is required between transmitter and receiver
b) Large bandwidth is required as compared to PAM
c) None of the above
d) Both a and b

7) In PWM signal reception, the Schmitt trigger circuit is used _____.
a) To remove noise b) To produce ramp signal
c) For synchronization d) None of the above

8) In a communications system noise is most likely to affect the signal _____.
a) at the transmitter b) in the channel
c) in the information source d) at the destination

9) Modulation is done in _____.
a) Transmitter
b) Radio receiver
c) Between transmitter and radio receiver
d) None of the above

10) In an AM wave useful power is carrier by _____.
a) Carrier b) Sidebands
c) Both sidebands and carrier d) None of the above

11) One of the following types of noise -becomes of great importance at high frequencies. It is the _____.
a) shot noise b) random noise
c) impulse noise d) transit-time noise

12) Noise is _____.
a) an unwanted noise b) an irritant
c) a source of stress d) all of the above

13) Ring Modulator is _____.
a) used for DSB-SC generation b) used for SSB-SC generation
c) used for VSB generation d) used for AM generation

14) What is the role of transmitter in communication system?
a) to decode a signal to be transmitted
b) to convert one form of energy into other
c) to detect and amplify information signal from the carrier
d) to produce radio waves to transmit data

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Communication (BTN06305)

Day & Date: Friday, 12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following **16**
- **a)** Explain the basic elements of communication system.
- **b)** Explain the different types of modulation.
- **c)** State and explain different sources of noise.
- **d)** Explain the Friss formula for noise temperature.
- **e)** What are different types of SSB generation? Explain any one in detail.

Q.3 Attempt any two of the following **12**
- **a)** What are different types of communication channels? Explain in brief.
- **b)** What are different steps for calculation of noise figure.
- **c)** Derive the expression for AM Power.

Section – II

Q.4 Attempt any four of the following **16**
- **a)** Explain the performance parameters of AM Receiver.
- **b)** Explain envelope detector for DSB-SC Demodulation.
- **c)** Compare AM, FM.
- **d)** Explain ratio detector.
- **e)** Explain sampling theorem.

Q.5 Attempt any two of the following **12**
- **a)** With block diagram explain superheterodyne receiver.
- **b)** Explain need for pre-emphasis & de-emphasis.
- **c)** Explain PAM Generation.

Seat No.		Set	R

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Communication (BTN06305)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What is the role of Amplitude limiter in FM receiver?
a) Filtration b) Adjust the gain of receiver
c) Amplify a weaker signal d) Demodulate a signal

2) The amount of data transmitted for a given amount of time is called _____.
a) Bandwidth b) Frequency
c) Noise d) Signal power

3) In Pulse Position Modulation, the drawbacks are _____.
a) Synchronization is required between transmitter and receiver
b) Large bandwidth is required as compared to PAM
c) None of the above
d) Both a and b

4) In PWM signal reception, the Schmitt trigger circuit is used _____.
a) To remove noise b) To produce ramp signal
c) For synchronization d) None of the above

5) In a communications system noise is most likely to affect the signal _____.
a) at the transmitter b) in the channel
c) in the information source d) at the destination

6) Modulation is done in _____.
a) Transmitter
b) Radio receiver
c) Between transmitter and radio receiver
d) None of the above

7) In an AM wave useful power is carrier by _____.
a) Carrier b) Sidebands
c) Both sidebands and carrier d) None of the above

8) One of the following types of noise -becomes of great importance at high frequencies. It is the _____.
a) shot noise b) random noise
c) impulse noise d) transit-time noise

9) Noise is _____.
a) an unwanted noise b) an irritant
c) a source of stress d) all of the above

10) Ring Modulator is _____.
a) used for DSB-SC generation b) used for SSB-SC generation
c) used for VSB generation d) used for AM generation

11) What is the role of transmitter in communication system?
a) to decode a signal to be transmitted
b) to convert one form of energy into other
c) to detect and amplify information signal from the carrier
d) to produce radio waves to transmit data

12) The ability of the receiver to select the wanted signals among the various incoming signals is termed as _____.
a) Sensitivity b) Selectivity
c) Stability d) None of the above

13) Super heterodyne receivers _____.
a) Have better sensitivity
b) Have high selectivity
c) Need extra circuitry for frequency conversion
d) All of the above

14) Standard intermediate frequency used for AM receiver is _____.
a) 455 MHz b) 455 KHz
c) 455 Hz d) None of the above

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Communication (BTN06305)

Day & Date: Friday, 12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following **16**
- **a)** Explain the basic elements of communication system.
- **b)** Explain the different types of modulation.
- **c)** State and explain different sources of noise.
- **d)** Explain the Friss formula for noise temperature.
- **e)** What are different types of SSB generation? Explain any one in detail.

Q.3 Attempt any two of the following **12**
- **a)** What are different types of communication channels? Explain in brief.
- **b)** What are different steps for calculation of noise figure.
- **c)** Derive the expression for AM Power.

Section – II

Q.4 Attempt any four of the following **16**
- **a)** Explain the performance parameters of AM Receiver.
- **b)** Explain envelope detector for DSB-SC Demodulation.
- **c)** Compare AM, FM.
- **d)** Explain ratio detector.
- **e)** Explain sampling theorem.

Q.5 Attempt any two of the following **12**
- **a)** With block diagram explain superheterodyne receiver.
- **b)** Explain need for pre-emphasis & de-emphasis.
- **c)** Explain PAM Generation.

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Communication (BTN06305)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no. 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Ring Modulator is _____.
a) used for DSB-SC generation b) used for SSB-SC generation
c) used for VSB generation d) used for AM generation

2) What is the role of transmitter in communication system?
a) to decode a signal to be transmitted
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d) to produce radio waves to transmit data

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a) Sensitivity b) Selectivity
c) Stability d) None of the above

4) Super heterodyne receivers _____.
a) Have better sensitivity
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c) Need extra circuitry for frequency conversion
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5) Standard intermediate frequency used for AM receiver is _____.
a) 455 MHz b) 455 KHz
c) 455 Hz d) None of the above

6) What is the role of Amplitude limiter in FM receiver?
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9) In PWM signal reception, the Schmitt trigger circuit is used _____.
a) To remove noise b) To produce ramp signal
c) For synchronization d) None of the above

10) In a communications system noise is most likely to affect the signal _____.
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c) in the information source d) at the destination

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a) Transmitter
b) Radio receiver
c) Between transmitter and radio receiver
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12) In an AM wave useful power is carrier by _____.
a) Carrier b) Sidebands
c) Both sidebands and carrier d) None of the above

13) One of the following types of noise -becomes of great importance at high frequencies. It is the _____.
a) shot noise b) random noise
c) impulse noise d) transit-time noise

14) Noise is _____.
a) an unwanted noise b) an irritant
c) a source of stress d) all of the above

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Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Communication (BTN06305)

Day & Date: Friday, 12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four of the following **16**
- **a)** Explain the basic elements of communication system.
- **b)** Explain the different types of modulation.
- **c)** State and explain different sources of noise.
- **d)** Explain the Friss formula for noise temperature.
- **e)** What are different types of SSB generation? Explain any one in detail.

Q.3 Attempt any two of the following **12**
- **a)** What are different types of communication channels? Explain in brief.
- **b)** What are different steps for calculation of noise figure.
- **c)** Derive the expression for AM Power.

Section – II

Q.4 Attempt any four of the following **16**
- **a)** Explain the performance parameters of AM Receiver.
- **b)** Explain envelope detector for DSB-SC Demodulation.
- **c)** Compare AM, FM.
- **d)** Explain ratio detector.
- **e)** Explain sampling theorem.

Q.5 Attempt any two of the following **12**
- **a)** With block diagram explain superheterodyne receiver.
- **b)** Explain need for pre-emphasis & de-emphasis.
- **c)** Explain PAM Generation.

Seat No.		Set	P

S. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Control System (BTN06401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

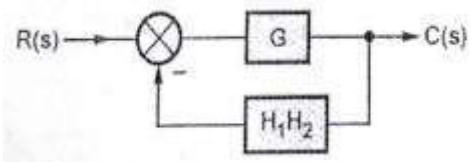
Q.1 Multiple choice questions. **14**

1) _____ is an example of open loop system.
a) Human being b) Automatic electric iron
c) washing machine d) None of these

2) For $T(s) = \frac{2(s+3)}{s(s+2)}$ the poles are _____.
a) $0, -2$ b) $-2, 0$
c) -3 d) 3

3) The roots of the characteristics equation of a system are called _____ of that system.
a) Zeros b) Poles
c) Order d) None

4) A transfer function of the block diagram shown is _____.



a) $\frac{G}{1 - H_1H_2}$ b) $\frac{G}{1 + H_1H_2}$
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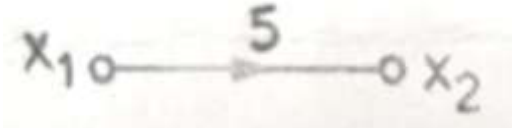
5) _____ is true for signal flow graph shown.



a) x_1 depends on x_2 b) x_2 depends on x_1
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a) Number of feedback paths
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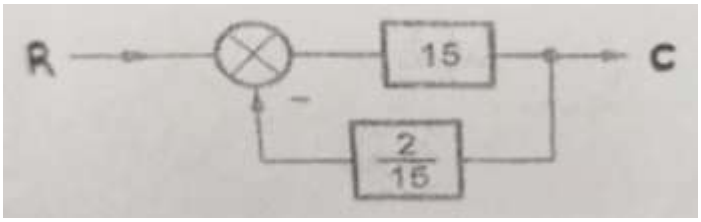

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9) If the system is specified by open loop transfer function $G(s)H(s) = k/s(s+3)\ (s+2)$, how many root loci proceed to end at infinity?

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10) Which unit is adopted for magnitude measurement in Bode plots?

a) Degree
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11) In bode plot phase margin is calculated at _____.

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14) Which among the following constitute the state model of a system in addition to state equations?

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Seat No.		Set	P

S. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Control System (BTN06401)

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Section – I

Q.2 Attempt any four: **16**

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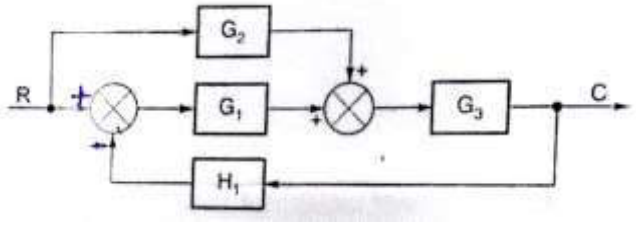
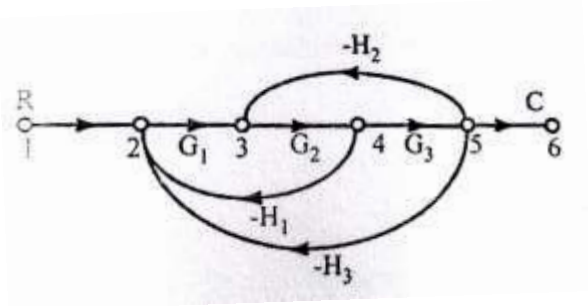


c) Find the Transfer function using mason's gain formula?



d) Explain in a detail Mason's Gain formula?

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$G(s) = \frac{10}{S^2(4+s)}$ and $r(t) = 2 + 3t + 4t^2$

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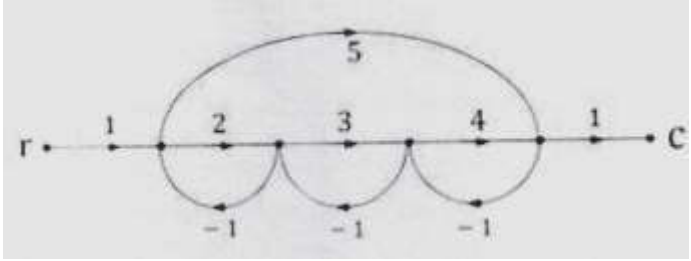

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a) Explain two special cases in Routh - Hurwitz criterion.

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a) The characteristic equation of a system is given as
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b) Sketch root locus for the system $G(s) = K/S(S+3)(S+5)$, $H(s) = 1$

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Seat No.		Set	Q

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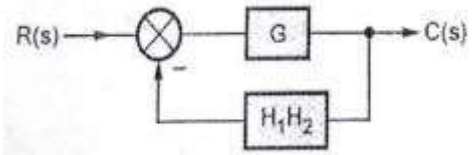

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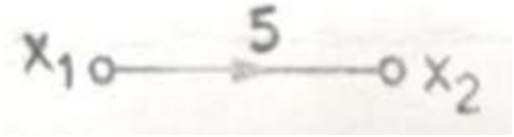

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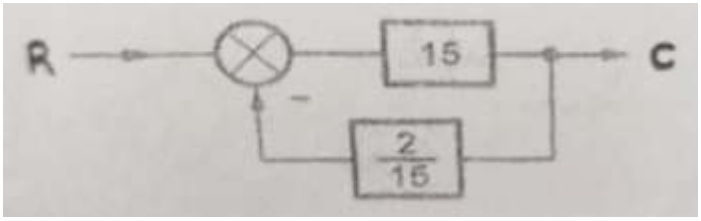

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Seat No.	

Set | Q

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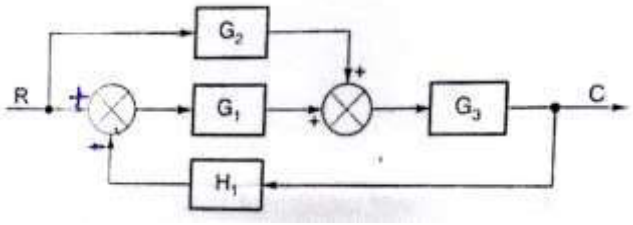

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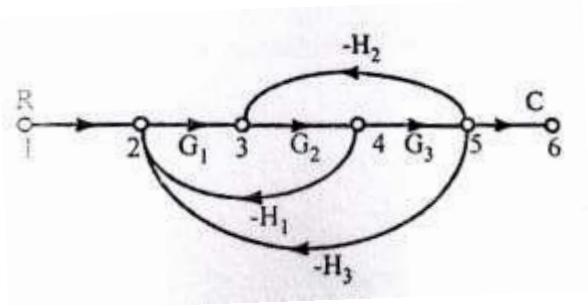

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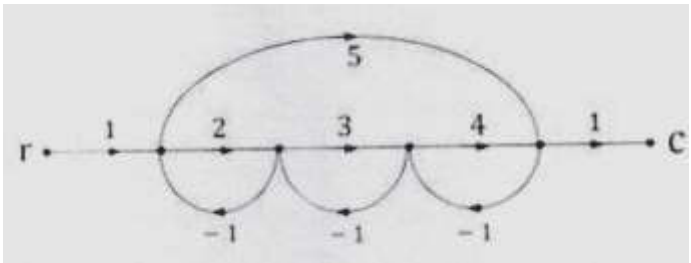

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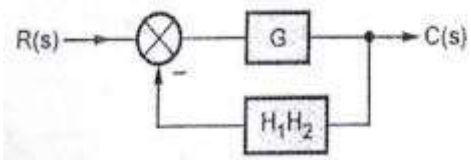

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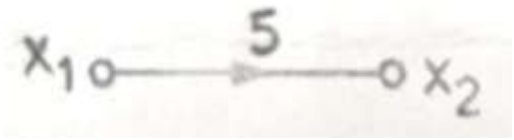

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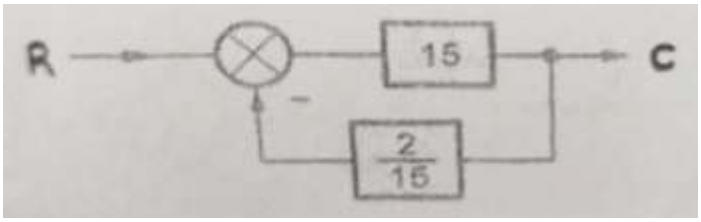

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Seat No.		Set	R

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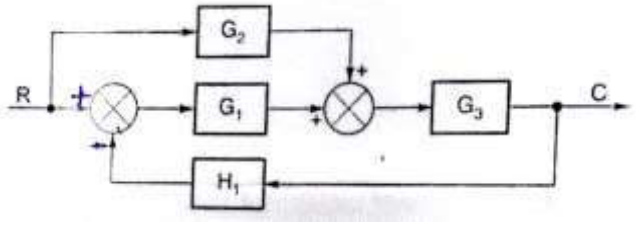

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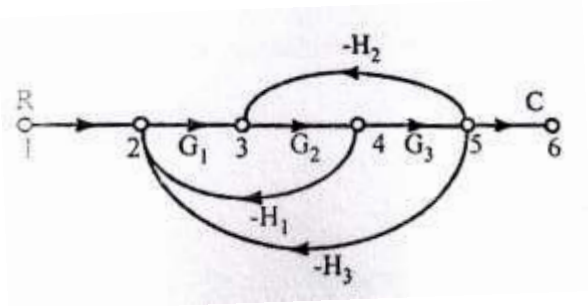

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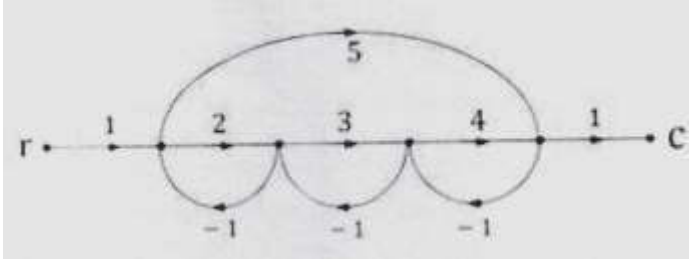

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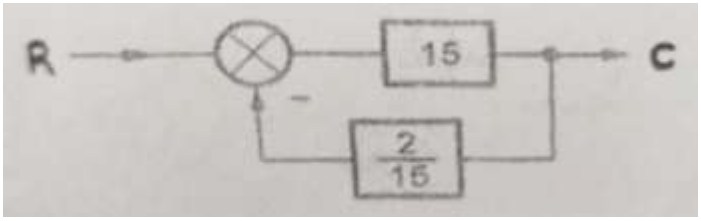

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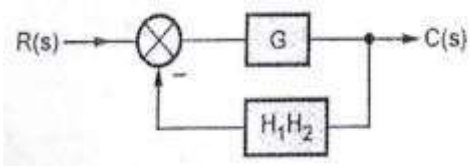
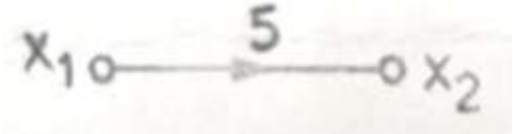
d) None

13) A transfer function of the block diagram shown is _____.



a) $\frac{G}{1 - H_1H_2}$
b) $\frac{G}{1 + H_1H_2}$
c) $\frac{G}{1 - GH_1H_2}$
d) $\frac{G}{1 + GH_1H_2}$

14) _____ is true for signal flow graph shown.



a) x_1 depends on x_2
b) x_2 depends on x_1
c) $x_1 = x_2$
d) none of these

Seat No.		Set	S

S. Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Control System (BTN06401)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

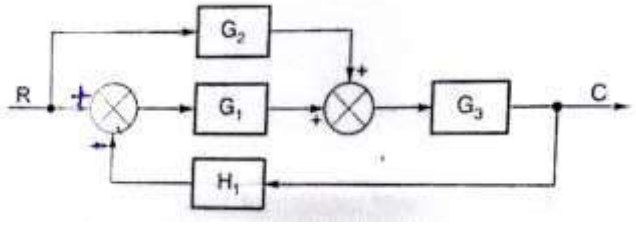
Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw the plots on Graph/Semi -log Paper.

Section – I

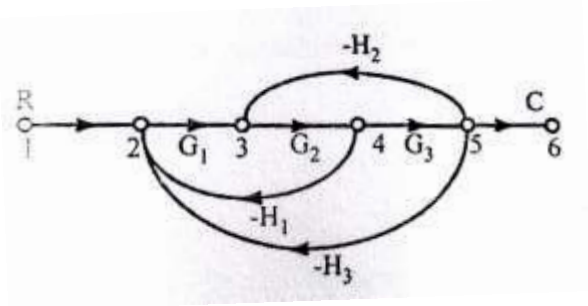
Q.2 Attempt any four: **16**

a) Compare between block diagram and signal flow graph.

b) Find the Transfer function using block reduction technique?



c) Find the Transfer function using mason's gain formula?

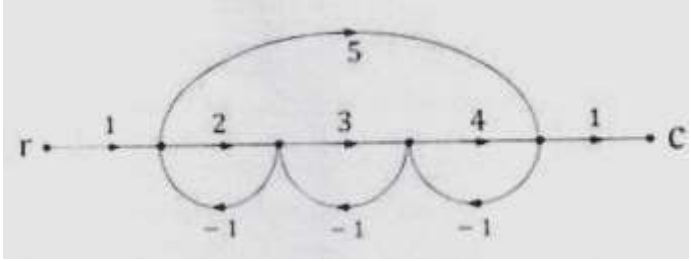


d) Explain in a detail Mason's Gain formula?

e) Find the steady error for unity feedback system.
$G(s) = \frac{10}{S^2(4+s)}$ and $r(t) = 2 + 3t + 4t^2$

Q.3 Attempt any two: **12**

a) In the Signal flow graph of figure find c/r?



b) Derive the steady state errors for type 1 for step input, ramp input & parabolic input?

c) Explain in detail Mathematical modeling of Electrical systems using R, L and C?

Section – II

Q.4 Solve Any Four: **16**

a) Explain two special cases in Routh - Hurwitz criterion.

b) What is root locus? Explain rules for root locus.

c) Explain following terms-

i) Phase crossover frequency

ii) Gain Crossover frequency

iii) Phase Margin

iv) Gain Margin

d) What is Lag compensator? Obtain the transfer function and draw a pole-zero plot.

e) Write a note on state transition matrix.

Q.5 Solve Any two **12**

a) The characteristic equation of a system is given as
$S^4 + 20S^3 + 10S^2 + S + K = 0$

i) Determine the range of k for stability.

ii) At what value of K system will be marginally stable? Find frequency of oscillations.

b) Sketch root locus for the system $G(s) = K/S(S+3)(S+5)$, $H(s) = 1$

c) Sketch the bode plot for following transfer function and obtain gain and phase cross over frequency.
$G(S)H(S) = 10/S(1+0.5S)(1+0.01S)$

SLR-GF-781

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Integrated Circuits (BTN06402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) Gain bandwidth product of IC741 is _____.
a) 10 MHz b) 1 MHz
c) Infinite d) 1 KHz

2) Introduction of negative feedback _____.
a) Makes gain infinite b) Make bandwidth infinite
c) Stabilizes gain d) None of these

3) What is the value of CMRR of IC741?
a) 500 nA b) 6 mV
c) 90 d) 90 dB

4) $A(R_1+R_f) / (R_1+R_f+AR_1)$ represents _____.
a) Exact voltage gain of non-inverting amplifier
b) Ideal voltage gain of inverting amplifier
c) Exact voltage gain of inverting amplifier
d) None of these

5) The average rate of change of input offset voltage per unit change in temperature is called as _____.
a) Thermal current drift b) Thermal voltage drift
c) Both a) and b) d) None of these

6) In V-I converter with floating load where load is _____.
a) Connected to ground b) Not connected to ground
c) Connected to input d) Load is zero

7) A signal voltage on one input of an op amp with known voltage is called _____.
a) comparator voltage b) unknown voltage
c) reference voltage d) None of these

8) For Wien bridge oscillator, frequency of oscillation is _____.
a) $f_0 = 0.159/RC$ b) $f_0 = 0.065/RC$
c) $f_0 = 1/2\pi RC$ d) both a) and c)

9) Elements used in _____ filters are resistor, capacitor and inductors.
a) active b) passive
c) both a) and b) d) None of these

10) For summing amplifier ratio of Rf/R should be _____.
a) less than one b) greater than one
c) zero d) one

11) The average rate of change of input offset voltage per unit change in temperature is called as _____.
a) Thermal current drift b) Thermal voltage drift
c) both a) and b) d) None of these

12) Maximum value of d Vo/dt is called _____.
a) voltage ratio b) voltage rate
c) slew rate d) transient response

13) Active filters offer below advantages over passive filters _____.
a) Flexibility in design b) Gain adjustment
c) Both a and b d) None of these

14) For a quadrature oscillator, If fo = 1.59 KHz and C = 0.01 μF then R =?
a) 10 KΩ b) 100 KΩ
c) 1 KΩ d) 15.9 KΩ

SLR-GF-781

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Integrated Circuits (BTN06402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Attempt the Following (Any Four) **16**

a) Derive and explain basic differentiator with waveform.
b) Draw and explain current mirror circuit.
c) What is slew rate? Explain its importance.
d) Consider an inverting amplifier with feedback with Rf=5KΩ, R1=100Ω, Af=50, slew rate=0.5 V/μsec. Calculate Vp.
e) For an AC inverting amplifier, derive equation for lower cut-off frequency.

Q.3 Attempt the Following (Any Two) **12**

a) Explain following term:
1) Input offset voltage
2) Input bias current
3) CMRR
4) SVRR
b) Derive the ICEQ and VCEQ for DIBO differential amplifier.
c) State any six specifications of IC 741.

Section – II

Q.4 Attempt the Following (Any Four) **16**

a) Draw and explain second order high pass butter worth filter.
b) Derive expression for log amplifier using diode.
c) With a neat diagram, explain sample and hold circuit.
d) Explain Log amplifier.
e) Design a Second order low pass Butterworth filter with fH = 1.5KHz.

Q.5 Attempt the Following (Any Two) **12**

a) Draw and explain Wien bridge oscillator.
b) Explain VCO.
c) Explain Half Wave precision rectifier with waveforms.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Integrated Circuits (BTN06402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) For Wien bridge oscillator, frequency of oscillation is _____.
a) $f_0 = 0.159/RC$ b) $f_0 = 0.065/RC$
c) $f_0 = 1/2\pi RC$ d) both a) and c)

2) Elements used in _____ filters are resistor, capacitor and inductors.
a) active b) passive
c) both a) and b) d) None of these

3) For summing amplifier ratio of Rf/R should be _____.
a) less than one b) greater than one
c) zero d) one

4) The average rate of change of input offset voltage per unit change in temperature is called as _____.
a) Thermal current drift b) Thermal voltage drift
c) both a) and b) d) None of these

5) Maximum value of d Vo/dt is called _____.
a) voltage ratio b) voltage rate
c) slew rate d) transient response

6) Active filters offer below advantages over passive filters _____.
a) Flexibility in design b) Gain adjustment
c) Both a and b d) None of these

7) For a quadrature oscillator, If fo = 1.59 KHz and C = 0.01 μF then R =?
a) 10 KΩ b) 100 KΩ
c) 1 KΩ d) 15.9 KΩ

8) Gain bandwidth product of IC741 is _____.
a) 10 MHz b) 1 MHz
c) Infinite d) 1 KHz

9) Introduction of negative feedback _____.
a) Makes gain infinite b) Make bandwidth infinite
c) Stabilizes gain d) None of these

10) What is the value of CMRR of IC741?
a) 500 nA b) 6 mV
c) 90 d) 90 dB

11) $A(R_1+R_f) / (R_1+R_f+AR_1)$ represents _____.
a) Exact voltage gain of non-inverting amplifier
b) Ideal voltage gain of inverting amplifier
c) Exact voltage gain of inverting amplifier
d) None of these

12) The average rate of change of input offset voltage per unit change in temperature is called as _____.
a) Thermal current drift b) Thermal voltage drift
c) Both a) and b) d) None of these

13) In V-I converter with floating load where load is _____.
a) Connected to ground b) Not connected to ground
c) Connected to input d) Load is zero

14) A signal voltage on one input of an op amp with known voltage is called _____.
a) comparator voltage b) unknown voltage
c) reference voltage d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Integrated Circuits (BTN06402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Attempt the Following (Any Four) **16**

a) Derive and explain basic differentiator with waveform.
b) Draw and explain current mirror circuit.
c) What is slew rate? Explain its importance.
d) Consider an inverting amplifier with feedback with Rf=5KΩ, R1=100Ω, Af=50, slew rate=0.5 V/μsec. Calculate Vp.
e) For an AC inverting amplifier, derive equation for lower cut-off frequency.

Q.3 Attempt the Following (Any Two) **12**

a) Explain following term:
1) Input offset voltage
2) Input bias current
3) CMRR
4) SVRR
b) Derive the ICEQ and VCEQ for DIBO differential amplifier.
c) State any six specifications of IC 741.

Section – II

Q.4 Attempt the Following (Any Four) **16**

a) Draw and explain second order high pass butter worth filter.
b) Derive expression for log amplifier using diode.
c) With a neat diagram, explain sample and hold circuit.
d) Explain Log amplifier.
e) Design a Second order low pass Butterworth filter with fH = 1.5KHz.

Q.5 Attempt the Following (Any Two) **12**

a) Draw and explain Wien bridge oscillator.
b) Explain VCO.
c) Explain Half Wave precision rectifier with waveforms.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Integrated Circuits (BTN06402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. **14**

1) The average rate of change of input offset voltage per unit change in temperature is called as _____.
a) Thermal current drift b) Thermal voltage drift
c) both a) and b) d) None of these

2) Maximum value of d Vo/dt is called _____.
a) voltage ratio b) voltage rate
c) slew rate d) transient response

3) Active filters offer below advantages over passive filters _____.
a) Flexibility in design b) Gain adjustment
c) Both a and b d) None of these

4) For a quadrature oscillator, If fo = 1.59 KHz and C = 0.01 μF then R =?
a) 10 KΩ b) 100 KΩ
c) 1 KΩ d) 15.9 KΩ

5) Gain bandwidth product of IC741 is _____.
a) 10 MHz b) 1 MHz
c) Infinite d) 1 KHz

6) Introduction of negative feedback _____.
a) Makes gain infinite b) Make bandwidth infinite
c) Stabilizes gain d) None of these

7) What is the value of CMRR of IC741?
a) 500 nA b) 6 mV
c) 90 d) 90 dB

8) $A(R_1+R_f) / (R_1+R_f+AR_1)$ represents _____.
a) Exact voltage gain of non-inverting amplifier
b) Ideal voltage gain of inverting amplifier
c) Exact voltage gain of inverting amplifier
d) None of these

9) The average rate of change of input offset voltage per unit change in temperature is called as _____.
a) Thermal current drift b) Thermal voltage drift
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10) In V-I converter with floating load where load is _____.
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c) Connected to input d) Load is zero

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c) reference voltage d) None of these

12) For Wien bridge oscillator, frequency of oscillation is _____.
a) $f_0 = 0.159/RC$ b) $f_0 = 0.065/RC$
c) $f_0 = 1/2\pi RC$ d) both a) and c)

13) Elements used in _____ filters are resistor, capacitor and inductors.
a) active b) passive
c) both a) and b) d) None of these

14) For summing amplifier ratio of Rf/R should be _____.
a) less than one b) greater than one
c) zero d) one

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Integrated Circuits (BTN06402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Attempt the Following (Any Four) **16**

a) Derive and explain basic differentiator with waveform.
b) Draw and explain current mirror circuit.
c) What is slew rate? Explain its importance.
d) Consider an inverting amplifier with feedback with Rf=5KΩ, R1=100Ω, Af=50, slew rate=0.5 V/μsec. Calculate Vp.
e) For an AC inverting amplifier, derive equation for lower cut-off frequency.

Q.3 Attempt the Following (Any Two) **12**

a) Explain following term:
1) Input offset voltage
2) Input bias current
3) CMRR
4) SVRR
b) Derive the ICEQ and VCEQ for DIBO differential amplifier.
c) State any six specifications of IC 741.

Section – II

Q.4 Attempt the Following (Any Four) **16**

a) Draw and explain second order high pass butter worth filter.
b) Derive expression for log amplifier using diode.
c) With a neat diagram, explain sample and hold circuit.
d) Explain Log amplifier.
e) Design a Second order low pass Butterworth filter with fH = 1.5KHz.

Q.5 Attempt the Following (Any Two) **12**

a) Draw and explain Wien bridge oscillator.
b) Explain VCO.
c) Explain Half Wave precision rectifier with waveforms.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Integrated Circuits (BTN06402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the given options. 14

1) In V-I converter with floating load where load is _____.
a) Connected to ground b) Not connected to ground
c) Connected to input d) Load is zero

2) A signal voltage on one input of an op amp with known voltage is called _____.
a) comparator voltage b) unknown voltage
c) reference voltage d) None of these

3) For Wien bridge oscillator, frequency of oscillation is _____.
a) $f_0 = 0.159/RC$ b) $f_0 = 0.065/RC$
c) $f_0 = 1/2\pi RC$ d) both a) and c)

4) Elements used in _____ filters are resistor, capacitor and inductors.
a) active b) passive
c) both a) and b) d) None of these

5) For summing amplifier ratio of Rf/R should be _____.
a) less than one b) greater than one
c) zero d) one

6) The average rate of change of input offset voltage per unit change in temperature is called as _____.
a) Thermal current drift b) Thermal voltage drift
c) both a) and b) d) None of these

7) Maximum value of d Vo/dt is called _____.
a) voltage ratio b) voltage rate
c) slew rate d) transient response

8) Active filters offer below advantages over passive filters _____.
a) Flexibility in design b) Gain adjustment
c) Both a and b d) None of these

9) For a quadrature oscillator, If fo = 1.59 KHz and C = 0.01 μF then R =?
a) 10 KΩ b) 100 KΩ
c) 1 KΩ d) 15.9 KΩ

10) Gain bandwidth product of IC741 is _____.
a) 10 MHz b) 1 MHz
c) Infinite d) 1 KHz

11) Introduction of negative feedback _____.
a) Makes gain infinite b) Make bandwidth infinite
c) Stabilizes gain d) None of these

12) What is the value of CMRR of IC741?
a) 500 nA b) 6 mV
c) 90 d) 90 dB

13) $A(R_1+R_f) / (R_1+R_f+AR_1)$ represents _____.
a) Exact voltage gain of non-inverting amplifier
b) Ideal voltage gain of inverting amplifier
c) Exact voltage gain of inverting amplifier
d) None of these

14) The average rate of change of input offset voltage per unit change in temperature is called as _____.
a) Thermal current drift b) Thermal voltage drift
c) Both a) and b) d) None of these

SLR-GF-781

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Analog Integrated Circuits (BTN06402)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Attempt the Following (Any Four) **16**

a) Derive and explain basic differentiator with waveform.
b) Draw and explain current mirror circuit.
c) What is slew rate? Explain its importance.
d) Consider an inverting amplifier with feedback with Rf=5KΩ, R1=100Ω, Af=50, slew rate=0.5 V/μsec. Calculate Vp.
e) For an AC inverting amplifier, derive equation for lower cut-off frequency.

Q.3 Attempt the Following (Any Two) **12**

a) Explain following term:
1) Input offset voltage
2) Input bias current
3) CMRR
4) SVRR
b) Derive the ICEQ and VCEQ for DIBO differential amplifier.
c) State any six specifications of IC 741.

Section – II

Q.4 Attempt the Following (Any Four) **16**

a) Draw and explain second order high pass butter worth filter.
b) Derive expression for log amplifier using diode.
c) With a neat diagram, explain sample and hold circuit.
d) Explain Log amplifier.
e) Design a Second order low pass Butterworth filter with fH = 1.5KHz.

Q.5 Attempt the Following (Any Two) **12**

a) Draw and explain Wien bridge oscillator.
b) Explain VCO.
c) Explain Half Wave precision rectifier with waveforms.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Principles of Digital Communication (BTN06403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The mutual information _____.
a) Is symmetric b) Always non-negative
c) Both a) and b) are correct d) None of the above

2) Entropy is _____.
a) Average information per message
b) Information in a signal
c) Amplitude of signal
d) All of the above

3) DPCM encodes the PCM values based on _____.
a) Quantization level
b) Difference between the current and predicted value
c) Interval between levels
d) None of the mentioned

4) Quantization noise occurs in _____.
a) PCM b) TDM
c) FDM d) PPM

5) Quantization noise can be reduced by _____ the number of levels.
a) Decreasing b) Increasing
c) Doubling d) Squaring

6) In On-Off keying, the carrier signal is transmitted with signal value '1' and '0' indicates _____.
a) No carrier
b) Half the carrier amplitude
c) Amplitude of modulating signal
d) None of the above

7) The probability of error of DPSK is _____ than that of BPSK.
a) Higher b) Lower
c) Same d) Not predictable

8) The data rate of QPSK is _____ of BPSK.
a) Thrice b) Four times
c) Twice d) Same

9) Minimum shift keying is similar to _____.
a) Continuous phase frequency shift keying
b) Binary phase shift keying
c) Binary frequency shift keying
d) QPSK

10) A cyclic code can be generated using _____.
a) Generator polynomial
b) Generator matrix
c) Generator polynomial & matrix
d) None of the mentioned

11) The _____ of the code-word is the number of non-zero elements.
a) Size b) Weight
c) Distance d) Subspace

12) In coherent detection of signals _____.
a) Local carrier is generated
b) Carrier of frequency and phase as same as transmitted carrier is generated
c) The carrier is in synchronization with modulated carrier
d) All of the above

13) Linear Filter that maximizes the SNR is _____ filter?
a) Matched Filter b) Low Pass Filter
c) High Pass Filter d) Band Pass Filter

14) Synchronization available in digital communication are _____.
a) Symbol synchronization b) Frame synchronization
c) Carrier synchronization d) All of the mentioned

Seat No.		Set	P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Principles of Digital Communication (BTN06403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) 1) Define information rate.
2) A continuous signal is band-limited to 5 KHz. The signal is quantized in 8 levels of a PCM system with the probabilities 0.25, 0.2, 0.2, 0.1, 0.1, 0.05, 0.05 and 0.05. Calculate the entropy and the rate of information.

b) With the help of a block diagram and waveforms explain the working of the PCM system.

c) Justify Delta Modulation is a 1-bit modulation method.

d) Explain frequency shift keying. Describe the Coherent detection method of the BFSK signal.

e) Write a note on the probability of error.

Q.3 Attempt the following (Any Two) **12**

a) A transmitter has an alphabet of four letters $[x_1, x_2, x_3, x_4]$ and the receiver has an alphabet of three letters $[y_1, y_2, y_3]$. The joint probability matrix is given below. Calculate all entropies.

$$P(X,Y) = \begin{array}{c} \\ x_1 \\ x_2 \\ x_3 \\ x_4 \end{array} \begin{array}{c} \begin{array}{ccc} y_1 & y_2 & y_3 \end{array} \\ \begin{bmatrix} 0.3 & 0.05 & 0 \\ 0 & 0.25 & 0 \\ 0 & 0.15 & 0.05 \\ 0 & 0.05 & 0.15 \end{bmatrix} \end{array}$$

b) 1) Derive the expression for Bandwidth of PCM system.
2) A voice signal band limited to 3.4 KHz is sampled at 8 KHz and pulse code modulated using 64 quantization levels. Ten such signals are time division multiplexed using one 5-bit synchronizing word. Calculate the minimum channel bandwidth.

c) With the help of a block diagram and an example, explain the working of DPSK modulation and demodulation techniques.

Section – II

Q.4 Answer the following (Any Four) **16**

a) With the help of a block diagram explain the working of the QAM modulator in detail.

b) Explain any one carrier recovery technique.

c) For a (6, 3) code, the parity check matrix is as shown. Determine whether a received code vector is erroneous. The received code vector is 100101.

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

d) Explain the principle of the MSK signaling scheme.

e) Write a note on integrate and dump receiver.

Q.5 Attempt the following (Any Two) **12**

a) Write a note on QPSK transmitter and receiver.

b) With the help of block diagram explain any one method of symbol synchronization technique.

c) Given a (6, 3) linear block code with the following parity check matrix H as shown,

1) Find the generator matrix
2) Find the code word for data bit 101

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

SLR-GF-782

Seat No.		Set	Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Principles of Digital Communication (BTN06403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The data rate of QPSK is _____ of BPSK.
a) Thrice b) Four times
c) Twice d) Same

2) Minimum shift keying is similar to _____.
a) Continuous phase frequency shift keying
b) Binary phase shift keying
c) Binary frequency shift keying
d) QPSK

3) A cyclic code can be generated using _____.
a) Generator polynomial
b) Generator matrix
c) Generator polynomial & matrix
d) None of the mentioned

4) The _____ of the code-word is the number of non-zero elements.
a) Size b) Weight
c) Distance d) Subspace

5) In coherent detection of signals _____.
a) Local carrier is generated
b) Carrier of frequency and phase as same as transmitted carrier is generated
c) The carrier is in synchronization with modulated carrier
d) All of the above

6) Linear Filter that maximizes the SNR is _____ filter?
a) Matched Filter b) Low Pass Filter
c) High Pass Filter d) Band Pass Filter

7) Synchronization available in digital communication are _____.
a) Symbol synchronization b) Frame synchronization
c) Carrier synchronization d) All of the mentioned

8) The mutual information _____.
a) Is symmetric
b) Always non-negative
c) Both a) and b) are correct
d) None of the above

9) Entropy is _____.
a) Average information per message
b) Information in a signal
c) Amplitude of signal
d) All of the above

10) DPCM encodes the PCM values based on _____.
a) Quantization level
b) Difference between the current and predicted value
c) Interval between levels
d) None of the mentioned

11) Quantization noise occurs in _____.
a) PCM
b) TDM
c) FDM
d) PPM

12) Quantization noise can be reduced by _____ the number of levels.
a) Decreasing
b) Increasing
c) Doubling
d) Squaring

13) In On-Off keying, the carrier signal is transmitted with signal value '1' and '0' indicates _____.
a) No carrier
b) Half the carrier amplitude
c) Amplitude of modulating signal
d) None of the above

14) The probability of error of DPSK is _____ than that of BPSK.
a) Higher
b) Lower
c) Same
d) Not predictable

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Principles of Digital Communication (BTN06403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) 1) Define information rate.
2) A continuous signal is band-limited to 5 KHz. The signal is quantized in 8 levels of a PCM system with the probabilities 0.25, 0.2, 0.2, 0.1, 0.1, 0.05, 0.05 and 0.05. Calculate the entropy and the rate of information.

b) With the help of a block diagram and waveforms explain the working of the PCM system.

c) Justify Delta Modulation is a 1-bit modulation method.

d) Explain frequency shift keying. Describe the Coherent detection method of the BFSK signal.

e) Write a note on the probability of error.

Q.3 Attempt the following (Any Two) **12**

a) A transmitter has an alphabet of four letters $[x_1, x_2, x_3, x_4]$ and the receiver has an alphabet of three letters $[y_1, y_2, y_3]$. The joint probability matrix is given below. Calculate all entropies.

$$P(X,Y) = \begin{array}{c} \\ x_1 \\ x_2 \\ x_3 \\ x_4 \end{array} \begin{array}{c} \begin{array}{ccc} y_1 & y_2 & y_3 \end{array} \\ \begin{bmatrix} 0.3 & 0.05 & 0 \\ 0 & 0.25 & 0 \\ 0 & 0.15 & 0.05 \\ 0 & 0.05 & 0.15 \end{bmatrix} \end{array}$$

b) 1) Derive the expression for Bandwidth of PCM system.
2) A voice signal band limited to 3.4 KHz is sampled at 8 KHz and pulse code modulated using 64 quantization levels. Ten such signals are time division multiplexed using one 5-bit synchronizing word. Calculate the minimum channel bandwidth.

c) With the help of a block diagram and an example, explain the working of DPSK modulation and demodulation techniques.

Section – II

Q.4 Answer the following (Any Four) **16**

a) With the help of a block diagram explain the working of the QAM modulator in detail.

b) Explain any one carrier recovery technique.

c) For a (6, 3) code, the parity check matrix is as shown. Determine whether a received code vector is erroneous. The received code vector is 100101.

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

d) Explain the principle of the MSK signaling scheme.

e) Write a note on integrate and dump receiver.

Q.5 Attempt the following (Any Two) **12**

a) Write a note on QPSK transmitter and receiver.

b) With the help of block diagram explain any one method of symbol synchronization technique.

c) Given a (6, 3) linear block code with the following parity check matrix H as shown,

1) Find the generator matrix
2) Find the code word for data bit 101

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Principles of Digital Communication (BTN06403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The _____ of the code-word is the number of non-zero elements.
a) Size b) Weight
c) Distance d) Subspace

2) In coherent detection of signals _____.
a) Local carrier is generated
b) Carrier of frequency and phase as same as transmitted carrier is generated
c) The carrier is in synchronization with modulated carrier
d) All of the above

3) Linear Filter that maximizes the SNR is _____ filter?
a) Matched Filter b) Low Pass Filter
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4) Synchronization available in digital communication are _____.
a) Symbol synchronization b) Frame synchronization
c) Carrier synchronization d) All of the mentioned

5) The mutual information _____.
a) Is symmetric b) Always non-negative
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6) Entropy is _____.
a) Average information per message
b) Information in a signal
c) Amplitude of signal
d) All of the above

7) DPCM encodes the PCM values based on _____.
a) Quantization level
b) Difference between the current and predicted value
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d) None of the mentioned

8) Quantization noise occurs in _____.
a) PCM b) TDM
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a) Decreasing b) Increasing
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10) In On-Off keying, the carrier signal is transmitted with signal value '1' and '0' indicates _____.
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13) Minimum shift keying is similar to _____.
a) Continuous phase frequency shift keying
b) Binary phase shift keying
c) Binary frequency shift keying
d) QPSK

14) A cyclic code can be generated using _____.
a) Generator polynomial
b) Generator matrix
c) Generator polynomial & matrix
d) None of the mentioned

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Principles of Digital Communication (BTN06403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt the following (Any Four) **16**

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2) A continuous signal is band-limited to 5 KHz. The signal is quantized in 8 levels of a PCM system with the probabilities 0.25, 0.2, 0.2, 0.1, 0.1, 0.05, 0.05 and 0.05. Calculate the entropy and the rate of information.

b) With the help of a block diagram and waveforms explain the working of the PCM system.

c) Justify Delta Modulation is a 1-bit modulation method.

d) Explain frequency shift keying. Describe the Coherent detection method of the BFSK signal.

e) Write a note on the probability of error.

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a) A transmitter has an alphabet of four letters $[x_1, x_2, x_3, x_4]$ and the receiver has an alphabet of three letters $[y_1, y_2, y_3]$. The joint probability matrix is given below. Calculate all entropies.

$$P(X,Y) = \begin{array}{c} \\ x_1 \\ x_2 \\ x_3 \\ x_4 \end{array} \begin{array}{c} \begin{array}{ccc} y_1 & y_2 & y_3 \end{array} \\ \begin{bmatrix} 0.3 & 0.05 & 0 \\ 0 & 0.25 & 0 \\ 0 & 0.15 & 0.05 \\ 0 & 0.05 & 0.15 \end{bmatrix} \end{array}$$

b) 1) Derive the expression for Bandwidth of PCM system.
2) A voice signal band limited to 3.4 KHz is sampled at 8 KHz and pulse code modulated using 64 quantization levels. Ten such signals are time division multiplexed using one 5-bit synchronizing word. Calculate the minimum channel bandwidth.

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Section – II

Q.4 Answer the following (Any Four) **16**

a) With the help of a block diagram explain the working of the QAM modulator in detail.

b) Explain any one carrier recovery technique.

c) For a (6, 3) code, the parity check matrix is as shown. Determine whether a received code vector is erroneous. The received code vector is 100101.

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

d) Explain the principle of the MSK signaling scheme.

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c) Given a (6, 3) linear block code with the following parity check matrix H as shown,

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Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Principles of Digital Communication (BTN06403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In On-Off keying, the carrier signal is transmitted with signal value '1' and '0' indicates _____.
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- c) Doubling
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Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Principles of Digital Communication (BTN06403)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following (Any Four) **16**

a) 1) Define information rate.
2) A continuous signal is band-limited to 5 KHz. The signal is quantized in 8 levels of a PCM system with the probabilities 0.25, 0.2, 0.2, 0.1, 0.1, 0.05, 0.05 and 0.05. Calculate the entropy and the rate of information.

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e) Write a note on the probability of error.

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c) With the help of a block diagram and an example, explain the working of DPSK modulation and demodulation techniques.

Section – II

Q.4 Answer the following (Any Four) **16**

a) With the help of a block diagram explain the working of the QAM modulator in detail.

b) Explain any one carrier recovery technique.

c) For a (6, 3) code, the parity check matrix is as shown. Determine whether a received code vector is erroneous. The received code vector is 100101.

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

d) Explain the principle of the MSK signaling scheme.

e) Write a note on integrate and dump receiver.

Q.5 Attempt the following (Any Two) **12**

a) Write a note on QPSK transmitter and receiver.

b) With the help of block diagram explain any one method of symbol synchronization technique.

c) Given a (6, 3) linear block code with the following parity check matrix H as shown,

1) Find the generator matrix
2) Find the code word for data bit 101

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

SLR-GF-783

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Signals and Systems (BTN06404)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required & state the assumptions.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) $y(t) = x(t) + x(t-100)$ is _____.
a) Linear b) Casual
c) Linear and causal d) None

2) If the impulse response of discrete time is $x[n] = (4)^n\, u[3-n]$, the system is _____.
a) causal b) stable
c) stable and casual d) stable and non-casual

3) The fundamental period T of the continuous time signal je^{j5t} is _____.
a) $0.2\ \pi$ sec b) $0.4\ \pi$ sec
c) $0.3\ \pi$ sec d) $0.5\ \pi$ sec

4) The output of LTI system with input $x(t) = u(t-3)$ and impulse response $h(t) = \delta(t-1)$ is _____.
a) $u(t)$ b) $u(t-3)$
c) $u(t-4)$ d) $\delta(\mathrm{t}-3)$

5) $u(n) - u(n-1) =$ _____.
a) $u(n+1)$ b) $u(2n-1)$
c) $u(n^2-1)$ d) $\delta(n)$

6) The range of n for which the signal $u(n+2) - u(n-4)$ exists is _____.
a) -2 to 4 b) -4 to 2
c) -2 to 3 d) -3 to 2

7) The signal $x[n] = \{1, \underset{\uparrow}{3}, 3\}$ is equivalent to _____.
a) $u[n] + 2u[n-2]$ b) $u[n] - u[n-2]$
c) $\delta[n] + 3\delta[n-1] + 3\delta[n-2]$ d) none of these

8) If $m(t)$ is an even function, then its trigonometric Fourier representation has _____.
a) $a_0 = 0$ b) $a_n = 0$
c) $b_n = 0$ d) $a_n = b_n$

9) Fourier transform of unity is _____.

a) $\delta(w)$ b) $2\pi\delta(w)$

c) $\pi\delta(w)$ d) Unit step signal

10) A function having frequency f is to be sampled. The sampling time T should be _____.

a) $T = \frac{1}{2f}$ b) $T > \frac{1}{2f}$

c) $T < \frac{1}{2f}$ d) $T \geq \frac{1}{2f}$

11) Which of the following is the method used for reconstruction of signal from its samples?

a) Zero order hold b) Linear interpolation

c) Both a) and b) d) None of these

12) If $X(n)$ is casual finite duration sequence, the ROC of $X(z)$ is _____.

a) Entire z plane except $z = \infty$

b) Entire z plane except $z = 0$

c) Entire z plane except $z = 0$ and $z = \infty$

d) Entire z plane

13) Fourier transform of $\frac{dx(t)}{dt}$ is _____.

a) $x\ (j\omega)$ b) $\frac{1}{j\omega}x(j\omega)$

c) $j\omega x\ (j\omega)$ d) $e^{j\omega}x(j\omega)$

14) An LTI system is stable if and only if the ROC of its system function H(z) ____.

a) Includes unit circle b) Interior of a circle

c) Exterior of a circle d) None of these

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Signals and Systems (BTN06404)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if required & state the assumptions.

Section – I

Q.2 Solve any Four of the Followings. **16**

a) Consider the signal $x[n] = \underset{\uparrow}{\{1,2,4,3,-1\}}$ Sketch & label following signals.

1) $x[n+1]$
2) $x[n-1]$
3) $x[-n]$
4) $x[n]u[n-2]$

b) Obtain and sketch the even and odd parts of the continuous time signal $x(t)$ shown below

$$X(t) = \begin{cases} -1 & -1 \le t \le 1 \\ 1 & 1 < t \le 2 \\ 0 & \text{otherwise} \end{cases}$$

c) What is an invertible system? Determine whether the following system is invertible. If it is, construct the inverse system. If it is not find the two input signals to the system that have the same output.

$$y(t) = x(t-4)$$

d) Determine whether or not the following signal is periodic or not. If the signal is periodic determine the fundamental period.

$$x(t) = 2\cos(10t+1) - \sin(4t-1)$$

e) Consider the system whose input output relation is as given below

$$y[n] = x[n-1]$$

Determine which of the following properties hold & which does not hold by above system. Justify your answers.

1) Memory less
2) Linear
3) Causal
4) Stable

Q.3 Solve any two of the Followings. **12**

a) Compute convolution integral $x(t)$ and $h(t)$ where $x(t) = e^{-t}u(t)$ and $h(t) = u(t-1)$

b) Obtain the direct form I and direct form II realization for the described by following differential equation.

$$\frac{d}{dt}y(t) + 3y(t) = x(t)$$

c) Check whether following systems are linear / nonlinear and time variant / time invariant

1) $y(t) = \sin[x(t)]$
2) $y(n) = nx(n)$

Section – II

Q.4 Solve any Four of the followings **16**

a) Explain in brief sample with zero order hold.

b) Obtain the Fourier transform of $x(t) = e^{-3t}u(t)$

c) Determine complex exponential Fourier representation for $x(t) = \cos(4t) + \sin(6t)$

d) State and prove time shifting property of Fourier transform.

e) State the conditions for ROC of system function $H(z)$ of an LTI system to be i) Stable & ii) Causal.

Determine whether following system is stable and or causal for each of the ROC given below.

$$H(z) = \frac{z}{z-1/2} + \frac{z}{z-3}$$

1) $|z| < (1/2)$
2) $(1/2) < |z| < 3$
3) $|z| > 3$

Q.5 Solve any two of the followings **12**

a) State and explain the sampling theorem.

b) Determine the Trigonometric Fourier series representation for the signal. $x(t)$ periodic with period 2 and defined over one period as

$$x(t) = \begin{cases} -1 & -1 < t < 0 \\ 1 & 0 \le t < 1 \end{cases}$$

c) Determine Inverse Z transform of following using partial fraction expansion method.

$$X(z) = \frac{2 - \frac{5}{2}z^{-1}}{\left(1 - \frac{1}{2}z^{-1}\right)(1 - 2z^{-1})} \qquad \text{ROC} : |z| > 2$$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Signals and Systems (BTN06404)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Figures to the right indicates full marks.
4) Assume suitable data if required & state the assumptions.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) If $m(t)$ is an even function, then its trigonometric Fourier representation has _____.
a) $a_0 = 0$ b) $a_n = 0$
c) $b_n = 0$ d) $a_n = b_n$

2) Fourier transform of unity is _____.
a) $\delta(w)$ b) $2\pi\delta(w)$
c) $\pi\delta(w)$ d) Unit step signal

3) A function having frequency f is to be sampled. The sampling time T should be _____.
a) $T = \frac{1}{2f}$ b) $T > \frac{1}{2f}$
c) $T < \frac{1}{2f}$ d) $T \geq \frac{1}{2f}$

4) Which of the following is the method used for reconstruction of signal from its samples?
a) Zero order hold b) Linear interpolation
c) Both a) and b) d) None of these

5) If $X(n)$ is casual finite duration sequence, the ROC of $X(z)$ is _____.
a) Entire z plane except $z = \infty$
b) Entire z plane except $z = 0$
c) Entire z plane except $z = 0$ and $z = \infty$
d) Entire z plane

6) Fourier transform of $\frac{dx(t)}{dt}$ is _____.
a) $x\,(j\omega)$ b) $\frac{1}{j\omega}x(j\omega)$
c) $j\omega x\,(j\omega)$ d) $e^{j\omega}x(j\omega)$

7) An LTI system is stable if and only if the ROC of its system function H(z) ____.
a) Includes unit circle b) Interior of a circle
c) Exterior of a circle d) None of these

8) $y(t) = x(t) + x(t-100)$ is _____.

a) Linear b) Casual
c) Linear and causal d) None

9) If the impulse response of discrete time is $x[n] = (4)^n\, u[3-n]$, the system is _____.

a) causal b) stable
c) stable and casual d) stable and non-casual

10) The fundamental period T of the continuous time signal je^{j5t} is _____.

a) $0.2\ \pi$ sec b) $0.4\ \pi$ sec
c) $0.3\ \pi$ sec d) $0.5\ \pi$ sec

11) The output of LTI system with input $x(t) = u(t-3)$ and impulse response $h(t) = \delta(t-1)$ is _____.

a) $u(t)$ b) $u(t-3)$
c) $u(t-4)$ d) $\delta(\mathrm{t}-3)$

12) $u(n) - u(n-1) =$ _____.

a) $u(n+1)$ b) $u(2n-1)$
c) $u(n^2-1)$ d) $\delta(n)$

13) The range of n for which the signal $u(n+2) - u(n-4)$ exists is _____.

a) -2 to 4 b) -4 to 2
c) -2 to 3 d) -3 to 2

14) The signal $x[n] = \{1, 3, 3\}$ ($\uparrow$ at 1) is equivalent to _____.

a) $u[n] + 2u[n-2]$ b) $u[n] - u[n-2]$
c) $\delta[n] + 3\delta[n-1] + 3\delta[n-2]$ d) none of these

Seat No.	

Set **Q**

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Section – I

Q.2 Solve any Four of the Followings. **16**

a) Consider the signal $x[n] = \underset{\uparrow}{\{1,2,4,3,-1\}}$ Sketch & label following signals.

1) $x[n+1]$
2) $x[n-1]$
3) $x[-n]$
4) $x[n]u[n-2]$

b) Obtain and sketch the even and odd parts of the continuous time signal $x(t)$ shown below

$$X(t) = \begin{cases} -1 & -1 \le t \le 1 \\ 1 & 1 < t \le 2 \\ 0 & \text{otherwise} \end{cases}$$

c) What is an invertible system? Determine whether the following system is invertible. If it is, construct the inverse system. If it is not find the two input signals to the system that have the same output.

$$y(t) = x(t-4)$$

d) Determine whether or not the following signal is periodic or not. If the signal is periodic determine the fundamental period.

$$x(t) = 2\cos(10t+1) - \sin(4t-1)$$

e) Consider the system whose input output relation is as given below

$$y[n] = x[n-1]$$

Determine which of the following properties hold & which does not hold by above system. Justify your answers.

1) Memory less
2) Linear
3) Causal
4) Stable

Q.3 Solve any two of the Followings. **12**

a) Compute convolution integral $x(t)$ and $h(t)$ where $x(t) = e^{-t}u(t)$ and $h(t) = u(t-1)$

b) Obtain the direct form I and direct form II realization for the described by following differential equation.

$$\frac{d}{dt}y(t) + 3y(t) = x(t)$$

c) Check whether following systems are linear / nonlinear and time variant / time invariant

1) $y(t) = \sin[x(t)]$
2) $y(n) = nx(n)$

Section – II

Q.4 Solve any Four of the followings **16**

a) Explain in brief sample with zero order hold.

b) Obtain the Fourier transform of $x(t) = e^{-3t}u(t)$

c) Determine complex exponential Fourier representation for $x(t) = \cos(4t) + \sin(6t)$

d) State and prove time shifting property of Fourier transform.

e) State the conditions for ROC of system function $H(z)$ of an LTI system to be i) Stable & ii) Causal.

Determine whether following system is stable and or causal for each of the ROC given below.

$$H(z) = \frac{z}{z-1/2} + \frac{z}{z-3}$$

1) $|z| < (1/2)$
2) $(1/2) < |z| < 3$
3) $|z| > 3$

Q.5 Solve any two of the followings **12**

a) State and explain the sampling theorem.

b) Determine the Trigonometric Fourier series representation for the signal. $x(t)$ periodic with period 2 and defined over one period as

$$x(t) = \begin{cases} -1 & -1 < t < 0 \\ 1 & 0 \le t < 1 \end{cases}$$

c) Determine Inverse Z transform of following using partial fraction expansion method.

$$X(z) = \frac{2 - \frac{5}{2}z^{-1}}{\left(1 - \frac{1}{2}z^{-1}\right)(1 - 2z^{-1})} \qquad \text{ROC} : |z| > 2$$

Seat No.	

Set **R**

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Which of the following is the method used for reconstruction of signal from its samples?
a) Zero order hold b) Linear interpolation
c) Both a) and b) d) None of these

2) If $X(n)$ is casual finite duration sequence, the ROC of $X(z)$ is _____.
a) Entire z plane except $z = \infty$
b) Entire z plane except $z = 0$
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5) $y(t) = x(t) + x(t - 100)$ is _____.
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$$y(t) = x(t-4)$$

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Determine which of the following properties hold & which does not hold by above system. Justify your answers.

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Section – II

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Section – II

Q.4 Solve any Four of the followings **16**

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a) State and explain the sampling theorem.

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Seat No.	

Set P

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Stack follows the strategy of _____.
a) LIFO b) FIFO
c) LRU d) RANDOM

2) Which data structure is used to perform recursion?
a) Queue b) Stack
c) Linked list d) Tree

3) Factorial(0) is _____.
a) 0 b) 1
c) Infinity d) Undefined

4) The result of Evaluating Following Postfix Expression is
5, 7, 9, *, +,4, 9,3,/, +, -
a) 50 b) 65
c) 61 d) 69

5) _____ is the application of stack.
a) Execution of subprogram b) Conversion of infix to postfix
c) Both a) & b) d) None of the above

6) How is an array initialized in C language?
a) int a[3] ={1,2,3} b) int a ={1,2,3}
c) int a[] =new int[3] d) int a(3) =[1,2,3]

7) If the elements "A", "B", "C" and "D" are placed in a queue and are deleted one at a time, in what order will they be removed?
a) ABCD b) DCBA
c) DCAB d) ABDC

8) What is the time complexity to count the number of elements in the linked list?
a) O(1) b) O(N)
c) O(logn) d) None of the above

9) Linked list data structure offers considerable saving in _____.
a) Computational Time
b) Space Utilization
c) Space Utilization and Computational Time
d) None of the mentioned

10) Which of the following is non-liner data structure?
a) Stack
b) List
c) Strings
d) Trees

11) In the _____ traversal we process all of a vertex's descendants before we move to an adjacent vertex.
a) Depth First
b) Breadth First
c) With First
d) Depth Limited

12) _____ Is a directed tree in which outdegree of each node is less than or equal to two.
a) Unary tree
b) Binary tree
c) Trinary tree
d) Both B and C

13) Perfect Hash function gives unique address for each key but practically it is not possible hence _____ occurs.
a) Complexity
b) Collision
c) Disorder
d) None of the above

14) In Bubble sort Single Run of comparing data items in an array is known as ____.
a) Pass
b) Line
c) Shift
d) None of the above

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Section – I

Q.2 Solve any four of the following. **16**

a) Explain difference between static memory allocation and dynamic memory allocation.
b) Evaluate the given postfix expression: $42\text{^}3*3 - 8\ 4/1\ 1\ +/+$.
c) Explain stack with its operation. List out application of stack.
d) Explain queue with its operation. List out application of queue.
e) What is difference between linear and binary search? Explain with example.

Q.3 Solve any two of the following. **12**

a) Write a C Program to implement stack using array.
b) How to convert infix expression into postfix expression? Convert following infix expression into postfix.
A *(B+C)-D/E.
c) Write a C Program to implement linear queue using array and perform the following operation
1) enqueue
2) dequeue
3) queue display
4) queue empty
5) queue full

Section – II

Q.4 Solve any four of the following. **16**

a) Explain Singly linked list with deletion operation.
b) Explain representation Doubly linked list with example.
c) Explain Threaded Binary Tree.
d) Draw binary search tree for following input.
42 23 74 11 65 54
e) Define Hash function. Explain types of Hash functions with example.

Q.5 Solve any two of the following. **12**

a) Explain Linked representation of queue.
b) What is Graph and explain basic Terminologies and representation.
c) What is Merge sort and Sort the list of numbers using Merge sort.
10,1,9,11,46,20,15,0,72,2

Seat No.	

Set **Q**

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2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) What is the time complexity to count the number of elements in the linked list?
a) O(1) b) O(N)
c) O(logn) d) None of the above

2) Linked list data structure offers considerable saving in _____.
a) Computational Time
b) Space Utilization
c) Space Utilization and Computational Time
d) None of the mentioned

3) Which of the following is non-liner data structure?
a) Stack b) List
c) Strings d) Trees

4) In the _____ traversal we process all of a vertex's descendants before we move to an adjacent vertex.
a) Depth First b) Breadth First
c) With First d) Depth Limited

5) _____ Is a directed tree in which outdegree of each node is less than or equal to two.
a) Unary tree b) Binary tree
c) Trinary tree d) Both B and C

6) Perfect Hash function gives unique address for each key but practically it is not possible hence _____ occurs.
a) Complexity b) Collision
c) Disorder d) None of the above

7) In Bubble sort Single Run of comparing data items in an array is known as ____.
a) Pass b) Line
c) Shift d) None of the above

8) Stack follows the strategy of _____.
a) LIFO b) FIFO
c) LRU d) RANDOM

9) Which data structure is used to perform recursion?
a) Queue b) Stack
c) Linked list d) Tree

10) Factorial(0) is _____.
a) 0 b) 1
c) Infinity d) Undefined

11) The result of Evaluating Following Postfix Expression is
5, 7, 9, *, +,4, 9,3,/, +, -
a) 50 b) 65
c) 61 d) 69

12) _____ is the application of stack.
a) Execution of subprogram b) Conversion of infix to postfix
c) Both a) & b) d) None of the above

13) How is an array initialized in C language?
a) int a[3] ={1,2,3} b) int a ={1,2,3}
c) int a[] =new int[3] d) int a(3) =[1,2,3]

14) If the elements “A”, “B”, “C” and “D” are placed in a queue and are deleted one at a time, in what order will they be removed?
a) ABCD b) DCBA
c) DCAB d) ABDC

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Structures (BTN06405)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Explain difference between static memory allocation and dynamic memory allocation.
b) Evaluate the given postfix expression: $42\text{^}3*3 - 8\ 4/1\ 1\ +/+$.
c) Explain stack with its operation. List out application of stack.
d) Explain queue with its operation. List out application of queue.
e) What is difference between linear and binary search? Explain with example.

Q.3 Solve any two of the following. **12**

a) Write a C Program to implement stack using array.
b) How to convert infix expression into postfix expression? Convert following infix expression into postfix.
A *(B+C)-D/E.
c) Write a C Program to implement linear queue using array and perform the following operation
1) enqueue
2) dequeue
3) queue display
4) queue empty
5) queue full

Section – II

Q.4 Solve any four of the following. **16**

a) Explain Singly linked list with deletion operation.
b) Explain representation Doubly linked list with example.
c) Explain Threaded Binary Tree.
d) Draw binary search tree for following input.
42 23 74 11 65 54
e) Define Hash function. Explain types of Hash functions with example.

Q.5 Solve any two of the following. **12**

a) Explain Linked representation of queue.
b) What is Graph and explain basic Terminologies and representation.
c) What is Merge sort and Sort the list of numbers using Merge sort.
10,1,9,11,46,20,15,0,72,2

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Structures (BTN06405)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) In the _____ traversal we process all of a vertex's descendants before we move to an adjacent vertex.
a) Depth First b) Breadth First
c) With First d) Depth Limited

2) _____ Is a directed tree in which outdegree of each node is less than or equal to two.
a) Unary tree b) Binary tree
c) Trinary tree d) Both B and C

3) Perfect Hash function gives unique address for each key but practically it is not possible hence _____ occurs.
a) Complexity b) Collision
c) Disorder d) None of the above

4) In Bubble sort Single Run of comparing data items in an array is known as ____.
a) Pass b) Line
c) Shift d) None of the above

5) Stack follows the strategy of _____.
a) LIFO b) FIFO
c) LRU d) RANDOM

6) Which data structure is used to perform recursion?
a) Queue b) Stack
c) Linked list d) Tree

7) Factorial(0) is _____.
a) 0 b) 1
c) Infinity d) Undefined

8) The result of Evaluating Following Postfix Expression is
5, 7, 9, *, +,4, 9,3,/, +, -
a) 50 b) 65
c) 61 d) 69

9) _____ is the application of stack.

a) Execution of subprogram
b) Conversion of infix to postfix
c) Both a) & b)
d) None of the above

10) How is an array initialized in C language?

a) int a[3] ={1,2,3}
b) int a ={1,2,3}
c) int a[] =new int[3]
d) int a(3) =[1,2,3]

11) If the elements “A”, “B”, “C” and “D” are placed in a queue and are deleted one at a time, in what order will they be removed?

a) ABCD
b) DCBA
c) DCAB
d) ABDC

12) What is the time complexity to count the number of elements in the linked list?

a) O(1)
b) O(N)
c) O(logn)
d) None of the above

13) Linked list data structure offers considerable saving in _____.

a) Computational Time
b) Space Utilization
c) Space Utilization and Computational Time
d) None of the mentioned

14) Which of the following is non-liner data structure?

a) Stack
b) List
c) Strings
d) Trees

SLR-GF-784

Seat No.	

Set R

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Structures (BTN06405)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Explain difference between static memory allocation and dynamic memory allocation.
b) Evaluate the given postfix expression: $42\text{^}3*3 - 8\ 4/1\ 1\ +/+$.
c) Explain stack with its operation. List out application of stack.
d) Explain queue with its operation. List out application of queue.
e) What is difference between linear and binary search? Explain with example.

Q.3 Solve any two of the following. **12**

a) Write a C Program to implement stack using array.
b) How to convert infix expression into postfix expression? Convert following infix expression into postfix.
A *(B+C)-D/E.
c) Write a C Program to implement linear queue using array and perform the following operation
1) enqueue
2) dequeue
3) queue display
4) queue empty
5) queue full

Section – II

Q.4 Solve any four of the following. **16**

a) Explain Singly linked list with deletion operation.
b) Explain representation Doubly linked list with example.
c) Explain Threaded Binary Tree.
d) Draw binary search tree for following input.
42 23 74 11 65 54
e) Define Hash function. Explain types of Hash functions with example.

Q.5 Solve any two of the following. **12**

a) Explain Linked representation of queue.
b) What is Graph and explain basic Terminologies and representation.
c) What is Merge sort and Sort the list of numbers using Merge sort.
10,1,9,11,46,20,15,0,72,2

SLR-GF-784

Seat No.	

Set S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Structures (BTN06405)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) How is an array initialized in C language?
a) int a[3] ={1,2,3} b) int a ={1,2,3}
c) int a[] =new int[3] d) int a(3) =[1,2,3]

2) If the elements "A", "B", "C" and "D" are placed in a queue and are deleted one at a time, in what order will they be removed?
a) ABCD b) DCBA
c) DCAB d) ABDC

3) What is the time complexity to count the number of elements in the linked list?
a) O(1) b) O(N)
c) O(logn) d) None of the above

4) Linked list data structure offers considerable saving in _____.
a) Computational Time
b) Space Utilization
c) Space Utilization and Computational Time
d) None of the mentioned

5) Which of the following is non-liner data structure?
a) Stack b) List
c) Strings d) Trees

6) In the _____ traversal we process all of a vertex's descendants before we move to an adjacent vertex.
a) Depth First b) Breadth First
c) With First d) Depth Limited

7) _____ Is a directed tree in which outdegree of each node is less than or equal to two.
a) Unary tree b) Binary tree
c) Trinary tree d) Both B and C

8) Perfect Hash function gives unique address for each key but practically it is not possible hence _____ occurs.

a) Complexity b) Collision
c) Disorder d) None of the above

9) In Bubble sort Single Run of comparing data items in an array is known as ____.

a) Pass b) Line
c) Shift d) None of the above

10) Stack follows the strategy of _____.

a) LIFO b) FIFO
c) LRU d) RANDOM

11) Which data structure is used to perform recursion?

a) Queue b) Stack
c) Linked list d) Tree

12) Factorial(0) is _____.

a) 0 b) 1
c) Infinity d) Undefined

13) The result of Evaluating Following Postfix Expression is
5, 7, 9, *, +,4, 9,3,/, +, -

a) 50 b) 65
c) 61 d) 69

14) _____ is the application of stack.

a) Execution of subprogram b) Conversion of infix to postfix
c) Both a) & b) d) None of the above

SLR-GF-784

Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Data Structures (BTN06405)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four of the following. **16**

a) Explain difference between static memory allocation and dynamic memory allocation.
b) Evaluate the given postfix expression: $42\text{^}3*3 - 8\ 4/1\ 1\ +/+$.
c) Explain stack with its operation. List out application of stack.
d) Explain queue with its operation. List out application of queue.
e) What is difference between linear and binary search? Explain with example.

Q.3 Solve any two of the following. **12**

a) Write a C Program to implement stack using array.
b) How to convert infix expression into postfix expression? Convert following infix expression into postfix.
A *(B+C)-D/E.
c) Write a C Program to implement linear queue using array and perform the following operation
1) enqueue
2) dequeue
3) queue display
4) queue empty
5) queue full

Section – II

Q.4 Solve any four of the following. **16**

a) Explain Singly linked list with deletion operation.
b) Explain representation Doubly linked list with example.
c) Explain Threaded Binary Tree.
d) Draw binary search tree for following input.
42 23 74 11 65 54
e) Define Hash function. Explain types of Hash functions with example.

Q.5 Solve any two of the following. **12**

a) Explain Linked representation of queue.
b) What is Graph and explain basic Terminologies and representation.
c) What is Merge sort and Sort the list of numbers using Merge sort.
10,1,9,11,46,20,15,0,72,2

SLR-GF-785

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Mutually Exclusive events _____.
a) Contain all sample points
b) Contain all common sample points
c) Does not contain any sample point
d) Does not contain any common sample point

2) What is the probability of getting a number greater than 6 on dice?
a) 1 b) 1/3
c) 1/2 d) 0

3) _____ is an incredibly powerful tool for analysing data.
a) Linear regression b) Logistic regression
c) Gradient Descent d) Greedy algorithms

4) A die is thrown once. What is the probability that the score is a factor of 6?
a) 1/6 b) 1/2
c) 2/3 d) 1

5) The matrix which follows the conditions m=n is called?
a) Square matrix b) Rectangular matrix
c) Scalar matrix d) Diagonal matrix

6) How many coefficients do you need to estimate in a simple linear regression model (One independent variable)?
a) 1 b) 2
c) 3 d) 4

7) How many outcomes are possible when drawing a card from deck of cards?
a) 1 b) 13
c) 52 d) 26

8) PCA reduce dimensionality of the data using feature extraction.
a) True b) False

9) What is Machine learning?
a) The autonomous acquisition of knowledge through the use of computer programs
b) The autonomous acquisition of knowledge through the use of manual programs
c) The selective acquisition of knowledge through the use of computer programs
d) The selective acquisition of knowledge through the use of manual programs

10) In the regression equation Y = 75.65 + 0.50X, the intercept is _____.
a) 0.50
b) 75.65
c) 1.00
d) indeterminable

11) Identify the type of learning in which labelled training data is used.
a) Semi supervised
b) Supervised learning
c) Reinforcement learning
d) Unsupervised learning

12) Which of the following are common classes of problems in machine learning?
a) Regression
b) Classification
c) Clustering
d) All of above

13) Choose a disadvantage of decision trees among the following.
a) Decision trees are robust to outliers
b) Factor analysis
c) Decision trees are prone to overfit
d) All of above

14) What will happen when eigenvalues are roughly equal?
a) PCA will perform outstandingly
b) PCA will perform badly
c) Can’t Say
d) None of above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Solve any four questions. **16**

a) From a standard deck of playing cards, a single card is drawn. The probability that the card is king is 4/52, then calculate posterior probability P(King|Face), which means the drawn face card is a king card.
b) Describe Gaussian distribution
c) Solve following using Substitute method.
$2x - 3y = -2 \qquad 4x + y = 24$
d) Determine rank of 4 * 4 checkerboard matrix.
e) Write short note on linear regression model.

Q.3 Solve any two questions. **12**

a) State and Explain Bayes Theorem with its formula and applications.
b) Solve following system of linear equation using Matrix method.
$3x + y + z = 1, 2x + 2z = 0, 5x + y + 2z = 2.$
c) Sunil Chhetri is best Indian Soccer Player. He loves being Goalkeeper. But that depends on coach, (a) with coach Ashley probability of being Goalkeeper is 0.5 (b) with coach Khalid probability of being Goalkeeper is 0.3. Ashley is coach more often about 6 out of every 10. So, what is probability that Sunil will be goalkeeper today?

Section – II

Q.4 Solve any four questions. **16**

a) Explain steps in PCA
b) Explain backward feature elimination technique for dimensionality reduction
c) Explain in short applications of machine learning.
d) Differentiate between Supervised, Unsupervised and Reinforcement Learning.
e) Differentiate between Training data and Testing data.

Q.5 Solve any two questions. **12**

a) Explain overfitting and underfitting in detail with an example.
b) What is Bias, Variance and what do you mean by Bias-Variance Tradeoff? And differentiate between overfitting & Underfitting.
c) Explain various issues in machine learning.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) PCA reduce dimensionality of the data using feature extraction.
a) True b) False

2) What is Machine learning?
a) The autonomous acquisition of knowledge through the use of computer programs
b) The autonomous acquisition of knowledge through the use of manual programs
c) The selective acquisition of knowledge through the use of computer programs
d) The selective acquisition of knowledge through the use of manual programs

3) In the regression equation Y = 75.65 + 0.50X, the intercept is _____.
a) 0.50 b) 75.65
c) 1.00 d) indeterminable

4) Identify the type of learning in which labelled training data is used.
a) Semi supervised
b) Supervised learning
c) Reinforcement learning
d) Unsupervised learning

5) Which of the following are common classes of problems in machine learning?
a) Regression b) Classification
c) Clustering d) All of above

6) Choose a disadvantage of decision trees among the following.
a) Decision trees are robust to outliers
b) Factor analysis
c) Decision trees are prone to overfit
d) All of above

7) What will happen when eigenvalues are roughly equal?
a) PCA will perform outstandingly b) PCA will perform badly
c) Can't Say d) None of above

8) Mutually Exclusive events _____.
a) Contain all sample points
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9) What is the probability of getting a number greater than 6 on dice?
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10) _____ is an incredibly powerful tool for analysing data.
a) Linear regression b) Logistic regression
c) Gradient Descent d) Greedy algorithms

11) A die is thrown once. What is the probability that the score is a factor of 6?
a) 1/6 b) 1/2
c) 2/3 d) 1

12) The matrix which follows the conditions m=n is called?
a) Square matrix b) Rectangular matrix
c) Scalar matrix d) Diagonal matrix

13) How many coefficients do you need to estimate in a simple linear regression model (One independent variable)?
a) 1 b) 2
c) 3 d) 4

14) How many outcomes are possible when drawing a card from deck of cards?
a) 1 b) 13
c) 52 d) 26

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Solve any four questions. **16**

a) From a standard deck of playing cards, a single card is drawn. The probability that the card is king is 4/52, then calculate posterior probability P(King|Face), which means the drawn face card is a king card.
b) Describe Gaussian distribution
c) Solve following using Substitute method.
$2x - 3y = -2 \qquad 4x + y = 24$
d) Determine rank of 4 * 4 checkerboard matrix.
e) Write short note on linear regression model.

Q.3 Solve any two questions. **12**

a) State and Explain Bayes Theorem with its formula and applications.
b) Solve following system of linear equation using Matrix method.
$3x + y + z = 1, 2x + 2z = 0, 5x + y + 2z = 2.$
c) Sunil Chhetri is best Indian Soccer Player. He loves being Goalkeeper. But that depends on coach, (a) with coach Ashley probability of being Goalkeeper is 0.5 (b) with coach Khalid probability of being Goalkeeper is 0.3. Ashley is coach more often about 6 out of every 10. So, what is probability that Sunil will be goalkeeper today?

Section – II

Q.4 Solve any four questions. **16**

a) Explain steps in PCA
b) Explain backward feature elimination technique for dimensionality reduction
c) Explain in short applications of machine learning.
d) Differentiate between Supervised, Unsupervised and Reinforcement Learning.
e) Differentiate between Training data and Testing data.

Q.5 Solve any two questions. **12**

a) Explain overfitting and underfitting in detail with an example.
b) What is Bias, Variance and what do you mean by Bias-Variance Tradeoff? And differentiate between overfitting & Underfitting.
c) Explain various issues in machine learning.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Identify the type of learning in which labelled training data is used.
a) Semi supervised
b) Supervised learning
c) Reinforcement learning
d) Unsupervised learning

2) Which of the following are common classes of problems in machine learning?
a) Regression b) Classification
c) Clustering d) All of above

3) Choose a disadvantage of decision trees among the following.
a) Decision trees are robust to outliers
b) Factor analysis
c) Decision trees are prone to overfit
d) All of above

4) What will happen when eigenvalues are roughly equal?
a) PCA will perform outstandingly b) PCA will perform badly
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5) Mutually Exclusive events _____.
a) Contain all sample points
b) Contain all common sample points
c) Does not contain any sample point
d) Does not contain any common sample point

6) What is the probability of getting a number greater than 6 on dice?
a) 1 b) 1/3
c) 1/2 d) 0

7) _____ is an incredibly powerful tool for analysing data.
a) Linear regression b) Logistic regression
c) Gradient Descent d) Greedy algorithms

8) A die is thrown once. What is the probability that the score is a factor of 6?

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9) The matrix which follows the conditions m=n is called?

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c) Scalar matrix d) Diagonal matrix

10) How many coefficients do you need to estimate in a simple linear regression model (One independent variable)?

a) 1 b) 2
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11) How many outcomes are possible when drawing a card from deck of cards?

a) 1 b) 13
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12) PCA reduce dimensionality of the data using feature extraction.

a) True b) False

13) What is Machine learning?

a) The autonomous acquisition of knowledge through the use of computer programs
b) The autonomous acquisition of knowledge through the use of manual programs
c) The selective acquisition of knowledge through the use of computer programs
d) The selective acquisition of knowledge through the use of manual programs

14) In the regression equation Y = 75.65 + 0.50X, the intercept is _____.

a) 0.50 b) 75.65
c) 1.00 d) indeterminable

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Solve any four questions. **16**

a) From a standard deck of playing cards, a single card is drawn. The probability that the card is king is 4/52, then calculate posterior probability P(King|Face), which means the drawn face card is a king card.
b) Describe Gaussian distribution
c) Solve following using Substitute method.
$2x - 3y = -2 \qquad 4x + y = 24$
d) Determine rank of 4 * 4 checkerboard matrix.
e) Write short note on linear regression model.

Q.3 Solve any two questions. **12**

a) State and Explain Bayes Theorem with its formula and applications.
b) Solve following system of linear equation using Matrix method.
$3x + y + z = 1, 2x + 2z = 0, 5x + y + 2z = 2.$
c) Sunil Chhetri is best Indian Soccer Player. He loves being Goalkeeper. But that depends on coach, (a) with coach Ashley probability of being Goalkeeper is 0.5 (b) with coach Khalid probability of being Goalkeeper is 0.3. Ashley is coach more often about 6 out of every 10. So, what is probability that Sunil will be goalkeeper today?

Section – II

Q.4 Solve any four questions. **16**

a) Explain steps in PCA
b) Explain backward feature elimination technique for dimensionality reduction
c) Explain in short applications of machine learning.
d) Differentiate between Supervised, Unsupervised and Reinforcement Learning.
e) Differentiate between Training data and Testing data.

Q.5 Solve any two questions. **12**

a) Explain overfitting and underfitting in detail with an example.
b) What is Bias, Variance and what do you mean by Bias-Variance Tradeoff? And differentiate between overfitting & Underfitting.
c) Explain various issues in machine learning.

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) How many coefficients do you need to estimate in a simple linear regression model (One independent variable)?
a) 1 b) 2
c) 3 d) 4

2) How many outcomes are possible when drawing a card from deck of cards?
a) 1 b) 13
c) 52 d) 26

3) PCA reduce dimensionality of the data using feature extraction.
a) True b) False

4) What is Machine learning?
a) The autonomous acquisition of knowledge through the use of computer programs
b) The autonomous acquisition of knowledge through the use of manual programs
c) The selective acquisition of knowledge through the use of computer programs
d) The selective acquisition of knowledge through the use of manual programs

5) In the regression equation Y = 75.65 + 0.50X, the intercept is _____.
a) 0.50 b) 75.65
c) 1.00 d) indeterminable

6) Identify the type of learning in which labelled training data is used.
a) Semi supervised
b) Supervised learning
c) Reinforcement learning
d) Unsupervised learning

7) Which of the following are common classes of problems in machine learning?

a) Regression
b) Classification
c) Clustering
d) All of above

8) Choose a disadvantage of decision trees among the following.

a) Decision trees are robust to outliers
b) Factor analysis
c) Decision trees are prone to overfit
d) All of above

9) What will happen when eigenvalues are roughly equal?

a) PCA will perform outstandingly
b) PCA will perform badly
c) Can't Say
d) None of above

10) Mutually Exclusive events _____.

a) Contain all sample points
b) Contain all common sample points
c) Does not contain any sample point
d) Does not contain any common sample point

11) What is the probability of getting a number greater than 6 on dice?

a) 1
b) 1/3
c) 1/2
d) 0

12) _____ is an incredibly powerful tool for analysing data.

a) Linear regression
b) Logistic regression
c) Gradient Descent
d) Greedy algorithms

13) A die is thrown once. What is the probability that the score is a factor of 6?

a) 1/6
b) 1/2
c) 2/3
d) 1

14) The matrix which follows the conditions m=n is called?

a) Square matrix
b) Rectangular matrix
c) Scalar matrix
d) Diagonal matrix

SLR-GF-785

Seat No.	

Set S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Computational Statistics (BTN04407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Solve any four questions. **16**

a) From a standard deck of playing cards, a single card is drawn. The probability that the card is king is 4/52, then calculate posterior probability P(King|Face), which means the drawn face card is a king card.
b) Describe Gaussian distribution
c) Solve following using Substitute method.
$2x - 3y = -2 \qquad 4x + y = 24$
d) Determine rank of 4 * 4 checkerboard matrix.
e) Write short note on linear regression model.

Q.3 Solve any two questions. **12**

a) State and Explain Bayes Theorem with its formula and applications.
b) Solve following system of linear equation using Matrix method.
$3x + y + z = 1, 2x + 2z = 0, 5x + y + 2z = 2.$
c) Sunil Chhetri is best Indian Soccer Player. He loves being Goalkeeper. But that depends on coach, (a) with coach Ashley probability of being Goalkeeper is 0.5 (b) with coach Khalid probability of being Goalkeeper is 0.3. Ashley is coach more often about 6 out of every 10. So, what is probability that Sunil will be goalkeeper today?

Section – II

Q.4 Solve any four questions. **16**

a) Explain steps in PCA
b) Explain backward feature elimination technique for dimensionality reduction
c) Explain in short applications of machine learning.
d) Differentiate between Supervised, Unsupervised and Reinforcement Learning.
e) Differentiate between Training data and Testing data.

Q.5 Solve any two questions. **12**

a) Explain overfitting and underfitting in detail with an example.
b) What is Bias, Variance and what do you mean by Bias-Variance Tradeoff? And differentiate between overfitting & Underfitting.
c) Explain various issues in machine learning.

Seat No.	

Set | P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) DDL stands for
a) Data declaration language
b) Declaration data language
c) Document declaration language
d) Data definition language

2) Updating database means
a) Revising the file structure b) recognizing the database
c) Modifying or adding record d) All of above

3) What key distinctly identifies a record in a database table?
a) Main key b) Primary key
c) Principal Key d) Major Key

4) E-R model uses this symbol to represent weak entity set?
a) Dotted rectangle b) Diamond
c) doubly outlined rectangle d) none of these

5) Key to represent relationship between tables is called
a) Primary key b) Secondary Key
c) Foreign Key d) None of theses

6) Relational Algebra is
a) Data Definition Language. b) Meta Language
c) Procedural query Language d) None of theses

7) A relation which is in a higher normal form
a) Implies that it also qualifies to be in lower normal form
b) Does not necessarily satisfy the conditions of lower normal form
c) is included in the lower normal form
d) is independent of lower normal forms

8) If more than one value of B is present for a single value of A in a dependency A -> B, then the relationship is _____.
a) Single b) Multi-valued
c) Both a and b d) None of theses

9) Which of the following makes the transaction permanent in the database?
a) View b) Commit
c) Rollback d) Flashback

10) Which of the following is not an integrity constraint?
a) Not null b) Positive
c) Unique d) Check ‘predicate’

11) Which of the following is the syntax for views where v is view name?
a) Create view v as “query name”;
b) Create “query expression” as view;
c) Create view v as “query expression”;
d) Create view “query expression”;

12) The database administrator who authorizes all the new users, modifies the database and takes grants privilege is
a) Super user b) Administrator
c) Operator of operating system d) All of the mentioned

13) Key value pairs is usually seen in
a) Hash tables b) Heaps
c) Both Hash tables and Heaps d) Skip list

14) The deadlock state can be changed back to stable state by using _____ statement.
a) Commit b) Rollback
c) Savepoint d) Deadlock

Seat No.		Set	P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt any four questions. **16**

a) What is DBMS? And explain the purpose of database system?
b) Draw Company Database E-R diagram & explain each components in details.
c) Explain with proper example following Relational algebra Operations.
A) Select b) Project c) Union d) Set- Difference
d) Explain Basic SQL clauses with example.
e) Explain Database Architecture in detail with diagram.

Q.3 Attempt any two questions. **12**

a) Enlist & explain extended ER features.
b) Which are the Types of SQL Commands? Explain in detail with suitable example.
c) Write in brief about the different Integrity construction in SQL.

Section - II

Q.4 Attempt any four questions. **16**

a) Write a short note on Nested subqueries with example.
b) Write Features of good Relational Designs.
c) What are the difference between B^+ tree and B tree index files?
d) Explain the transaction states with neat diagram.
e) What do you mean by Concurrency control? Explain it.

Q.5 Attempt any two questions. **12**

a) Explain different Aggregate operations in SQL.
b) List the ACID properties and explain each property in detail with a suitable example.
c) Define and explain 2NF, 3NF, BCNF.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) If more than one value of B is present for a single value of A in a dependency A -> B, then the relationship is _____.
a) Single b) Multi-valued
c) Both a and b d) None of theses

2) Which of the following makes the transaction permanent in the database?
a) View b) Commit
c) Rollback d) Flashback

3) Which of the following is not an integrity constraint?
a) Not null b) Positive
c) Unique d) Check 'predicate'

4) Which of the following is the syntax for views where v is view name?
a) Create view v as "query name";
b) Create "query expression" as view;
c) Create view v as "query expression";
d) Create view "query expression";

5) The database administrator who authorizes all the new users, modifies the database and takes grants privilege is
a) Super user b) Administrator
c) Operator of operating system d) All of the mentioned

6) Key value pairs is usually seen in
a) Hash tables b) Heaps
c) Both Hash tables and Heaps d) Skip list

7) The deadlock state can be changed back to stable state by using _____ statement.
a) Commit b) Rollback
c) Savepoint d) Deadlock

8) DDL stands for
a) Data declaration language
b) Declaration data language
c) Document declaration language
d) Data definition language

9) Updating database means
a) Revising the file structure
b) recognizing the database
c) Modifying or adding record
d) All of above

10) What key distinctly identifies a record in a database table?
a) Main key
b) Primary key
c) Principal Key
d) Major Key

11) E-R model uses this symbol to represent weak entity set?
a) Dotted rectangle
b) Diamond
c) doubly outlined rectangle
d) none of these

12) Key to represent relationship between tables is called
a) Primary key
b) Secondary Key
c) Foreign Key
d) None of theses

13) Relational Algebra is
a) Data Definition Language.
b) Meta Language
c) Procedural query Language
d) None of theses

14) A relation which is in a higher normal form
a) Implies that it also qualifies to be in lower normal form
b) Does not necessarily satisfy the conditions of lower normal form
c) is included in the lower normal form
d) is independent of lower normal forms

Seat No.		Set	Q

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt any four questions. **16**

a) What is DBMS? And explain the purpose of database system?
b) Draw Company Database E-R diagram & explain each components in details.
c) Explain with proper example following Relational algebra Operations.
A) Select b) Project c) Union d) Set- Difference
d) Explain Basic SQL clauses with example.
e) Explain Database Architecture in detail with diagram.

Q.3 Attempt any two questions. **12**

a) Enlist & explain extended ER features.
b) Which are the Types of SQL Commands? Explain in detail with suitable example.
c) Write in brief about the different Integrity construction in SQL.

Section - II

Q.4 Attempt any four questions. **16**

a) Write a short note on Nested subqueries with example.
b) Write Features of good Relational Designs.
c) What are the difference between B^+ tree and B tree index files?
d) Explain the transaction states with neat diagram.
e) What do you mean by Concurrency control? Explain it.

Q.5 Attempt any two questions. **12**

a) Explain different Aggregate operations in SQL.
b) List the ACID properties and explain each property in detail with a suitable example.
c) Define and explain 2NF, 3NF, BCNF.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which of the following is the syntax for views where v is view name?
a) Create view v as "query name";
b) Create "query expression" as view;
c) Create view v as "query expression";
d) Create view "query expression";

2) The database administrator who authorizes all the new users, modifies the database and takes grants privilege is
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13) Which of the following makes the transaction permanent in the database?
a) View b) Commit
c) Rollback d) Flashback

14) Which of the following is not an integrity constraint?
a) Not null b) Positive
c) Unique d) Check 'predicate'

Seat No.		Set	R

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt any four questions. **16**

a) What is DBMS? And explain the purpose of database system?
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d) Explain Basic SQL clauses with example.
e) Explain Database Architecture in detail with diagram.

Q.3 Attempt any two questions. **12**

a) Enlist & explain extended ER features.
b) Which are the Types of SQL Commands? Explain in detail with suitable example.
c) Write in brief about the different Integrity construction in SQL.

Section - II

Q.4 Attempt any four questions. **16**

a) Write a short note on Nested subqueries with example.
b) Write Features of good Relational Designs.
c) What are the difference between B^+ tree and B tree index files?
d) Explain the transaction states with neat diagram.
e) What do you mean by Concurrency control? Explain it.

Q.5 Attempt any two questions. **12**

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b) List the ACID properties and explain each property in detail with a suitable example.
c) Define and explain 2NF, 3NF, BCNF.

Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Relational Algebra is
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2) A relation which is in a higher normal form
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3) If more than one value of B is present for a single value of A in a dependency A -> B, then the relationship is _____.
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c) Principal Key d) Major Key

13) E-R model uses this symbol to represent weak entity set?
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c) doubly outlined rectangle d) none of these

14) Key to represent relationship between tables is called
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c) Foreign Key d) None of theses

SLR-GF-786

Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Database Management Systems (BTN04408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt any four questions. **16**

a) What is DBMS? And explain the purpose of database system?
b) Draw Company Database E-R diagram & explain each components in details.
c) Explain with proper example following Relational algebra Operations.
A) Select b) Project c) Union d) Set- Difference
d) Explain Basic SQL clauses with example.
e) Explain Database Architecture in detail with diagram.

Q.3 Attempt any two questions. **12**

a) Enlist & explain extended ER features.
b) Which are the Types of SQL Commands? Explain in detail with suitable example.
c) Write in brief about the different Integrity construction in SQL.

Section - II

Q.4 Attempt any four questions. **16**

a) Write a short note on Nested subqueries with example.
b) Write Features of good Relational Designs.
c) What are the difference between B^+ tree and B tree index files?
d) Explain the transaction states with neat diagram.
e) What do you mean by Concurrency control? Explain it.

Q.5 Attempt any two questions. **12**

a) Explain different Aggregate operations in SQL.
b) List the ACID properties and explain each property in detail with a suitable example.
c) Define and explain 2NF, 3NF, BCNF.

SLR-GF-787

Seat No.		Set	P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In the context of IoT, what does the term edge computing refer to?
a) Cloud-based processing
b) Real-time processing on the device
c) Communication between devices
d) Application development

2) Which of the following is NOT a component of an IoT system?
a) Embedded system b) Communication protocol
c) Blockchain d) Cloud

3) Which of the following is a key component of an embedded system?
a) Cloud b) Input/Output interfaces
c) Communication system d) Applications

4) What is the role of embedded systems in IoT?
a) Managing communication between devices
b) Providing data storage in the cloud
c) Performing real-time processing on IoT devices
d) Designing user interfaces for IoT applications

5) What is the purpose of an Integrated Development Environment (IDE) in embedded development?
a) Managing communication between devices
b) Providing data storage in the cloud
c) Simplifying the development process
d) Designing user interfaces for IoT applications

6) What are the key characteristics of sensors?
a) Size and weight
b) Sensitivity, accuracy, precision, and resolution
c) Color and shape
d) Operating temperature

7) What does the term signal conditioning refer to in the context of sensors?
a) Adjusting sensor readings to match a reference standard
b) Enhancing sensor sensitivity
c) Preprocessing and modifying the sensor signal
d) Improving sensor communication range

8) What is the role of velocity and acceleration sensors in IoT applications?
a) Measuring speed and changes in speed
b) Detecting light intensity
c) Monitoring environmental noise
d) Assessing humidity levels

9) What is sensor fusion in the context of IoT?
a) Combining data from multiple sensors to enhance accuracy
b) Reducing sensor sensitivity
c) Enhancing communication between sensors
d) Increasing power consumption in sensors

10) What are the applications of light detectors in IoT?
a) Monitoring temperature b) Adjusting ambient light
c) Measuring humidity levels d) Tracking asset positions

11) In which scenario would RFID be a suitable communication technology for IoT devices?
a) Short-range communication in a smart home
b) Real-time data transfer in industrial automation
c) Asset tracking in a warehouse
d) Monitoring health parameters in healthcare applications

12) What is a characteristic feature of Zigbee technology in IoT applications?
a) High power consumption
b) Short communication range
c) High data transfer speed
d) Mesh networking capability

13) Which directory in the Raspberry Pi file system stores boot-related files?
a) /bin b) /etc
c) /boot d) /home

14) What is the first step after installing Raspbian on a Raspberry Pi for initial configuration?
a) Setting up Wi-Fi
b) Changing the default password
c) Configuring GPIO pins
d) Installing Python

Seat No.	

Set | P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any four **16**

a) Describe the key components of an IoT system, including embedded systems, communication systems, and the cloud.
b) Explain the importance of communication systems in the context of IoT.
c) Compare various embedded platforms commonly used in IoT. Discuss the factors that influence the choice of an embedded platform for a specific IoT application.
d) Discuss the key characteristics that differentiate embedded systems from general-purpose computing systems.
e) Classify sensors based on their types and functionalities. Provide examples for each sensor type.

Q.3 Attempt any two **12**

a) Discuss the impact of IoT on smart cities. Explore how IoT technologies contribute to the development of smart infrastructure, transportation, and energy management in urban environments.
b) Discuss the challenges associated with developing embedded systems for IoT, including power consumption, real-time requirements, and resource constraints. Explain how these challenges are addressed in the design and development process.
c) Discuss the key characteristics of sensors. Explore parameters such as sensitivity, accuracy, precision, and resolution, and explain how these characteristics impact the overall performance of sensors in IoT systems.

Section - II

Q.4 Attempt any Four **16**

a) Examine the role of velocity and acceleration sensors in IoT applications. Provide examples of how these sensors are employed.
b) Discuss the significance of humidity and moisture sensors in IoT with building automation as an example.
c) Discuss the challenges and considerations in implementing sensor applications in real-world scenarios.
d) Discuss the architecture of WiFi communication technology in the context of IoT.
e) Enumerate and explain five essential Linux commands used for shell access in Raspberry Pi.

Q.5 Attempt Any Two **12**

a) Examine the integration of communication technologies in industrial IoT applications. Discuss how BLE, WiFi, and RFID are employed to enable communication between machines and support automation in industrial settings.

b) Discuss the role of temperature sensors in various IoT applications. Discuss examples of temperature-sensitive applications in industries such as healthcare, food storage, and climate control.

c) Discuss the techniques and protocols used for interfacing LED, switches, and LCD with Raspberry Pi.

Seat No.		Set	Q

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What is the role of velocity and acceleration sensors in IoT applications?
a) Measuring speed and changes in speed
b) Detecting light intensity
c) Monitoring environmental noise
d) Assessing humidity levels

2) What is sensor fusion in the context of IoT?
a) Combining data from multiple sensors to enhance accuracy
b) Reducing sensor sensitivity
c) Enhancing communication between sensors
d) Increasing power consumption in sensors

3) What are the applications of light detectors in IoT?
a) Monitoring temperature b) Adjusting ambient light
c) Measuring humidity levels d) Tracking asset positions

4) In which scenario would RFID be a suitable communication technology for IoT devices?
a) Short-range communication in a smart home
b) Real-time data transfer in industrial automation
c) Asset tracking in a warehouse
d) Monitoring health parameters in healthcare applications

5) What is a characteristic feature of Zigbee technology in IoT applications?
a) High power consumption
b) Short communication range
c) High data transfer speed
d) Mesh networking capability

6) Which directory in the Raspberry Pi file system stores boot-related files?
a) /bin b) /etc
c) /boot d) /home

7) What is the first step after installing Raspbian on a Raspberry Pi for initial configuration?
a) Setting up Wi-Fi
b) Changing the default password
c) Configuring GPIO pins
d) Installing Python

8) In the context of IoT, what does the term edge computing refer to?
a) Cloud-based processing
b) Real-time processing on the device
c) Communication between devices
d) Application development

9) Which of the following is NOT a component of an IoT system?
a) Embedded system b) Communication protocol
c) Blockchain d) Cloud

10) Which of the following is a key component of an embedded system?
a) Cloud b) Input/Output interfaces
c) Communication system d) Applications

11) What is the role of embedded systems in IoT?
a) Managing communication between devices
b) Providing data storage in the cloud
c) Performing real-time processing on IoT devices
d) Designing user interfaces for IoT applications

12) What is the purpose of an Integrated Development Environment (IDE) in embedded development?
a) Managing communication between devices
b) Providing data storage in the cloud
c) Simplifying the development process
d) Designing user interfaces for IoT applications

13) What are the key characteristics of sensors?
a) Size and weight
b) Sensitivity, accuracy, precision, and resolution
c) Color and shape
d) Operating temperature

14) What does the term signal conditioning refer to in the context of sensors?
a) Adjusting sensor readings to match a reference standard
b) Enhancing sensor sensitivity
c) Preprocessing and modifying the sensor signal
d) Improving sensor communication range

Seat No.	

Set | Q

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any four **16**

a) Describe the key components of an IoT system, including embedded systems, communication systems, and the cloud.
b) Explain the importance of communication systems in the context of IoT.
c) Compare various embedded platforms commonly used in IoT. Discuss the factors that influence the choice of an embedded platform for a specific IoT application.
d) Discuss the key characteristics that differentiate embedded systems from general-purpose computing systems.
e) Classify sensors based on their types and functionalities. Provide examples for each sensor type.

Q.3 Attempt any two **12**

a) Discuss the impact of IoT on smart cities. Explore how IoT technologies contribute to the development of smart infrastructure, transportation, and energy management in urban environments.
b) Discuss the challenges associated with developing embedded systems for IoT, including power consumption, real-time requirements, and resource constraints. Explain how these challenges are addressed in the design and development process.
c) Discuss the key characteristics of sensors. Explore parameters such as sensitivity, accuracy, precision, and resolution, and explain how these characteristics impact the overall performance of sensors in IoT systems.

Section - II

Q.4 Attempt any Four **16**

a) Examine the role of velocity and acceleration sensors in IoT applications. Provide examples of how these sensors are employed.
b) Discuss the significance of humidity and moisture sensors in IoT with building automation as an example.
c) Discuss the challenges and considerations in implementing sensor applications in real-world scenarios.
d) Discuss the architecture of WiFi communication technology in the context of IoT.
e) Enumerate and explain five essential Linux commands used for shell access in Raspberry Pi.

Q.5 Attempt Any Two **12**

a) Examine the integration of communication technologies in industrial IoT applications. Discuss how BLE, WiFi, and RFID are employed to enable communication between machines and support automation in industrial settings.

b) Discuss the role of temperature sensors in various IoT applications. Discuss examples of temperature-sensitive applications in industries such as healthcare, food storage, and climate control.

c) Discuss the techniques and protocols used for interfacing LED, switches, and LCD with Raspberry Pi.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In which scenario would RFID be a suitable communication technology for IoT devices?
a) Short-range communication in a smart home
b) Real-time data transfer in industrial automation
c) Asset tracking in a warehouse
d) Monitoring health parameters in healthcare applications

2) What is a characteristic feature of Zigbee technology in IoT applications?
a) High power consumption
b) Short communication range
c) High data transfer speed
d) Mesh networking capability

3) Which directory in the Raspberry Pi file system stores boot-related files?
a) /bin b) /etc
c) /boot d) /home

4) What is the first step after installing Raspbian on a Raspberry Pi for initial configuration?
a) Setting up Wi-Fi
b) Changing the default password
c) Configuring GPIO pins
d) Installing Python

5) In the context of IoT, what does the term edge computing refer to?
a) Cloud-based processing
b) Real-time processing on the device
c) Communication between devices
d) Application development

6) Which of the following is NOT a component of an IoT system?
a) Embedded system b) Communication protocol
c) Blockchain d) Cloud

7) Which of the following is a key component of an embedded system?
a) Cloud b) Input/Output interfaces
c) Communication system d) Applications

8) What is the role of embedded systems in IoT?
a) Managing communication between devices
b) Providing data storage in the cloud
c) Performing real-time processing on IoT devices
d) Designing user interfaces for IoT applications

9) What is the purpose of an Integrated Development Environment (IDE) in embedded development?
a) Managing communication between devices
b) Providing data storage in the cloud
c) Simplifying the development process
d) Designing user interfaces for IoT applications

10) What are the key characteristics of sensors?
a) Size and weight
b) Sensitivity, accuracy, precision, and resolution
c) Color and shape
d) Operating temperature

11) What does the term signal conditioning refer to in the context of sensors?
a) Adjusting sensor readings to match a reference standard
b) Enhancing sensor sensitivity
c) Preprocessing and modifying the sensor signal
d) Improving sensor communication range

12) What is the role of velocity and acceleration sensors in IoT applications?
a) Measuring speed and changes in speed
b) Detecting light intensity
c) Monitoring environmental noise
d) Assessing humidity levels

13) What is sensor fusion in the context of IoT?
a) Combining data from multiple sensors to enhance accuracy
b) Reducing sensor sensitivity
c) Enhancing communication between sensors
d) Increasing power consumption in sensors

14) What are the applications of light detectors in IoT?
a) Monitoring temperature b) Adjusting ambient light
c) Measuring humidity levels d) Tracking asset positions

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Seat No.	

Set R

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any four **16**

a) Describe the key components of an IoT system, including embedded systems, communication systems, and the cloud.
b) Explain the importance of communication systems in the context of IoT.
c) Compare various embedded platforms commonly used in IoT. Discuss the factors that influence the choice of an embedded platform for a specific IoT application.
d) Discuss the key characteristics that differentiate embedded systems from general-purpose computing systems.
e) Classify sensors based on their types and functionalities. Provide examples for each sensor type.

Q.3 Attempt any two **12**

a) Discuss the impact of IoT on smart cities. Explore how IoT technologies contribute to the development of smart infrastructure, transportation, and energy management in urban environments.
b) Discuss the challenges associated with developing embedded systems for IoT, including power consumption, real-time requirements, and resource constraints. Explain how these challenges are addressed in the design and development process.
c) Discuss the key characteristics of sensors. Explore parameters such as sensitivity, accuracy, precision, and resolution, and explain how these characteristics impact the overall performance of sensors in IoT systems.

Section - II

Q.4 Attempt any Four **16**

a) Examine the role of velocity and acceleration sensors in IoT applications. Provide examples of how these sensors are employed.
b) Discuss the significance of humidity and moisture sensors in IoT with building automation as an example.
c) Discuss the challenges and considerations in implementing sensor applications in real-world scenarios.
d) Discuss the architecture of WiFi communication technology in the context of IoT.
e) Enumerate and explain five essential Linux commands used for shell access in Raspberry Pi.

Q.5 Attempt Any Two **12**

a) Examine the integration of communication technologies in industrial IoT applications. Discuss how BLE, WiFi, and RFID are employed to enable communication between machines and support automation in industrial settings.

b) Discuss the role of temperature sensors in various IoT applications. Discuss examples of temperature-sensitive applications in industries such as healthcare, food storage, and climate control.

c) Discuss the techniques and protocols used for interfacing LED, switches, and LCD with Raspberry Pi.

Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What are the key characteristics of sensors?
a) Size and weight
b) Sensitivity, accuracy, precision, and resolution
c) Color and shape
d) Operating temperature

2) What does the term signal conditioning refer to in the context of sensors?
a) Adjusting sensor readings to match a reference standard
b) Enhancing sensor sensitivity
c) Preprocessing and modifying the sensor signal
d) Improving sensor communication range

3) What is the role of velocity and acceleration sensors in IoT applications?
a) Measuring speed and changes in speed
b) Detecting light intensity
c) Monitoring environmental noise
d) Assessing humidity levels

4) What is sensor fusion in the context of IoT?
a) Combining data from multiple sensors to enhance accuracy
b) Reducing sensor sensitivity
c) Enhancing communication between sensors
d) Increasing power consumption in sensors

5) What are the applications of light detectors in IoT?
a) Monitoring temperature b) Adjusting ambient light
c) Measuring humidity levels d) Tracking asset positions

6) In which scenario would RFID be a suitable communication technology for IoT devices?
a) Short-range communication in a smart home
b) Real-time data transfer in industrial automation
c) Asset tracking in a warehouse
d) Monitoring health parameters in healthcare applications

7) What is a characteristic feature of Zigbee technology in IoT applications?
a) High power consumption
b) Short communication range
c) High data transfer speed
d) Mesh networking capability

8) Which directory in the Raspberry Pi file system stores boot-related files?
a) /bin
b) /etc
c) /boot
d) /home

9) What is the first step after installing Raspbian on a Raspberry Pi for initial configuration?
a) Setting up Wi-Fi
b) Changing the default password
c) Configuring GPIO pins
d) Installing Python

10) In the context of IoT, what does the term edge computing refer to?
a) Cloud-based processing
b) Real-time processing on the device
c) Communication between devices
d) Application development

11) Which of the following is NOT a component of an IoT system?
a) Embedded system
b) Communication protocol
c) Blockchain
d) Cloud

12) Which of the following is a key component of an embedded system?
a) Cloud
b) Input/Output interfaces
c) Communication system
d) Applications

13) What is the role of embedded systems in IoT?
a) Managing communication between devices
b) Providing data storage in the cloud
c) Performing real-time processing on IoT devices
d) Designing user interfaces for IoT applications

14) What is the purpose of an Integrated Development Environment (IDE) in embedded development?
a) Managing communication between devices
b) Providing data storage in the cloud
c) Simplifying the development process
d) Designing user interfaces for IoT applications

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Seat No.	

Set S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Fundamentals of IOT (BTN04409)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section - I

Q.2 Attempt any four **16**

a) Describe the key components of an IoT system, including embedded systems, communication systems, and the cloud.
b) Explain the importance of communication systems in the context of IoT.
c) Compare various embedded platforms commonly used in IoT. Discuss the factors that influence the choice of an embedded platform for a specific IoT application.
d) Discuss the key characteristics that differentiate embedded systems from general-purpose computing systems.
e) Classify sensors based on their types and functionalities. Provide examples for each sensor type.

Q.3 Attempt any two **12**

a) Discuss the impact of IoT on smart cities. Explore how IoT technologies contribute to the development of smart infrastructure, transportation, and energy management in urban environments.
b) Discuss the challenges associated with developing embedded systems for IoT, including power consumption, real-time requirements, and resource constraints. Explain how these challenges are addressed in the design and development process.
c) Discuss the key characteristics of sensors. Explore parameters such as sensitivity, accuracy, precision, and resolution, and explain how these characteristics impact the overall performance of sensors in IoT systems.

Section - II

Q.4 Attempt any Four **16**

a) Examine the role of velocity and acceleration sensors in IoT applications. Provide examples of how these sensors are employed.
b) Discuss the significance of humidity and moisture sensors in IoT with building automation as an example.
c) Discuss the challenges and considerations in implementing sensor applications in real-world scenarios.
d) Discuss the architecture of WiFi communication technology in the context of IoT.
e) Enumerate and explain five essential Linux commands used for shell access in Raspberry Pi.

Q.5 Attempt Any Two **12**

a) Examine the integration of communication technologies in industrial IoT applications. Discuss how BLE, WiFi, and RFID are employed to enable communication between machines and support automation in industrial settings.

b) Discuss the role of temperature sensors in various IoT applications. Discuss examples of temperature-sensitive applications in industries such as healthcare, food storage, and climate control.

c) Discuss the techniques and protocols used for interfacing LED, switches, and LCD with Raspberry Pi.

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Seat No.		Set	P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cryptography (BTN04410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 AM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The _____ is the message after transformation.
a) Plaintext b) Secret-text
c) Ciphertext d) None of the above

2) The keys used in cryptography are _____.
a) Private key b) Public key
c) Secret key d) All of the above

3) In symmetric-key cryptography, the key locks and unlocks the box is ____
a) Shared b) Same
c) Private d) Public

4) In asymmetric key cryptography, the private key is kept by _____
a) Sender
b) Receiver
c) sender and receiver
d) all the connected devices to the network

5) Caesar Cipher is an example of _____
a) Poly-alphabetic Cipher b) Mono-alphabetic Cipher
c) Multi-alphabetic Cipher d) Bi-alphabetic Cipher

6) The DES algorithm has a key length of _____
a) 128 Bits b) 32 Bits
c) 64 Bits d) 16 Bits

7) AES stands for Advanced Encryption Standard.
a) True b) False

8) RSA algorithm is _____ cryptography algorithm.
a) Systematic b) Symmetric
c) Asymmetric d) None of the mentioned above

9) Which of the following modes of operation in DES is used for operating?
a) Cipher Feedback Mode (CFB)
b) Cipher Block chaining (CBC)
c) Electronic code book (ECB)
d) Output Feedback Modes (OFB)

10) Which of the following is /are offered by the Hash functions?
a) Authentication
b) Non repudiation
c) Data Integrity
d) All of the above

11) A cryptographic hash function is an equation used to verify the _____ of data.
a) Variety
b) Validity
c) Veracity
d) None of the mentioned above

12) MAC is a _____.
a) one-to-one mapping
b) many-to-one mapping
c) onto mapping
d) none of the mentioned

13) What are the common security threats?
a) File Shredding
b) File sharing and permission
c) File corrupting
d) File integrity

14) A cryptosystem is also termed as _____.
a) secure system
b) cipher system
c) cipher-text
d) secure algorithm

SLR-GF-788

Seat No.	

Set P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cryptography (BTN04410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 AM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four. **16**

a) Explain the model of network security with diagram.
b) Explain in detail security attacks.
c) Explain Caesar cipher with example.
d) What is difference between monoalphabetic cipher and polyalphabetic cipher?
e) Explain block cipher and stream cipher with diagram.

Q.3 Attempt any two. **12**

a) Explain the working of DES with diagram.
b) Explain Security services in details.
c) Explain in detail symmetric cipher model with diagram.

Section – II

Q.4 Attempt any four. **16**

a) Write application of public key cryptosystem.
b) Explain encryption with public key with diagram.
c) Write hash functions based on using a cipher block chaining technique.
d) Explain Kerberos in details.
e) Write a note on Simplified Depiction of Essential Elements of Digital Signature Process.

Q.5 Attempt any two. **12**

a) What is MAC? Explain three basic uses of Message authentication code.
b) Explain PIV System Model with diagram.
c) Explain Man-in-the-Middle Attack

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cryptography (BTN04410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 AM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) RSA algorithm is _____ cryptography algorithm.
a) Systematic b) Symmetric
c) Asymmetric d) None of the mentioned above

2) Which of the following modes of operation in DES is used for operating?
a) Cipher Feedback Mode (CFB)
b) Cipher Block chaining (CBC)
c) Electronic code book (ECB)
d) Output Feedback Modes (OFB)

3) Which of the following is /are offered by the Hash functions?
a) Authentication b) Non repudiation
c) Data Integrity d) All of the above

4) A cryptographic hash function is an equation used to verify the _____ of data.
a) Variety b) Validity
c) Veracity d) None of the mentioned above

5) MAC is a _____.
a) one-to-one mapping b) many-to-one mapping
c) onto mapping d) none of the mentioned

6) What are the common security threats?
a) File Shredding b) File sharing and permission
c) File corrupting d) File integrity

7) A cryptosystem is also termed as _____.
a) secure system b) cipher system
c) cipher-text d) secure algorithm

8) The _____ is the message after transformation.
a) Plaintext b) Secret-text
c) Ciphertext d) None of the above

9) The keys used in cryptography are _____.
a) Private key b) Public key
c) Secret key d) All of the above

10) In symmetric-key cryptography, the key locks and unlocks the box is ____

a) Shared b) Same
c) Private d) Public

11) In asymmetric key cryptography, the private key is kept by _____

a) Sender
b) Receiver
c) sender and receiver
d) all the connected devices to the network

12) Caesar Cipher is an example of _____

a) Poly-alphabetic Cipher b) Mono-alphabetic Cipher
c) Multi-alphabetic Cipher d) Bi-alphabetic Cipher

13) The DES algorithm has a key length of _____

a) 128 Bits b) 32 Bits
c) 64 Bits d) 16 Bits

14) AES stands for Advanced Encryption Standard.

a) True b) False

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cryptography (BTN04410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 AM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four. **16**

a) Explain the model of network security with diagram.
b) Explain in detail security attacks.
c) Explain Caesar cipher with example.
d) What is difference between monoalphabetic cipher and polyalphabetic cipher?
e) Explain block cipher and stream cipher with diagram.

Q.3 Attempt any two. **12**

a) Explain the working of DES with diagram.
b) Explain Security services in details.
c) Explain in detail symmetric cipher model with diagram.

Section – II

Q.4 Attempt any four. **16**

a) Write application of public key cryptosystem.
b) Explain encryption with public key with diagram.
c) Write hash functions based on using a cipher block chaining technique.
d) Explain Kerberos in details.
e) Write a note on Simplified Depiction of Essential Elements of Digital Signature Process.

Q.5 Attempt any two. **12**

a) What is MAC? Explain three basic uses of Message authentication code.
b) Explain PIV System Model with diagram.
c) Explain Man-in-the-Middle Attack

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cryptography (BTN04410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 AM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) A cryptographic hash function is an equation used to verify the _____ of data.
a) Variety b) Validity
c) Veracity d) None of the mentioned above

2) MAC is a _____.
a) one-to-one mapping b) many-to-one mapping
c) onto mapping d) none of the mentioned

3) What are the common security threats?
a) File Shredding b) File sharing and permission
c) File corrupting d) File integrity

4) A cryptosystem is also termed as _____.
a) secure system b) cipher system
c) cipher-text d) secure algorithm

5) The _____ is the message after transformation.
a) Plaintext b) Secret-text
c) Ciphertext d) None of the above

6) The keys used in cryptography are _____.
a) Private key b) Public key
c) Secret key d) All of the above

7) In symmetric-key cryptography, the key locks and unlocks the box is ____
a) Shared b) Same
c) Private d) Public

8) In asymmetric key cryptography, the private key is kept by _____
a) Sender
b) Receiver
c) sender and receiver
d) all the connected devices to the network

9) Caesar Cipher is an example of _____
a) Poly-alphabetic Cipher b) Mono-alphabetic Cipher
c) Multi-alphabetic Cipher d) Bi-alphabetic Cipher

10) The DES algorithm has a key length of _____
a) 128 Bits b) 32 Bits
c) 64 Bits d) 16 Bits

11) AES stands for Advanced Encryption Standard.
a) True b) False

12) RSA algorithm is _____ cryptography algorithm.
a) Systematic b) Symmetric
c) Asymmetric d) None of the mentioned above

13) Which of the following modes of operation in DES is used for operating?
a) Cipher Feedback Mode (CFB)
b) Cipher Block chaining (CBC)
c) Electronic code book (ECB)
d) Output Feedback Modes (OFB)

14) Which of the following is /are offered by the Hash functions?
a) Authentication b) Non repudiation
c) Data Integrity d) All of the above

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cryptography (BTN04410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 AM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four. **16**

a) Explain the model of network security with diagram.
b) Explain in detail security attacks.
c) Explain Caesar cipher with example.
d) What is difference between monoalphabetic cipher and polyalphabetic cipher?
e) Explain block cipher and stream cipher with diagram.

Q.3 Attempt any two. **12**

a) Explain the working of DES with diagram.
b) Explain Security services in details.
c) Explain in detail symmetric cipher model with diagram.

Section – II

Q.4 Attempt any four. **16**

a) Write application of public key cryptosystem.
b) Explain encryption with public key with diagram.
c) Write hash functions based on using a cipher block chaining technique.
d) Explain Kerberos in details.
e) Write a note on Simplified Depiction of Essential Elements of Digital Signature Process.

Q.5 Attempt any two. **12**

a) What is MAC? Explain three basic uses of Message authentication code.
b) Explain PIV System Model with diagram.
c) Explain Man-in-the-Middle Attack

Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cryptography (BTN04410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 AM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The DES algorithm has a key length of _____
a) 128 Bits b) 32 Bits
c) 64 Bits d) 16 Bits

2) AES stands for Advanced Encryption Standard.
a) True b) False

3) RSA algorithm is _____ cryptography algorithm.
a) Systematic b) Symmetric
c) Asymmetric d) None of the mentioned above

4) Which of the following modes of operation in DES is used for operating?
a) Cipher Feedback Mode (CFB)
b) Cipher Block chaining (CBC)
c) Electronic code book (ECB)
d) Output Feedback Modes (OFB)

5) Which of the following is /are offered by the Hash functions?
a) Authentication b) Non repudiation
c) Data Integrity d) All of the above

6) A cryptographic hash function is an equation used to verify the _____ of data.
a) Variety b) Validity
c) Veracity d) None of the mentioned above

7) MAC is a _____.
a) one-to-one mapping b) many-to-one mapping
c) onto mapping d) none of the mentioned

8) What are the common security threats?
a) File Shredding b) File sharing and permission
c) File corrupting d) File integrity

9) A cryptosystem is also termed as _____.
a) secure system b) cipher system
c) cipher-text d) secure algorithm

10) The _____ is the message after transformation.
a) Plaintext b) Secret-text
c) Ciphertext d) None of the above

11) The keys used in cryptography are _____.
a) Private key b) Public key
c) Secret key d) All of the above

12) In symmetric-key cryptography, the key locks and unlocks the box is ____
a) Shared b) Same
c) Private d) Public

13) In asymmetric key cryptography, the private key is kept by _____
a) Sender
b) Receiver
c) sender and receiver
d) all the connected devices to the network

14) Caesar Cipher is an example of _____
a) Poly-alphabetic Cipher b) Mono-alphabetic Cipher
c) Multi-alphabetic Cipher d) Bi-alphabetic Cipher

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Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Cryptography (BTN04410)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 AM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt any four. **16**

a) Explain the model of network security with diagram.
b) Explain in detail security attacks.
c) Explain Caesar cipher with example.
d) What is difference between monoalphabetic cipher and polyalphabetic cipher?
e) Explain block cipher and stream cipher with diagram.

Q.3 Attempt any two. **12**

a) Explain the working of DES with diagram.
b) Explain Security services in details.
c) Explain in detail symmetric cipher model with diagram.

Section – II

Q.4 Attempt any four. **16**

a) Write application of public key cryptosystem.
b) Explain encryption with public key with diagram.
c) Write hash functions based on using a cipher block chaining technique.
d) Explain Kerberos in details.
e) Write a note on Simplified Depiction of Essential Elements of Digital Signature Process.

Q.5 Attempt any two. **12**

a) What is MAC? Explain three basic uses of Message authentication code.
b) Explain PIV System Model with diagram.
c) Explain Man-in-the-Middle Attack

Seat No.	

Set | P

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering: A Beginner's Perspective (BTN04411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Bogies and Coaches are same _____
a) True b) False

2) The number of stations on Indian Railways is
a) 6000 approximately b) 7070 approximately
c) 8000 proximately d) 9000 approximately

3) Which of following is not the type of Rail?
a) D.H. Rails b) B.H. Rails
c) F.F. Rails d) R.H. Rails

4) What do you mean of SWTR?
a) Single wagon test rubber b) Single wagon test rig
c) Sliding wagon test ring d) None of the above

5) The ballast material generally used in IR _____
a) Moorum b) Broken stones
c) Gravel d) All of the above

6) Railway locomotive (Engine) not in Working Nowadays _____.
a) Steam b) Electric
c) Diesel d) AC Electric

7) Pantograph is Mounted _____
a) At driver's cabin b) At track
c) At Railway roof d) At Bogie

8) The main rail to which the tongue rail fits is called as _____ rail.
a) Tongue b) Wing
c) Stock d) Flange

9) When was the first Metro operated in Kolkata?
a) 1984 b) 1987
c) 1982 d) 1988

10) Proposed bullet train route in India is _____

a) Mumbai-Ahmedabad b) Delhi-Varanasi
c) Mumbai-Chennai d) Kolkata-Chennai

11) The yards where trains & other loads are received, sorted out, transformed & dispatched Onwards are known as

a) Station yards b) Marshalling yards
c) Goods yards d) Locomotive yards

12) Which is Overhead equipments in Railways?

a) Pantograph b) Switch
c) Relays d) Traction motor

13) Which is not part of Rail?

a) Head b) Web
c) Foot d) Frog

14) Which is not part of Railway track layer?

a) Ballast b) Fishplate
c) Switch d) Subgrade

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering: A Beginner's Perspective (BTN04411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**
- **a)** Write Short note on Growth of Indian Railways.
- **b)** Define crossing, Junction, Terminal, Fishplate And Crossing.
- **c)** Which are the different Organization of Indian Railways?
- **d)** Is Bogie and Coach is same? Give details of each.
- **e)** Write a short note on Statistics of Indian Railways.

Q.3 Attempt any two. **12**
- **a)** What is mean by PSC? Describe
- **b)** What is mean by Switches? Explain with types?
- **c)** Write a short note on Safety measures in Railways.

Section – II

Q.4 Attempt any four. **16**
- **a)** What is Clean Energy concept in Railways? Explain
- **b)** Explain concept Maglev Technology in Railways.
- **c)** Explain Display Control and Mechanism in Railway.
- **d)** Give main function of Rail track and material used in railing system.
- **e)** What is "Anubhuti" Coaches in Indian Railways? Give details

Q.5 Attempt any two. **12**
- **a)** Which are Layers of material on Tracks? Give details
- **b)** Which are the Faster Trains in India?
- **c)** Write note on Recent Trends in International Railways.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering: A Beginner's Perspective (BTN04411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The main rail to which the tongue rail fits is called as _____ rail.
a) Tongue b) Wing
c) Stock d) Flange

2) When was the first Metro operated in Kolkata?
a) 1984 b) 1987
c) 1982 d) 1988

3) Proposed bullet train route in India is _____
a) Mumbai-Ahmedabad b) Delhi-Varanasi
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4) The yards where trains & other loads are received, sorted out, transformed & dispatched Onwards are known as
a) Station yards b) Marshalling yards
c) Goods yards d) Locomotive yards

5) Which is Overhead equipments in Railways?
a) Pantograph b) Switch
c) Relays d) Traction motor

6) Which is not part of Rail?
a) Head b) Web
c) Foot d) Frog

7) Which is not part of Railway track layer?
a) Ballast b) Fishplate
c) Switch d) Subgrade

8) Bogies and Coaches are same _____
a) True b) False

9) The number of stations on Indian Railways is
a) 6000 approximately b) 7070 approximately
c) 8000 proximately d) 9000 approximately

10) Which of following is not the type of Rail?

a) D.H. Rails b) B.H. Rails
c) F.F. Rails d) R.H. Rails

11) What do you mean of SWTR?

a) Single wagon test rubber b) Single wagon test rig
c) Sliding wagon test ring d) None of the above

12) The ballast material generally used in IR _____

a) Moorum b) Broken stones
c) Gravel d) All of the above

13) Railway locomotive (Engine) not in Working Nowadays _____.

a) Steam b) Electric
c) Diesel d) AC Electric

14) Pantograph is Mounted _____

a) At driver's cabin b) At track
c) At Railway roof d) At Bogie

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering: A Beginner's Perspective (BTN04411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any four. **16**
- **a)** Write Short note on Growth of Indian Railways.
- **b)** Define crossing, Junction, Terminal, Fishplate And Crossing.
- **c)** Which are the different Organization of Indian Railways?
- **d)** Is Bogie and Coach is same? Give details of each.
- **e)** Write a short note on Statistics of Indian Railways.

Q.3 Attempt any two. **12**
- **a)** What is mean by PSC? Describe
- **b)** What is mean by Switches? Explain with types?
- **c)** Write a short note on Safety measures in Railways.

Section – II

Q.4 Attempt any four. **16**
- **a)** What is Clean Energy concept in Railways? Explain
- **b)** Explain concept Maglev Technology in Railways.
- **c)** Explain Display Control and Mechanism in Railway.
- **d)** Give main function of Rail track and material used in railing system.
- **e)** What is "Anubhuti" Coaches in Indian Railways? Give details

Q.5 Attempt any two. **12**
- **a)** Which are Layers of material on Tracks? Give details
- **b)** Which are the Faster Trains in India?
- **c)** Write note on Recent Trends in International Railways.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering: A Beginner's Perspective (BTN04411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The yards where trains & other loads are received, sorted out, transformed & dispatched Onwards are known as
a) Station yards b) Marshalling yards
c) Goods yards d) Locomotive yards

2) Which is Overhead equipments in Railways?
a) Pantograph b) Switch
c) Relays d) Traction motor

3) Which is not part of Rail?
a) Head b) Web
c) Foot d) Frog

4) Which is not part of Railway track layer?
a) Ballast b) Fishplate
c) Switch d) Subgrade

5) Bogies and Coaches are same _____
a) True b) False

6) The number of stations on Indian Railways is
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c) At Railway roof d) At Bogie

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c) Stock d) Flange

13) When was the first Metro operated in Kolkata?

a) 1984 b) 1987
c) 1982 d) 1988

14) Proposed bullet train route in India is _____

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c) Mumbai-Chennai d) Kolkata-Chennai

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering: A Beginner's Perspective (BTN04411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

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- **a)** Write Short note on Growth of Indian Railways.
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- **d)** Is Bogie and Coach is same? Give details of each.
- **e)** Write a short note on Statistics of Indian Railways.

Q.3 Attempt any two. **12**
- **a)** What is mean by PSC? Describe
- **b)** What is mean by Switches? Explain with types?
- **c)** Write a short note on Safety measures in Railways.

Section – II

Q.4 Attempt any four. **16**
- **a)** What is Clean Energy concept in Railways? Explain
- **b)** Explain concept Maglev Technology in Railways.
- **c)** Explain Display Control and Mechanism in Railway.
- **d)** Give main function of Rail track and material used in railing system.
- **e)** What is "Anubhuti" Coaches in Indian Railways? Give details

Q.5 Attempt any two. **12**
- **a)** Which are Layers of material on Tracks? Give details
- **b)** Which are the Faster Trains in India?
- **c)** Write note on Recent Trends in International Railways.

Seat No.	

Set | S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering: A Beginner's Perspective (BTN04411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Railway locomotive (Engine) not in Working Nowadays _____.
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c) Foot d) Frog

9) Which is not part of Railway track layer?
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c) Gravel d) All of the above

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Seat No.		Set	S

S.Y. (B.Tech.) (Sem-II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRONICS & TELECOMMUNICATION ENGINEERING
Railway Engineering: A Beginner's Perspective (BTN04411)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any four. **16**
- **a)** Write Short note on Growth of Indian Railways.
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- **d)** Is Bogie and Coach is same? Give details of each.
- **e)** Write a short note on Statistics of Indian Railways.

Q.3 Attempt any two. **12**
- **a)** What is mean by PSC? Describe
- **b)** What is mean by Switches? Explain with types?
- **c)** Write a short note on Safety measures in Railways.

Section – II

Q.4 Attempt any four. **16**
- **a)** What is Clean Energy concept in Railways? Explain
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- **c)** Explain Display Control and Mechanism in Railway.
- **d)** Give main function of Rail track and material used in railing system.
- **e)** What is "Anubhuti" Coaches in Indian Railways? Give details

Q.5 Attempt any two. **12**
- **a)** Which are Layers of material on Tracks? Give details
- **b)** Which are the Faster Trains in India?
- **c)** Write note on Recent Trends in International Railways.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Computer Networks (BTN05404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve Multiple Choice Questions. **14**

1) TCP assigns a sequence number to each segment that is being sent. The sequence number for each segment is the number of the _____ byte carried in that segment.
a) First b) Last
c) Middle d) None of these

2) The Bootstrap Protocol (BOOTP) is a client/server protocol designed to provide _____ of information for a diskless computer or a computer that is booted for the first time.
a) One piece b) Two pieces
c) Four pieces d) None of these

3) A serious problem can arise in the sliding window operation when either the sending application program creates data slowly or the receiving application program consumes data slowly, or both. This problem is called the _____.
a) Silly window syndrome b) Unexpected syndrome
c) Window bug d) None of these

4) In a _____ name space, a name is assigned to an address. A name in this space is a sequence of characters without structure.
a) Flat b) Hierarchical
c) Organized d) None of these

5) What a server is responsible for or has authority over is called a _____
a) Domain b) Label
c) Zone d) None of these

6) TELNET uses only one TCP connection. The Server uses _____ port and the client uses _____ port.
a) A well-known; another well- know
b) An ephemeral; another ephemeral
c) A well-known; an ephemeral
d) None of these

7) Using the limited broadcast address, a _____ sends a packet to _____ on the network.
a) host; all other hosts
b) router; all other hosts
c) host; a specific host
d) None of these

8) Which of the following is true of the IP address 192.0.0.10?
a) The netid is 192
b) The hostid is 0.10.
c) The network address is 192.0.0.0
d) None of these

9) If the sender wants to enable an option, it sends a _____ command.
a) WILL
b) DO
c) WONT
d) None of these

10) The entire hostname has a maximum of _____.
a) 255 characters
b) 127 characters
c) 63 characters
d) 31 characters

11) Transport layer protocols deals with _____.
a) application to application communication
b) process to process communication
c) node to node communication
d) man to man communication

12) IP is responsible for _____ communication while TCP is responsible for _____ communication.
a) host-to-host; process-to-process
b) process-to-process; host-to-host
c) process-to-process; network-to-network
d) None of these

13) Mode of data transfer in FTP, where all these left to TCP?
a) Stream mode
b) Block mode
c) Compressed mode
d) None of these

14) Which one of the following is not true?
a) Telnet defines a network virtual terminal (NVT) standard
b) Client programs interact with NVT
c) Server translates NVT operations
d) Client can transfer files using to remote server using NVT

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Computer Networks (BTN05404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt the following (Any Three) **12**
- **a)** Draw and illustrate the OSI reference model.
- **b)** State and Extend different notations used in classful addressing.
- **c)** Draw and explain the user datagram format.
- **d)** Explain in detail the congestion control in TCP.

Q.3 Identify and illustrate the services of TCP. **08**

OR

State and explain all the socket system calls in socket interface.

Q.4 Attempt any two **08**
- **a)** SCTP services
- **b)** Classless addressing
- **c)** Concurrency in Server

Section – II

Q.5 Attempt the following (Any Three) **12**
- **a)** Draw and illustrate the packet format of BOOTP.
- **b)** Explain the distribution of name space in DNS.
- **c)** Extend with figure the two connections establishment in FTP.
- **d)** Identify and illustrate option negotiation from TELNET.

Q.6 Draw and illustrate the message format of TFTP. **08**

OR

Extend in detail the role of message transfer agent in an electronic mail system.

Q.7 Attempt any two. **08**
- **a)** POP and IMAP
- **b)** Local and remote login in TELNET
- **c)** DNS Messages

Seat No.		Set	Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Computer Networks (BTN05404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve Multiple Choice Questions. **14**

1) Which of the following is true of the IP address 192.0.0.10?
a) The netid is 192
b) The hostid is 0.10.
c) The network address is 192.0.0.0
d) None of these

2) If the sender wants to enable an option, it sends a _____ command.
a) WILL b) DO
c) WONT d) None of these

3) The entire hostname has a maximum of _____.
a) 255 characters b) 127 characters
c) 63 characters d) 31 characters

4) Transport layer protocols deals with _____.
a) application to application communication
b) process to process communication
c) node to node communication
d) man to man communication

5) IP is responsible for _____ communication while TCP is responsible for _____ communication.
a) host-to-host; process-to-process
b) process-to-process; host-to-host
c) process-to-process; network-to-network
d) None of these

6) Mode of data transfer in FTP, where all these left to TCP?
a) Stream mode b) Block mode
c) Compressed mode d) None of these

7) Which one of the following is not true?
a) Telnet defines a network virtual terminal (NVT) standard
b) Client programs interact with NVT
c) Server translates NVT operations
d) Client can transfer files using to remote server using NVT

8) TCP assigns a sequence number to each segment that is being sent. The sequence number for each segment is the number of the _____ byte carried in that segment.

a) First
b) Last
c) Middle
d) None of these

9) The Bootstrap Protocol (BOOTP) is a client/server protocol designed to provide _____ of information for a diskless computer or a computer that is booted for the first time.

a) One piece
b) Two pieces
c) Four pieces
d) None of these

10) A serious problem can arise in the sliding window operation when either the sending application program creates data slowly or the receiving application program consumes data slowly, or both. This problem is called the _____.

a) Silly window syndrome
b) Unexpected syndrome
c) Window bug
d) None of these

11) In a _____ name space, a name is assigned to an address. A name in this space is a sequence of characters without structure.

a) Flat
b) Hierarchical
c) Organized
d) None of these

12) What a server is responsible for or has authority over is called a _____

a) Domain
b) Label
c) Zone
d) None of these

13) TELNET uses only one TCP connection. The Server uses _____ port and the client uses _____ port.

a) A well-known; another well- know
b) An ephemeral; another ephemeral
c) A well-known; an ephemeral
d) None of these

14) Using the limited broadcast address, a _____ sends a packet to _____ on the network.

a) host; all other hosts
b) router; all other hosts
c) host; a specific host
d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Computer Networks (BTN05404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt the following (Any Three) **12**
- **a)** Draw and illustrate the OSI reference model.
- **b)** State and Extend different notations used in classful addressing.
- **c)** Draw and explain the user datagram format.
- **d)** Explain in detail the congestion control in TCP.

Q.3 Identify and illustrate the services of TCP. **08**

OR

State and explain all the socket system calls in socket interface.

Q.4 Attempt any two **08**
- **a)** SCTP services
- **b)** Classless addressing
- **c)** Concurrency in Server

Section – II

Q.5 Attempt the following (Any Three) **12**
- **a)** Draw and illustrate the packet format of BOOTP.
- **b)** Explain the distribution of name space in DNS.
- **c)** Extend with figure the two connections establishment in FTP.
- **d)** Identify and illustrate option negotiation from TELNET.

Q.6 Draw and illustrate the message format of TFTP. **08**

OR

Extend in detail the role of message transfer agent in an electronic mail system.

Q.7 Attempt any two. **08**
- **a)** POP and IMAP
- **b)** Local and remote login in TELNET
- **c)** DNS Messages

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Computer Networks (BTN05404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve Multiple Choice Questions. **14**

1) Transport layer protocols deals with _____.
a) application to application communication
b) process to process communication
c) node to node communication
d) man to man communication

2) IP is responsible for _____ communication while TCP is responsible for _____ communication.
a) host-to-host; process-to-process
b) process-to-process; host-to-host
c) process-to-process; network-to-network
d) None of these

3) Mode of data transfer in FTP, where all these left to TCP?
a) Stream mode b) Block mode
c) Compressed mode d) None of these

4) Which one of the following is not true?
a) Telnet defines a network virtual terminal (NVT) standard
b) Client programs interact with NVT
c) Server translates NVT operations
d) Client can transfer files using to remote server using NVT

5) TCP assigns a sequence number to each segment that is being sent. The sequence number for each segment is the number of the _____ byte carried in that segment.
a) First b) Last
c) Middle d) None of these

6) The Bootstrap Protocol (BOOTP) is a client/server protocol designed to provide _____ of information for a diskless computer or a computer that is booted for the first time.
a) One piece b) Two pieces
c) Four pieces d) None of these

7) A serious problem can arise in the sliding window operation when either the sending application program creates data slowly or the receiving application program consumes data slowly, or both. This problem is called the _____.

a) Silly window syndrome b) Unexpected syndrome
c) Window bug d) None of these

8) In a _____ name space, a name is assigned to an address. A name in this space is a sequence of characters without structure.

a) Flat b) Hierarchical
c) Organized d) None of these

9) What a server is responsible for or has authority over is called a _____

a) Domain b) Label
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10) TELNET uses only one TCP connection. The Server uses _____ port and the client uses _____ port.

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a) WILL b) DO
c) WONT d) None of these

14) The entire hostname has a maximum of _____.

a) 255 characters b) 127 characters
c) 63 characters d) 31 characters

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Computer Networks (BTN05404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt the following (Any Three) **12**
- **a)** Draw and illustrate the OSI reference model.
- **b)** State and Extend different notations used in classful addressing.
- **c)** Draw and explain the user datagram format.
- **d)** Explain in detail the congestion control in TCP.

Q.3 Identify and illustrate the services of TCP. **08**

OR

State and explain all the socket system calls in socket interface.

Q.4 Attempt any two **08**
- **a)** SCTP services
- **b)** Classless addressing
- **c)** Concurrency in Server

Section – II

Q.5 Attempt the following (Any Three) **12**
- **a)** Draw and illustrate the packet format of BOOTP.
- **b)** Explain the distribution of name space in DNS.
- **c)** Extend with figure the two connections establishment in FTP.
- **d)** Identify and illustrate option negotiation from TELNET.

Q.6 Draw and illustrate the message format of TFTP. **08**

OR

Extend in detail the role of message transfer agent in an electronic mail system.

Q.7 Attempt any two. **08**
- **a)** POP and IMAP
- **b)** Local and remote login in TELNET
- **c)** DNS Messages

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Computer Networks (BTN05404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve Multiple Choice Questions. **14**

1) TELNET uses only one TCP connection. The Server uses _____ port and the client uses _____ port.
a) A well-known; another well- know
b) An ephemeral; another ephemeral
c) A well-known; an ephemeral
d) None of these

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a) The netid is 192
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a) application to application communication
b) process to process communication
c) node to node communication
d) man to man communication

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a) host-to-host; process-to-process
b) process-to-process; host-to-host
c) process-to-process; network-to-network
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a) Stream mode b) Block mode
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9) Which one of the following is not true?
a) Telnet defines a network virtual terminal (NVT) standard
b) Client programs interact with NVT
c) Server translates NVT operations
d) Client can transfer files using to remote server using NVT

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11) The Bootstrap Protocol (BOOTP) is a client/server protocol designed to provide _____ of information for a diskless computer or a computer that is booted for the first time.
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c) Window bug d) None of these

13) In a _____ name space, a name is assigned to an address. A name in this space is a sequence of characters without structure.
a) Flat b) Hierarchical
c) Organized d) None of these

14) What a server is responsible for or has authority over is called a _____
a) Domain b) Label
c) Zone d) None of these

SLR-GF-797

Seat No.	

Set S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
INFORMATION TECHNOLOGY ENGINEERING
Computer Networks (BTN05404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt the following (Any Three) **12**
- **a)** Draw and illustrate the OSI reference model.
- **b)** State and Extend different notations used in classful addressing.
- **c)** Draw and explain the user datagram format.
- **d)** Explain in detail the congestion control in TCP.

Q.3 Identify and illustrate the services of TCP. **08**

OR

State and explain all the socket system calls in socket interface.

Q.4 Attempt any two **08**
- **a)** SCTP services
- **b)** Classless addressing
- **c)** Concurrency in Server

Section – II

Q.5 Attempt the following (Any Three) **12**
- **a)** Draw and illustrate the packet format of BOOTP.
- **b)** Explain the distribution of name space in DNS.
- **c)** Extend with figure the two connections establishment in FTP.
- **d)** Identify and illustrate option negotiation from TELNET.

Q.6 Draw and illustrate the message format of TFTP. **08**

OR

Extend in detail the role of message transfer agent in an electronic mail system.

Q.7 Attempt any two. **08**
- **a)** POP and IMAP
- **b)** Local and remote login in TELNET
- **c)** DNS Messages

SLR-GF-802

Seat No.		Set	P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Engineering Mathematics - III (BTN07301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of calculated is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The particular integral of $\frac{1}{D^2-4D+3}e^{2x}$ is equal to _____.

a) e^x b) $-e^{2x}$
c) e^{-2x} d) e^{3x}

2) The complementary function of $(D+1)^3y = e^{-x}$ is _____.

a) $(c_1+c_2x)e^x$ b) $(c_1+c_2x)e^{-x}$
c) $(c_1+c_2x+c_3x^2)e^x$ d) $(c_1+c_2x+c_3x^2)e^{-x}$

3) The solution of $x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} = 0$ is _____.

a) $y = c_1 + c_2e^x$ b) $y = c_1 + c_2x$
c) $y = c_1 + c_2x^2$ d) $y = c_1x + c_2x^2$

4) Laplace transform of $t\,e^{-t}$ is _____.

a) $\frac{1}{(s+1)^2}$ b) $-\frac{1}{(s+1)^2}$
c) $\frac{s}{(s+1)^2}$ d) $-\frac{s}{(s+1)^2}$

5) If $L\{f(t)\} = \varphi(s)$, then $L\{f(at)\}$= _____.

a) $\varphi(s/a)$ b) $\frac{1}{s}\varphi(s/a)$
c) $\frac{1}{a}\varphi(s/a)$ d) None of these

6) If $L^{-1}\{\varphi_1(s)\} = f_1(t), L^{-1}\{\varphi_2(s)\} = f_2(t)$, then $L^{-1}\{\varphi_1(s)\varphi_2(s)\} =$

a) $\int_0^t f_1(u)f_2(t-u)du$ b) $\int_0^t f_1(u)f_2(t)du$
c) $\int_0^t f_1(t)f_2(t)du$ d) None of these

7) $L^{-1}\left\{\frac{s+2}{(s+2)^2-25}\right\} =$ _____.

a) $e^{2t}\cosh 5t$ b) $e^{-2t}\cosh 25t$

c) $e^{-2t}\sinh 5t$ d) $e^{-2t}\cosh 5t$

8) The solution of the equation $p+q=1$ is _____.

a) $z=ax+by+c$ b) $z=ax+(a-1)y+c$

c) $z=ax+b(1-y)+c$ d) None of these

9) The solution of $px^2+qy^2=z^2$ is _____.

a) $\emptyset(x+y+z, x-y-z)=0$ b) $\emptyset\left(\frac{1}{x}-\frac{1}{y}, \frac{1}{y}-\frac{1}{z}\right)=0$

c) $\emptyset(x^2+y^2+z^2, xyz)=0$ d) None of these

10) If $z\{f(k)\}=F(z)$ then $z\{a^k f(k)\}$=_____.

a) $F\left(\frac{a}{z}\right)$ b) $F\left(\frac{z}{a}\right)$

c) $\frac{1}{a}F\left(\frac{z}{a}\right)$ d) $\frac{1}{a}F\left(\frac{a}{z}\right)$

11) If $f(k)=4^k, k\geq 0$ then its z transform is defined for _____.

a) $|z|>4$ b) $|z|<4$

c) $|z|>0$ d) None of these

12) Inverse Z transform of $\frac{z}{z+a}, |Z|>a$ with $k\geq 0$ is _____.

a) a^k b) $(-a)^k$

c) a^{k+1} d) $(-a)^{k+1}$

13) If the function is an analytic in connected region C $\int_c f(z)dz$=_____.

a) 0 b) $2\pi i$

c) $-4\pi i$ d) $4\pi i$

14) The Cauchy Integral formula for $\int \frac{f(z)}{(z-z_0)^n}dz$ is _____.

a) $\frac{2\pi i}{(n+1)!}f^{n-1}(z_0)$ b) $\frac{2\pi i}{(n)!}f^{n+1}(z_0)$

c) $\frac{2\pi i}{(n-1)!}f^{n}(z_0)$ d) None of these

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Engineering Mathematics - III (BTN07301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of calculator is allowed.

Section – I

Q.2 Attempt any three of the following question. **09**

a) $(D^2 + 5D + 6)y = e^{2x}$

b) $(D^3 + 1)y = \cos 2x$

c) $(D^2 + 4)y = x \cos x$

d) $x^2 \frac{d^2y}{dx^2} - x\frac{dy}{dx} + y = 2\log x$

e) $(1+x)^2 \frac{d^2y}{dx^2} + (1+x)\frac{dy}{dx} + y = 2\cos\log(1+x)$

Q.3 Attempt any three of the following question. **09**

a) $L\{4t^2 + \sin 3t + e^{2t}\}$

b) $L\{t \sin 2t\}$

c) Find the Laplace Transform of $\int_0^\infty \frac{e^{-at} - e^{-bt}}{t}\, dt$

d) Find inverse Laplace transform of $\tan^{-1}\left(\frac{2}{s}\right)$

e) Find the Laplace transform of integral $\int_0^t \frac{\sin u}{u}\, du$

Q.4 Attempt any two of the following question. **10**

a) $(D^2 + 4D + 4)y = \frac{e^{-2x}}{1+x^2}$

b) In LC circuit the charge Q on a plate of condenser is given by $\frac{d^2Q}{dt^2} + \frac{Q}{CL} = \frac{E}{L}\ \cos\omega t$. $Q = Q_0$ & $i = i_0$ when $t = 0$
Prove that the charge at any time t is given by
$Q = Q_0 \cos\omega t + \frac{i_0}{\omega}\sin\omega t + \frac{E_0}{2L\omega} t \sin\omega t$ where $\omega^2 = \frac{1}{LC}$

c) Find inverse Laplace transform by using convolution theorem $\frac{1}{(s+3)(s-1)}$

Section – II

Q.5 Attempt any three of the following question. **09**

a) Solve $p^2 + q^2 = z$

b) Solve $p - q = x^2 + y^2$

c) Evaluate $\int_c \frac{e^{2z}}{(z-1)^4}\, dz$ where C is $|z-1| = 3$.

d) Evaluate $\int_c |z| dz$ where C is the left half of the unit circle $|z| = 1$ from $z = -i$ *to* $z = i$.

e) Find z transform of $f(k) = c^k \sin ak,\ k \geq 0$ where a is real.

Q.6 Attempt any three of the following question. **09**

a) Solve $xzp + yzq = z^2$

b) Evaluate $\int_0^{1+i}(x - y + ix^2)dz$ along the line from $z = 0$ to $z = 1 + i$

c) Calculate residue of $\frac{1-\cos}{z^3}$

d) Find $Z\{4^k\}, k \geq 0$ with its region of Convergence.

e) Find the transform $Z\{k\},\ k \geq 0$

Q.7 Attempt any two of the following question. **10**

a) Solve the following partial differential equation by the method of separation of variables $\frac{\partial u}{\partial x} = 4\frac{\partial u}{\partial y}$ given $u(x, 0) = 8e^{-3y}$

b) Evaluate $\int_c \frac{z+6}{z^2-4} dz$ where c is circle given by $|z-2| = 1$

c) Find the inverse z transform of $\frac{z}{(z-1)(z-2)}$, $|z| > 2$

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Engineering Mathematics - III (BTN07301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The solution of the equation $p + q = 1$ is _____.

a) $z = ax + by + c$ b) $z = ax + (a-1)y + c$
c) $z = ax + b(1-y) + c$ d) None of these

2) The solution of $px^2 + qy^2 = z^2$ is _____.

a) $\emptyset(x + y + z, x - y - z) = 0$ b) $\emptyset\left(\frac{1}{x} - \frac{1}{y}, \frac{1}{y} - \frac{1}{z}\right) = 0$
c) $\emptyset(x^2 + y^2 + z^2, xyz) = 0$ d) None of these

3) If $z\{f(k)\} = F(z)$ then $z\{a^k f(k)\}$=_____.

a) $F\left(\frac{a}{z}\right)$ b) $F\left(\frac{z}{a}\right)$
c) $\frac{1}{a}F\left(\frac{z}{a}\right)$ d) $\frac{1}{a}F\left(\frac{a}{z}\right)$

4) If $f(k) = 4^k, k \geq 0$ then its z transform is defined for _____.

a) $|z| > 4$ b) $|z| < 4$
c) $|z| > 0$ d) None of these

5) Inverse Z transform of $\frac{z}{z+a}, |Z| > a$ with $k \geq 0$ is _____.

a) a^k b) $(-a)^k$
c) a^{k+1} d) $(-a)^{k+1}$

6) If the function is an analytic in connected region C $\int_c f(z)dz$=_____.

a) 0 b) $2\pi i$
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a) $\frac{2\pi i}{(n+1)!} f^{n-1}(z_0)$ b) $\frac{2\pi i}{(n)!} f^{n+1}(z_0)$
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a) $(c_1+c_2x)e^x$ b) $(c_1+c_2x)e^{-x}$

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c) $y = c_1 + c_2x^2$ d) $y = c_1x + c_2x^2$

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a) $\frac{1}{(s+1)^2}$ b) $-\frac{1}{(s+1)^2}$

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c) $\frac{1}{a}\varphi(s/a)$ d) None of these

13) If $L^{-1}\{\varphi_1(s)\} = f_1(t), L^{-1}\{\varphi_2(s)\} = f_2(t)$, then $L^{-1}\{\varphi_1(s)\varphi_2(s)\} =$

a) $\int_0^t f_1(u)f_2(t-u)du$ b) $\int_0^t f_1(u)f_2(t)du$

c) $\int_0^t f_1(t)f_2(t)du$ d) None of these

14) $L^{-1}\left\{\frac{s+2}{(s+2)^2-25}\right\} =$ _____.

a) $e^{2t}\cosh 5t$ b) $e^{-2t}\cosh 25t$

c) $e^{-2t}\sinh 5t$ d) $e^{-2t}\cosh 5t$

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Engineering Mathematics - III (BTN07301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of calculator is allowed.

Section – I

Q.2 Attempt any three of the following question. **09**

a) $(D^2 + 5D + 6)y = e^{2x}$

b) $(D^3 + 1)y = \cos 2x$

c) $(D^2 + 4)y = x \cos x$

d) $x^2 \frac{d^2y}{dx^2} - x\frac{dy}{dx} + y = 2\log x$

e) $(1+x)^2 \frac{d^2y}{dx^2} + (1+x)\frac{dy}{dx} + y = 2\cos\log(1+x)$

Q.3 Attempt any three of the following question. **09**

a) $L\{4t^2 + \sin 3t + e^{2t}\}$

b) $L\{t \sin 2t\}$

c) Find the Laplace Transform of $\int_0^\infty \frac{e^{-at} - e^{-bt}}{t}\, dt$

d) Find inverse Laplace transform of $\tan^{-1}\left(\frac{2}{s}\right)$

e) Find the Laplace transform of integral $\int_0^t \frac{\sin u}{u}\, du$

Q.4 Attempt any two of the following question. **10**

a) $(D^2 + 4D + 4)y = \frac{e^{-2x}}{1+x^2}$

b) In LC circuit the charge Q on a plate of condenser is given by $\frac{d^2Q}{dt^2} + \frac{Q}{CL} = \frac{E}{L}\ \cos\omega t$. $Q = Q_0$ & $i = i_0$ when $t = 0$
Prove that the charge at any time t is given by
$Q = Q_0 \cos\omega t + \frac{i_0}{\omega}\sin\omega t + \frac{E_0}{2L\omega} t \sin\omega t$ where $\omega^2 = \frac{1}{LC}$

c) Find inverse Laplace transform by using convolution theorem $\frac{1}{(s+3)(s-1)}$

Section – II

Q.5 Attempt any three of the following question. **09**

a) Solve $p^2 + q^2 = z$

b) Solve $p - q = x^2 + y^2$

c) Evaluate $\int_c \frac{e^{2z}}{(z-1)^4}\, dz$ where C is $|z-1| = 3$.

d) Evaluate $\int_c |z| dz$ where C is the left half of the unit circle $|z| = 1$ from $z = -i \; to \; z = i$.

e) Find z transform of $f(k) = c^k \sin ak, \; k \geq 0$ where a is real.

Q.6 Attempt any three of the following question. **09**

a) Solve $xzp + yzq = z^2$

b) Evaluate $\int_0^{1+i} (x - y + ix^2) dz$ along the line from $z = 0$ to $z = 1 + i$

c) Calculate residue of $\frac{1-\cos}{z^3}$

d) Find $Z\{4^k\}, k \geq 0$ with its region of Convergence.

e) Find the transform $Z\{k\}, \; k \geq 0$

Q.7 Attempt any two of the following question. **10**

a) Solve the following partial differential equation by the method of separation of variables $\frac{\partial u}{\partial x} = 4\frac{\partial u}{\partial y}$ given $u(x, 0) = 8e^{-3y}$

b) Evaluate $\int_c \frac{z+6}{z^2-4} dz$ where c is circle given by $|z-2| = 1$

c) Find the inverse z transform of $\frac{z}{(z-1)(z-2)}$, $|z| > 2$

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Engineering Mathematics - III (BTN07301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of calculated is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If $f(k) = 4^k, k \geq 0$ then its z transform is defined for _____.
a) $|z| > 4$ b) $|z| < 4$
c) $|z| > 0$ d) None of these

2) Inverse Z transform of $\frac{z}{z+a}, |Z| > a$ with $k \geq 0$ is _____.
a) a^k b) $(-a)^k$
c) a^{k+1} d) $(-a)^{k+1}$

3) If the function is an analytic in connected region C $\int_c f(z)dz$=_____.
a) 0 b) $2\pi i$
c) $-4\pi i$ d) $4\pi i$

4) The Cauchy Integral formula for $\int \frac{f(z)}{(z-z_0)^n} dz$ is _____.
a) $\frac{2\pi i}{(n+1)!} f^{n-1}(z_0)$ b) $\frac{2\pi i}{(n)!} f^{n+1}(z_0)$
c) $\frac{2\pi i}{(n-1)!} f^{n}(z_0)$ d) None of these

5) The particular integral of $\frac{1}{D^2-4D+3} e^{2x}$ is equal to _____.
a) e^x b) $-e^{2x}$
c) e^{-2x} d) e^{3x}

6) The complementary function of $(D+1)^3 y = e^{-x}$ is _____.
a) $(c_1 + c_2 x)e^x$ b) $(c_1 + c_2 x)e^{-x}$
c) $(c_1 + c_2 x + c_3 x^2)e^x$ d) $(c_1 + c_2 x + c_3 x^2)e^{-x}$

7) The solution of $x^2 \frac{d^2y}{dx^2} - x\frac{dy}{dx} = 0$ is _____.
a) $y = c_1 + c_2 e^x$ b) $y = c_1 + c_2 x$
c) $y = c_1 + c_2 x^2$ d) $y = c_1 x + c_2 x^2$

8) Laplace transform of $t\,e^{-t}$ is _____.

a) $\dfrac{1}{(s+1)^2}$ b) $-\dfrac{1}{(s+1)^2}$

c) $\dfrac{s}{(s+1)^2}$ d) $-\dfrac{s}{(s+1)^2}$

9) If $L\{f(t)\} = \varphi(s)$, then $L\{f(at)\}$= _____.

a) $\varphi(s/a)$ b) $\dfrac{1}{s}\varphi(s/a)$

c) $\dfrac{1}{a}\varphi(s/a)$ d) None of these

10) If $L^{-1}\{\varphi_1(s)\} = f_1(t), L^{-1}\{\varphi_2(s)\} = f_2(t)$, then $L^{-1}\{\varphi_1(s)\varphi_2(s)\} =$

a) $\int_0^t f_1(u) f_2(t-u)du$ b) $\int_0^t f_1(u) f_2(t)du$

c) $\int_0^t f_1(t) f_2(t)du$ d) None of these

11) $L^{-1}\left\{\dfrac{s+2}{(s+2)^2-25}\right\} =$ _____.

a) $e^{2t}\cosh 5t$ b) $e^{-2t}\cosh 25t$

c) $e^{-2t}\sinh 5t$ d) $e^{-2t}\cosh 5t$

12) The solution of the equation $p+q=1$ is _____.

a) $z = ax + by + c$ b) $z = ax + (a-1)y + c$

c) $z = ax + b(1-y) + c$ d) None of these

13) The solution of $px^2 + qy^2 = z^2$ is _____.

a) $\emptyset(x+y+z, x-y-z) = 0$ b) $\emptyset\left(\dfrac{1}{x}-\dfrac{1}{y}, \dfrac{1}{y}-\dfrac{1}{z}\right) = 0$

c) $\emptyset(x^2+y^2+z^2, xyz) = 0$ d) None of these

14) If $z\{f(k)\} = F(z)$ then $z\{a^k f(k)\}$=_____.

a) $F\left(\dfrac{a}{z}\right)$ b) $F\left(\dfrac{z}{a}\right)$

c) $\dfrac{1}{a}F\left(\dfrac{z}{a}\right)$ d) $\dfrac{1}{a}F\left(\dfrac{a}{z}\right)$

SLR-GF-802

Seat No.	

Set R

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Engineering Mathematics - III (BTN07301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of calculator is allowed.

Section – I

Q.2 Attempt any three of the following question. **09**

a) $(D^2 + 5D + 6)y = e^{2x}$

b) $(D^3 + 1)y = \cos 2x$

c) $(D^2 + 4)y = x \cos x$

d) $x^2 \frac{d^2y}{dx^2} - x\frac{dy}{dx} + y = 2 \log x$

e) $(1 + x)^2 \frac{d^2y}{dx^2} + (1 + x)\frac{dy}{dx} + y = 2 \cos \log(1 + x)$

Q.3 Attempt any three of the following question. **09**

a) $L\{4t^2 + \sin 3t + e^{2t}\}$

b) $L\{t \sin 2t\}$

c) Find the Laplace Transform of $\int_0^\infty \frac{e^{-at} - e^{-bt}}{t}\, dt$

d) Find inverse Laplace transform of $\tan^{-1}\left(\frac{2}{s}\right)$

e) Find the Laplace transform of integral $\int_0^t \frac{\sin u}{u}\, du$

Q.4 Attempt any two of the following question. **10**

a) $(D^2 + 4D + 4)y = \frac{e^{-2x}}{1 + x^2}$

b) In LC circuit the charge Q on a plate of condenser is given by $\frac{d^2Q}{dt^2} + \frac{Q}{CL} = \frac{E}{L}\ \cos\omega t$. $Q = Q_0$ & $i = i_0$ when $t = 0$
Prove that the charge at any time t is given by
$Q = Q_0 \cos \omega t + \frac{i_0}{\omega} \sin \omega t + \frac{E_0}{2L\omega} t \sin \omega t$ where $\omega^2 = \frac{1}{LC}$

c) Find inverse Laplace transform by using convolution theorem $\frac{1}{(s+3)(s-1)}$

Section – II

Q.5 Attempt any three of the following question. **09**

a) Solve $p^2 + q^2 = z$

b) Solve $p - q = x^2 + y^2$

c) Evaluate $\int_c \frac{e^{2z}}{(z-1)^4}\, dz$ where C is $|z-1| = 3$.

d) Evaluate $\int_c |z| dz$ where C is the left half of the unit circle $|z| = 1$ from $z = -i$ *to* $z = i$.

e) Find z transform of $f(k) = c^k \sin ak,\ k \geq 0$ where a is real.

Q.6 Attempt any three of the following question. **09**

a) Solve $xzp + yzq = z^2$

b) Evaluate $\int_0^{1+i}(x - y + ix^2)dz$ along the line from $z = 0$ to $z = 1 + i$

c) Calculate residue of $\frac{1-\cos}{z^3}$

d) Find $Z\{4^k\}, k \geq 0$ with its region of Convergence.

e) Find the transform $Z\{k\},\ k \geq 0$

Q.7 Attempt any two of the following question. **10**

a) Solve the following partial differential equation by the method of separation of variables $\frac{\partial u}{\partial x} = 4\frac{\partial u}{\partial y}$ given $u(x, 0) = 8e^{-3y}$

b) Evaluate $\int_c \frac{z+6}{z^2-4} dz$ where c is circle given by $|z-2| = 1$

c) Find the inverse z transform of $\frac{z}{(z-1)(z-2)}$, $|z| > 2$

Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Engineering Mathematics - III (BTN07301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of calculated is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If $L^{-1}\{\varphi_1(s)\} = f_1(t), L^{-1}\{\varphi_2(s)\} = f_2(t)$, then $L^{-1}\{\varphi_1(s)\varphi_2(s)\} =$

a) $\int_0^t f_1(u) f_2(t-u)du$ b) $\int_0^t f_1(u) f_2(t)du$

c) $\int_0^t f_1(t) f_2(t)du$ d) None of these

2) $L^{-1}\left\{\frac{s+2}{(s+2)^2-25}\right\} =$ _____.

a) $e^{2t}\cosh 5t$ b) $e^{-2t}\cosh 25t$

c) $e^{-2t}\sinh 5t$ d) $e^{-2t}\cosh 5t$

3) The solution of the equation $p + q = 1$ is _____.

a) $z = ax + by + c$ b) $z = ax + (a-1)y + c$

c) $z = ax + b(1-y) + c$ d) None of these

4) The solution of $px^2 + qy^2 = z^2$ is _____.

a) $\emptyset(x+y+z, x-y-z) = 0$ b) $\emptyset\left(\frac{1}{x}-\frac{1}{y}, \frac{1}{y}-\frac{1}{z}\right) = 0$

c) $\emptyset(x^2+y^2+z^2, xyz) = 0$ d) None of these

5) If $z\{f(k)\} = F(z)$ then $z\{a^k f(k)\}$=_____.

a) $F\left(\frac{a}{z}\right)$ b) $F\left(\frac{z}{a}\right)$

c) $\frac{1}{a}F\left(\frac{z}{a}\right)$ d) $\frac{1}{a}F\left(\frac{a}{z}\right)$

6) If $f(k) = 4^k, k \geq 0$ then its z transform is defined for ____.

a) $|z| > 4$ b) $|z| < 4$

c) $|z| > 0$ d) None of these

7) Inverse Z transform of $\frac{z}{z+a}$, $|Z| > a$ with $k \geq 0$ is _____.

a) a^k b) $(-a)^k$

c) a^{k+1} d) $(-a)^{k+1}$

8) If the function is an analytic in connected region C $\int_c f(z)dz$=_____.

a) 0 b) $2\pi i$

c) $-4\pi i$ d) $4\pi i$

9) The Cauchy Integral formula for $\int \frac{f(z)}{(z-z_0)^n} dz$ is _____.

a) $\frac{2\pi i}{(n+1)!} f^{n-1}(z_0)$ b) $\frac{2\pi i}{(n)!} f^{n+1}(z_0)$

c) $\frac{2\pi i}{(n-1)!} f^{n}(z_0)$ d) None of these

10) The particular integral of $\frac{1}{D^2-4D+3} e^{2x}$ is equal to _____.

a) e^x b) $-e^{2x}$

c) e^{-2x} d) e^{3x}

11) The complementary function of $(D+1)^3 y = e^{-x}$ is _____.

a) $(c_1 + c_2 x)e^x$ b) $(c_1 + c_2 x)e^{-x}$

c) $(c_1 + c_2 x + c_3 x^2)e^x$ d) $(c_1 + c_2 x + c_3 x^2)e^{-x}$

12) The solution of $x^2 \frac{d^2y}{dx^2} - x\frac{dy}{dx} = 0$ is _____.

a) $y = c_1 + c_2 e^x$ b) $y = c_1 + c_2 x$

c) $y = c_1 + c_2 x^2$ d) $y = c_1 x + c_2 x^2$

13) Laplace transform of $t\, e^{-t}$ is _____.

a) $\frac{1}{(s+1)^2}$ b) $-\frac{1}{(s+1)^2}$

c) $\frac{s}{(s+1)^2}$ d) $-\frac{s}{(s+1)^2}$

14) If $L\{f(t)\} = \varphi(s)$, then $L\{f(at)\}$= _____.

a) $\varphi(s/a)$ b) $\frac{1}{s}\varphi(s/a)$

c) $\frac{1}{a}\varphi(s/a)$ d) None of these

Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Engineering Mathematics - III (BTN07301)

Day & Date: Thursday, 18-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of calculator is allowed.

Section – I

Q.2 Attempt any three of the following question. **09**

a) $(D^2 + 5D + 6)y = e^{2x}$

b) $(D^3 + 1)y = \cos 2x$

c) $(D^2 + 4)y = x \cos x$

d) $x^2 \frac{d^2y}{dx^2} - x\frac{dy}{dx} + y = 2\log x$

e) $(1+x)^2 \frac{d^2y}{dx^2} + (1+x)\frac{dy}{dx} + y = 2\cos\log(1+x)$

Q.3 Attempt any three of the following question. **09**

a) $L\{4t^2 + \sin 3t + e^{2t}\}$

b) $L\{t \sin 2t\}$

c) Find the Laplace Transform of $\int_0^\infty \frac{e^{-at} - e^{-bt}}{t}\, dt$

d) Find inverse Laplace transform of $\tan^{-1}\left(\frac{2}{s}\right)$

e) Find the Laplace transform of integral $\int_0^t \frac{\sin u}{u}\, du$

Q.4 Attempt any two of the following question. **10**

a) $(D^2 + 4D + 4)y = \frac{e^{-2x}}{1+x^2}$

b) In LC circuit the charge Q on a plate of condenser is given by $\frac{d^2Q}{dt^2} + \frac{Q}{CL} = \frac{E}{L}\ \cos\omega t$. $Q = Q_0$ & $i = i_0$ when $t = 0$
Prove that the charge at any time t is given by
$Q = Q_0 \cos\omega t + \frac{i_0}{\omega}\sin\omega t + \frac{E_0}{2L\omega} t \sin\omega t$ where $\omega^2 = \frac{1}{LC}$

c) Find inverse Laplace transform by using convolution theorem $\frac{1}{(s+3)(s-1)}$

Section – II

Q.5 Attempt any three of the following question. **09**

a) Solve $p^2 + q^2 = z$

b) Solve $p - q = x^2 + y^2$

c) Evaluate $\int_c \frac{e^{2z}}{(z-1)^4}\, dz$ where C is $|z-1| = 3$.

d) Evaluate $\int_c |z| dz$ where C is the left half of the unit circle $|z| = 1$ from $z = -i \; to \; z = i$.

e) Find z transform of $f(k) = c^k \sin ak, \; k \geq 0$ where a is real.

Q.6 Attempt any three of the following question. **09**

a) Solve $xzp + yzq = z^2$

b) Evaluate $\int_0^{1+i} (x - y + ix^2) dz$ along the line from $z = 0$ to $z = 1 + i$

c) Calculate residue of $\frac{1-\cos}{z^3}$

d) Find $Z\{4^k\}, k \geq 0$ with its region of Convergence.

e) Find the transform $Z\{k\}, \; k \geq 0$

Q.7 Attempt any two of the following question. **10**

a) Solve the following partial differential equation by the method of separation of variables $\frac{\partial u}{\partial x} = 4\frac{\partial u}{\partial y}$ given $u(x, 0) = 8e^{-3y}$

b) Evaluate $\int_c \frac{z+6}{z^2-4} dz$ where c is circle given by $|z-2| = 1$

c) Find the inverse z transform of $\frac{z}{(z-1)(z-2)}$, $|z| > 2$

SLR-GF-803

Seat No.	

Set P

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - I (BTN07302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Draw neat diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) The critical resistance of the d.c. generator is the resistance of _____.
a) armature b) load
c) field d) brushes

2) In lap winding, the number of brushes is always _____.
a) Double the number of poles b) Same as the number of poles
c) Half the number of poles d) Two

3) The efficiency of d.c. shunt generator is maximum when _____.
a) Magnetic losses are equal to mechanical losses
b) Armature copper losses are equal to constant losses
c) Field copper losses are equal to constant losses
d) Stray losses are equal to copper losses

4) What will happen if the back e.m.f. in the d.c. motor absent?
a) Motor will run faster than rated value
b) Motor will burn
c) Armature drop will be reduced substantially
d) None of the above

5) In a D.C. scries motor, if the armature current is reduced by 50%, the torque of the motor will be equal to _____.
a) 100% of the previous value b) 50% of the previous value
c) 25% of the previous value d) None of these

6) Hopkinson's test on D.C. machines is conducted at _____.
a) no-load b) part load
c) full-load d) overload

7) To perform field test on d.c. machines two motors are required. The motors used are _____.
a) Series motors
b) One will be series motor and other will be shunt motors
c) Shunt motors
d) None of these

8) In an ideal transformer, _____.
a) windings have no resistance b) core has no losses
c) core has infinite permeability d) all of the above

9) The ordinary efficiency of a given transformer is maximum when _____.
a) it runs at half full-load b) it runs at full-load
c) its Cu loss equals iron loss d) it runs slightly overload

10) The essential condition for parallel operation of two 1- φ transformers is that they should have the same _____.
a) polarity b) kVA rating
c) voltage ratio d) percentage impedance

11) Transformers are rated in kVA instead of kW because _____.
a) load power factor is often not known
b) kVA is fixed whereas kW depends on load p.f.
c) total transformer loss depends on voltampere
d) it has become customary

12) When a V – V system is converted into a $\Delta - \Delta$ system, increase in capacity of the system is _____ percent.
a) 86.6 b) 66.7
c) 73.2 d) 50

13) Out of the following given choices for poly phase transformer connections which one will you select for three to-two phase conversion?
a) Scott b) star/star
c) double Scott d) star/double-delta

14) An autotransformer having a transformation ratio of 0.8 supplies a load of 3 kW. The power transferred conductively from primary to secondary is _____ kW.
a) 0.6 b) 2.4
c) 1.5 d) 0.27

Seat No.	

Set **P**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - I (BTN07302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt any four of the following: **16**

a) With help of neat diagram explain speed control methods of dc shunt motor.

b) What is the necessity of a starter? Explain the 4-point starter with a neat diagram.

c) With a neat sketch explain the Hopkinson's test for dc motor.

d) A DC Shunt motor designed to operate on 500 V supply takes full load current of 42 A and runs at 800 rpm. The flux per pole is reduced to 75% of its normal value. Calculate the speed of the motor if the total torque exerted on the armature is
i) unchanged
ii) reduced by 20%.
The armature resistance is $0.6\ \Omega$ and the total voltage loss at the brushes is 2V.

e) A 4 pole DC generator with a shunt field resistance of $100\ \Omega$ and an armature resistance of $1\ \Omega$ has 378 wave connected conductors in its armature. The flux per pole is 0.02 Wb. If the load resistance of $10\ \Omega$ is connected across the armature terminal and the generator is driven at 1000 rpm., calculate the load current and power absorbed by the load.

Q.3 Attempt the following: **12**

a) With neat sketch explain the armature reaction, its effect and remedies to overcome it.

b) A 440 V, 4-pole, lap-connected shunt motor has a no-load input current of 15 A and a shunt field current of 10 A. At full load, it takes a current of 150 A. If armature resistance = 0.1 ohms, flux per pole on no-load = 0.05 weber, number of armature conductors = 750, and contact drop per brush = 1 V, calculate:
i) No-load speed
ii) Full-load speed
iii) Speed regulation
Armature reaction weakens the field by 1.5% on full load.

OR

b) The brake test on a DC shunt motor gave the following results: tensions on two sides of the brake were 10 kg and 35 kg, radius of pully 20 cm, speed 950 rpm, Input current was 30 A at 200V. Find:

i) Output torque
ii) Output power
iii) Input power
iv) Efficiency

Section – II

Q.4 Attempt any four of the following: **16**

a) Derive an emf equation of transformer.

b) Explain with phasor diagram a practical transformer on load condition.

c) A 220/400 V, 10 kVA, 50Hz, single-phase transformer has copper loss of 120 W at full load. If it has an efficiency of 98% at full load, unity power factor, determine the iron losses. What would be the efficiency of the transformer at half full-load at 0.8 p.f. lagging.

d) With a neat sketch explain Δ-Δ connection of a 3-Ø transformer.

e) A single-phase transformer with a ratio 5: 1 has primary resistance of 0.4 ohm and reactance of 1.2 ohm and the secondary resistance of 0.01 and reactance of 0.04 ohm. Determine the percentage regulation when delivering 125 A at 600 V at 0.8 p.f. lagging.

f) Derive the condition for maximum efficiency of a transformer.

Q.5 Attempt any two of the following: **12**

a) Explain open delta and Scott connections for three phase transformers.

b) Two single phase transformers are connected in parallel. Both of them are having equal turns and an impedance of (0.5 + j3) ohm and (0.6 + j10) ohm with respect to the secondary. Determine how they will share a total load of 100 kW at power factor 0.8 lagging.

c) Explain how Open circuit and short circuit tests are conducted on single phase transformer to calculate equivalent circuit parameters and efficiency.

Seat No.	

Set **Q**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - I (BTN07302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Draw neat diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. **14**

1) In an ideal transformer, _____.
a) windings have no resistance b) core has no losses
c) core has infinite permeability d) all of the above

2) The ordinary efficiency of a given transformer is maximum when _____.
a) it runs at half full-load b) it runs at full-load
c) its Cu loss equals iron loss d) it runs slightly overload

3) The essential condition for parallel operation of two 1- φ transformers is that they should have the same _____.
a) polarity b) kVA rating
c) voltage ratio d) percentage impedance

4) Transformers are rated in kVA instead of kW because _____.
a) load power factor is often not known
b) kVA is fixed whereas kW depends on load p.f.
c) total transformer loss depends on voltampere
d) it has become customary

5) When a V – V system is converted into a $\Delta - \Delta$ system, increase in capacity of the system is _____ percent.
a) 86.6 b) 66.7
c) 73.2 d) 50

6) Out of the following given choices for poly phase transformer connections which one will you select for three to-two phase conversion?
a) Scott b) star/star
c) double Scott d) star/double-delta

7) An autotransformer having a transformation ratio of 0.8 supplies a load of 3 kW. The power transferred conductively from primary to secondary is _____ kW.

a) 0.6 b) 2.4
c) 1.5 d) 0.27

8) The critical resistance of the d.c. generator is the resistance of _____.

a) armature b) load
c) field d) brushes

9) In lap winding, the number of brushes is always _____.

a) Double the number of poles b) Same as the number of poles
c) Half the number of poles d) Two

10) The efficiency of d.c. shunt generator is maximum when _____.

a) Magnetic losses are equal to mechanical losses
b) Armature copper losses are equal to constant losses
c) Field copper losses are equal to constant losses
d) Stray losses are equal to copper losses

11) What will happen if the back e.m.f. in the d.c. motor absent?

a) Motor will run faster than rated value
b) Motor will burn
c) Armature drop will be reduced substantially
d) None of the above

12) In a D.C. scries motor, if the armature current is reduced by 50%, the torque of the motor will be equal to _____.

a) 100% of the previous value b) 50% of the previous value
c) 25% of the previous value d) None of these

13) Hopkinson's test on D.C. machines is conducted at _____.

a) no-load b) part load
c) full-load d) overload

14) To perform field test on d.c. machines two motors are required. The motors used are _____.

a) Series motors
b) One will be series motor and other will be shunt motors
c) Shunt motors
d) None of these

Seat No.	

Set **Q**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - I (BTN07302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt any four of the following: **16**

a) With help of neat diagram explain speed control methods of dc shunt motor.

b) What is the necessity of a starter? Explain the 4-point starter with a neat diagram.

c) With a neat sketch explain the Hopkinson's test for dc motor.

d) A DC Shunt motor designed to operate on 500 V supply takes full load current of 42 A and runs at 800 rpm. The flux per pole is reduced to 75% of its normal value. Calculate the speed of the motor if the total torque exerted on the armature is
i) unchanged
ii) reduced by 20%.
The armature resistance is $0.6\ \Omega$ and the total voltage loss at the brushes is 2V.

e) A 4 pole DC generator with a shunt field resistance of $100\ \Omega$ and an armature resistance of $1\ \Omega$ has 378 wave connected conductors in its armature. The flux per pole is 0.02 Wb. If the load resistance of $10\ \Omega$ is connected across the armature terminal and the generator is driven at 1000 rpm., calculate the load current and power absorbed by the load.

Q.3 Attempt the following: **12**

a) With neat sketch explain the armature reaction, its effect and remedies to overcome it.

b) A 440 V, 4-pole, lap-connected shunt motor has a no-load input current of 15 A and a shunt field current of 10 A. At full load, it takes a current of 150 A. If armature resistance = 0.1 ohms, flux per pole on no-load = 0.05 weber, number of armature conductors = 750, and contact drop per brush = 1 V, calculate:
i) No-load speed
ii) Full-load speed
iii) Speed regulation
Armature reaction weakens the field by 1.5% on full load.

OR

b) The brake test on a DC shunt motor gave the following results: tensions on two sides of the brake were 10 kg and 35 kg, radius of pully 20 cm, speed 950 rpm, Input current was 30 A at 200V. Find:

i) Output torque
ii) Output power
iii) Input power
iv) Efficiency

Section – II

Q.4 Attempt any four of the following: **16**

a) Derive an emf equation of transformer.

b) Explain with phasor diagram a practical transformer on load condition.

c) A 220/400 V, 10 kVA, 50Hz, single-phase transformer has copper loss of 120 W at full load. If it has an efficiency of 98% at full load, unity power factor, determine the iron losses. What would be the efficiency of the transformer at half full-load at 0.8 p.f. lagging.

d) With a neat sketch explain Δ-Δ connection of a 3-Ø transformer.

e) A single-phase transformer with a ratio 5: 1 has primary resistance of 0.4 ohm and reactance of 1.2 ohm and the secondary resistance of 0.01 and reactance of 0.04 ohm. Determine the percentage regulation when delivering 125 A at 600 V at 0.8 p.f. lagging.

f) Derive the condition for maximum efficiency of a transformer.

Q.5 Attempt any two of the following: **12**

a) Explain open delta and Scott connections for three phase transformers.

b) Two single phase transformers are connected in parallel. Both of them are having equal turns and an impedance of (0.5 + j3) ohm and (0.6 + j10) ohm with respect to the secondary. Determine how they will share a total load of 100 kW at power factor 0.8 lagging.

c) Explain how Open circuit and short circuit tests are conducted on single phase transformer to calculate equivalent circuit parameters and efficiency.

Seat No.	

Set **R**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - I (BTN07302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Draw neat diagrams wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

1) Transformers are rated in kVA instead of kW because _____.
a) load power factor is often not known
b) kVA is fixed whereas kW depends on load p.f.
c) total transformer loss depends on voltampere
d) it has become customary

2) When a V – V system is converted into a Δ – Δ system, increase in capacity of the system is _____ percent.
a) 86.6 b) 66.7
c) 73.2 d) 50

3) Out of the following given choices for poly phase transformer connections which one will you select for three to-two phase conversion?
a) Scott b) star/star
c) double Scott d) star/double-delta

4) An autotransformer having a transformation ratio of 0.8 supplies a load of 3 kW. The power transferred conductively from primary to secondary is _____ kW.
a) 0.6 b) 2.4
c) 1.5 d) 0.27

5) The critical resistance of the d.c. generator is the resistance of _____.
a) armature b) load
c) field d) brushes

6) In lap winding, the number of brushes is always _____.
a) Double the number of poles b) Same as the number of poles
c) Half the number of poles d) Two

7) The efficiency of d.c. shunt generator is maximum when _____.
a) Magnetic losses are equal to mechanical losses
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8) What will happen if the back e.m.f. in the d.c. motor absent?
a) Motor will run faster than rated value
b) Motor will burn
c) Armature drop will be reduced substantially
d) None of the above

9) In a D.C. scries motor, if the armature current is reduced by 50%, the torque of the motor will be equal to _____.
a) 100% of the previous value b) 50% of the previous value
c) 25% of the previous value d) None of these

10) Hopkinson's test on D.C. machines is conducted at _____.
a) no-load b) part load
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11) To perform field test on d.c. machines two motors are required. The motors used are _____.
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b) One will be series motor and other will be shunt motors
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a) it runs at half full-load b) it runs at full-load
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14) The essential condition for parallel operation of two 1- φ transformers is that they should have the same _____.
a) polarity b) kVA rating
c) voltage ratio d) percentage impedance

Seat No.	

Set **R**

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - I (BTN07302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
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Section – I

Q.2 Attempt any four of the following: **16**

a) With help of neat diagram explain speed control methods of dc shunt motor.

b) What is the necessity of a starter? Explain the 4-point starter with a neat diagram.

c) With a neat sketch explain the Hopkinson's test for dc motor.

d) A DC Shunt motor designed to operate on 500 V supply takes full load current of 42 A and runs at 800 rpm. The flux per pole is reduced to 75% of its normal value. Calculate the speed of the motor if the total torque exerted on the armature is
i) unchanged
ii) reduced by 20%.
The armature resistance is $0.6\ \Omega$ and the total voltage loss at the brushes is 2V.

e) A 4 pole DC generator with a shunt field resistance of $100\ \Omega$ and an armature resistance of $1\ \Omega$ has 378 wave connected conductors in its armature. The flux per pole is 0.02 Wb. If the load resistance of $10\ \Omega$ is connected across the armature terminal and the generator is driven at 1000 rpm., calculate the load current and power absorbed by the load.

Q.3 Attempt the following: **12**

a) With neat sketch explain the armature reaction, its effect and remedies to overcome it.

b) A 440 V, 4-pole, lap-connected shunt motor has a no-load input current of 15 A and a shunt field current of 10 A. At full load, it takes a current of 150 A. If armature resistance = 0.1 ohms, flux per pole on no-load = 0.05 weber, number of armature conductors = 750, and contact drop per brush = 1 V, calculate:
i) No-load speed
ii) Full-load speed
iii) Speed regulation
Armature reaction weakens the field by 1.5% on full load.

OR

b) The brake test on a DC shunt motor gave the following results: tensions on two sides of the brake were 10 kg and 35 kg, radius of pully 20 cm, speed 950 rpm, Input current was 30 A at 200V. Find:

i) Output torque
ii) Output power
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Section – II

Q.4 Attempt any four of the following: **16**

a) Derive an emf equation of transformer.

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d) With a neat sketch explain Δ-Δ connection of a 3-Ø transformer.

e) A single-phase transformer with a ratio 5: 1 has primary resistance of 0.4 ohm and reactance of 1.2 ohm and the secondary resistance of 0.01 and reactance of 0.04 ohm. Determine the percentage regulation when delivering 125 A at 600 V at 0.8 p.f. lagging.

f) Derive the condition for maximum efficiency of a transformer.

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b) Two single phase transformers are connected in parallel. Both of them are having equal turns and an impedance of (0.5 + j3) ohm and (0.6 + j10) ohm with respect to the secondary. Determine how they will share a total load of 100 kW at power factor 0.8 lagging.

c) Explain how Open circuit and short circuit tests are conducted on single phase transformer to calculate equivalent circuit parameters and efficiency.

Seat No.		Set	S

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - I (BTN07302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options. 14

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a) Series motors
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7) When a V – V system is converted into a $\Delta - \Delta$ system, increase in capacity of the system is _____ percent.
a) 86.6 b) 66.7
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8) Out of the following given choices for poly phase transformer connections which one will you select for three to-two phase conversion?

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9) An autotransformer having a transformation ratio of 0.8 supplies a load of 3 kW. The power transferred conductively from primary to secondary is _____ kW.

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b) 2.4
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14) In a D.C. scries motor, if the armature current is reduced by 50%, the torque of the motor will be equal to _____.

a) 100% of the previous value
b) 50% of the previous value
c) 25% of the previous value
d) None of these

Seat No.		Set	S

S.Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - I (BTN07302)

Day & Date: Saturday, 06-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
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4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt any four of the following: **16**

a) With help of neat diagram explain speed control methods of dc shunt motor.

b) What is the necessity of a starter? Explain the 4-point starter with a neat diagram.

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Q.3 Attempt the following: **12**

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b) A 440 V, 4-pole, lap-connected shunt motor has a no-load input current of 15 A and a shunt field current of 10 A. At full load, it takes a current of 150 A. If armature resistance = 0.1 ohms, flux per pole on no-load = 0.05 weber, number of armature conductors = 750, and contact drop per brush = 1 V, calculate:
i) No-load speed
ii) Full-load speed
iii) Speed regulation
Armature reaction weakens the field by 1.5% on full load.

OR

b) The brake test on a DC shunt motor gave the following results: tensions on two sides of the brake were 10 kg and 35 kg, radius of pully 20 cm, speed 950 rpm, Input current was 30 A at 200V. Find:

i) Output torque
ii) Output power
iii) Input power
iv) Efficiency

Section – II

Q.4 Attempt any four of the following: **16**

a) Derive an emf equation of transformer.

b) Explain with phasor diagram a practical transformer on load condition.

c) A 220/400 V, 10 kVA, 50Hz, single-phase transformer has copper loss of 120 W at full load. If it has an efficiency of 98% at full load, unity power factor, determine the iron losses. What would be the efficiency of the transformer at half full-load at 0.8 p.f. lagging.

d) With a neat sketch explain Δ-Δ connection of a 3-Ø transformer.

e) A single-phase transformer with a ratio 5: 1 has primary resistance of 0.4 ohm and reactance of 1.2 ohm and the secondary resistance of 0.01 and reactance of 0.04 ohm. Determine the percentage regulation when delivering 125 A at 600 V at 0.8 p.f. lagging.

f) Derive the condition for maximum efficiency of a transformer.

Q.5 Attempt any two of the following: **12**

a) Explain open delta and Scott connections for three phase transformers.

b) Two single phase transformers are connected in parallel. Both of them are having equal turns and an impedance of (0.5 + j3) ohm and (0.6 + j10) ohm with respect to the secondary. Determine how they will share a total load of 100 kW at power factor 0.8 lagging.

c) Explain how Open circuit and short circuit tests are conducted on single phase transformer to calculate equivalent circuit parameters and efficiency.

SLR-GF-804

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System - I (BTN07304)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from options. **14**

1) Heating value of coal is approximately _____.
a) 1000-2000 kcal/kg b) 2000-4000 kcal/kg
c) 5000-6500 kcal/kg d) 9000-10,500 kcal/kg

2) Pressure of steam in condenser is _____.
a) atmospheric pressure b) more than pressure
c) slightly less than pressure d) much less than pressure

3) Critical pressure of water is _____.
a) 1 kg / cm^2 b) 100 kg / cm^2
c) 155 kg / cm^2 d) 213.8 kg / cm^2

4) Overall thermal efficiency of a steam power station is in the range _____.
a) 18-24% b) 30-40%
c) 44-62% d) 68-79%

5) In power station practice "spinning reserve" is _____.
a) reserve generating capacity that is in operation but not in service
b) reserve generating capacity that is connected to bus and ready to take the load
c) reserve generating capacity that is available for service but not in operation
d) capacity of the part of the plant that remains under maintenance

6) For low head and high discharge, the hydraulic turbine used is _____.
a) Kaplan turbine b) Francis turbine
c) Pelton wheel d) Jonual turbine

7) 1 atomic mass unit is equal to _____.
a) 1.66 x 10^{-27} kg b) 1.66 x 10^{-25} kg
c) 1.66 x 10^{-17} kg d) 1.66 x 10^{-10} kg

8) In two-part tariff, variation in load factor will affect _____.

a) fixed charges
b) operating or running charges
c) both (a) and (b)
d) either (a) or (b)

9) String efficiency is given by _____

a) (voltage across the string) / ((numbers of discs on the string) x (voltage across disc nearest to the conductor))
b) ((voltage across the string) x (numbers of discs on the string)) / (voltage across disc nearest to the conductor)
c) ((voltage across disc nearest to the conductor) x (numbers of discs on the string)) / (voltage across the string)
d) (voltage across disc nearest to the conductor) / ((numbers of discs on the string) x (voltage across the string))

10) Strain type insulator arc used where the conductors arc _____.

a) dead ended
b) at intermediate anchor towers
c) any of the above
d) none of the above

11) In three-unit insulator string, voltage across the lowest unit is 17.5 kV and string efficiency is 84.28%. The total voltage across the string will be equal to _____.

a) 8.285 kV
b) 44.25 kV
c) 88.25 kV
d) 442.5 kV

12) The ratio of puncture voltage to the flash-over voltage of a line insulator is _____.

a) equal to 1
b) lower than 1
c) much greater than 1
d) none

13) For the same conductor length, same amount of power, same losses and same maximum voltage to earth, which system requires minimum conductor area?

a) single phase AC
b) 3 phase AC
c) 2 wire AC
d) 3 wire DC

14) Spillway belongs to which structure: _____.

a) Hydroelectric power plant
b) Steam power station
c) Nuclear power station
d) Wind turbine

Seat No.	

Set | P

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System - I (BTN07304)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Solve any four. **16**

a) Write a short note on Base load and Peak load power plant.
b) Write the number of factors considered while the selection of Hydro power plant.
c) Explain merits and demerits of Gas Power Plant.
d) Classify the different types of Tariffs.
e) Explain the wind power plant and different factors considered for the selection of this power plant.

Q.3 Solve any two. **12**

a) From the following data, estimate the cost per kWh for the generating station:
Plant capacity = 50 MW
Annual load factor = 40%
Capital cost = Rs 12 x 106
Annual cost of wages, taxes etc. = Rs 4,00,000; cost of fuel, lubrication, maintenance = Rs 17,52,000; Annual interest and depreciation = 10% of initial value.
b) A factory has a maximum load of 300 kW at 0.72 p.f. lagging with an annual consumption of 40,000 units. The tariff in force is Rs 4.5 per kVA of maximum demand plus 2 paise per unit. Calculate the flat rate of energy consumption. What will be the annual saving if p.f. is raised to unity?
c) Write a note on nuclear power plant with suitable sketch.

Section – II

Q.4 Solve any four. **16**

a) Derive an expression for 3-phase 3-wire system for OHT.
b) Write a short note on Pin type Insulator with neat sketch.
c) Explain the Kelvin's Law.
d) Write properties and characteristics of insulating material used in insulators.
e) Explain the typical layout of Electrical supply system with proper voltage level.

Q.5 Solve any two. **12**

a) Each line of a 3-phase system is suspended by a string of 3 similar insulators. If the voltage across the line unit is 17.5 kV, calculate the line to neutral voltage. Assume that the shunt capacitance between each insulator and earth is $1/8^{th}$ of the capacitance of the insulator itself. Also find the string efficiency.
b) Explain strain and shackle types insulators.
c) Comparison of conductor cost for various Overhead AC transmission systems.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power System - I (BTN07304)

Day & Date: Monday, 08-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from options. **14**

1) In two-part tariff, variation in load factor will affect _____.
a) fixed charges b) operating or running charges
c) both (a) and (b) d) either (a) or (b)

2) String efficiency is given by _____
a) (voltage across the string) / ((numbers of discs on the string) x (voltage across disc nearest to the conductor))
b) ((voltage across the string) x (numbers of discs on the string)) / (voltage across disc nearest to the conductor)
c) ((voltage across disc nearest to the conductor) x (numbers of discs on the string)) / (voltage across the string)
d) (voltage across disc nearest to the conductor) / ((numbers of discs on the string) x (voltage across the string))

3) Strain type insulator arc used where the conductors arc _____.
a) dead ended b) at intermediate anchor towers
c) any of the above d) none of the above

4) In three-unit insulator string, voltage across the lowest unit is 17.5 kV and string efficiency is 84.28%. The total voltage across the string will be equal to _____.
a) 8.285 kV b) 44.25 kV
c) 88.25 kV d) 442.5 kV

5) The ratio of puncture voltage to the flash-over voltage of a line insulator is _____.
a) equal to 1 b) lower than 1
c) much greater than 1 d) none

6) For the same conductor length, same amount of power, same losses and same maximum voltage to earth, which system requires minimum conductor area?
a) single phase AC b) 3 phase AC
c) 2 wire AC d) 3 wire DC

7) Spillway belongs to which structure: _____.
a) Hydroelectric power plant b) Steam power station
c) Nuclear power station d) Wind turbine

8) Heating value of coal is approximately _____.
a) 1000-2000 kcal/kg b) 2000-4000 kcal/kg
c) 5000-6500 kcal/kg d) 9000-10,500 kcal/kg

9) Pressure of steam in condenser is _____.
a) atmospheric pressure b) more than pressure
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10) Critical pressure of water is _____.
a) 1 kg / cm^2 b) 100 kg / cm^2
c) 155 kg / cm^2 d) 213.8 kg / cm^2

11) Overall thermal efficiency of a steam power station is in the range _____.
a) 18-24% b) 30-40%
c) 44-62% d) 68-79%

12) In power station practice "spinning reserve" is _____.
a) reserve generating capacity that is in operation but not in service
b) reserve generating capacity that is connected to bus and ready to take the load
c) reserve generating capacity that is available for service but not in operation
d) capacity of the part of the plant that remains under maintenance

13) For low head and high discharge, the hydraulic turbine used is _____.
a) Kaplan turbine b) Francis turbine
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14) 1 atomic mass unit is equal to _____.
a) 1.66 x 10^{-27} kg b) 1.66 x 10^{-25} kg
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Seat No.	

Set | Q

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Section – I

Q.2 Solve any four. **16**

a) Write a short note on Base load and Peak load power plant.
b) Write the number of factors considered while the selection of Hydro power plant.
c) Explain merits and demerits of Gas Power Plant.
d) Classify the different types of Tariffs.
e) Explain the wind power plant and different factors considered for the selection of this power plant.

Q.3 Solve any two. **12**

a) From the following data, estimate the cost per kWh for the generating station:
Plant capacity = 50 MW
Annual load factor = 40%
Capital cost = Rs 12 x 106
Annual cost of wages, taxes etc. = Rs 4,00,000; cost of fuel, lubrication, maintenance = Rs 17,52,000; Annual interest and depreciation = 10% of initial value.
b) A factory has a maximum load of 300 kW at 0.72 p.f. lagging with an annual consumption of 40,000 units. The tariff in force is Rs 4.5 per kVA of maximum demand plus 2 paise per unit. Calculate the flat rate of energy consumption. What will be the annual saving if p.f. is raised to unity?
c) Write a note on nuclear power plant with suitable sketch.

Section – II

Q.4 Solve any four. **16**

a) Derive an expression for 3-phase 3-wire system for OHT.
b) Write a short note on Pin type Insulator with neat sketch.
c) Explain the Kelvin's Law.
d) Write properties and characteristics of insulating material used in insulators.
e) Explain the typical layout of Electrical supply system with proper voltage level.

Q.5 Solve any two. **12**

a) Each line of a 3-phase system is suspended by a string of 3 similar insulators. If the voltage across the line unit is 17.5 kV, calculate the line to neutral voltage. Assume that the shunt capacitance between each insulator and earth is $1/8^{th}$ of the capacitance of the insulator itself. Also find the string efficiency.
b) Explain strain and shackle types insulators.
c) Comparison of conductor cost for various Overhead AC transmission systems.

Seat No.	

Set **R**

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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14) Strain type insulator arc used where the conductors arc _____.
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- b) at intermediate anchor towers
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Seat No.	

Set **R**

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Section – II

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Seat No.	

Set | S

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Duration: 30 Minutes Marks: 14

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SLR-GF-804

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
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Power System - I (BTN07304)

Day & Date: Monday, 08-01-2024 Max. Marks: 56
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Section – I

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Section – II

Q.4 Solve any four. **16**

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SLR-GF-805

Seat No.	

Set P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electronic Devices and Circuits (BTN07305)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Thermal runaway occurs when _____.
a) Collector is reverse biased b) Transistor is not biased
c) Emitter is forward biased d) Junction capacitance is high

2) The disadvantage of voltage divider bias, that it has _____.
a) High stability factor b) Low base current
c) Many resistor d) None of the above

3) Zener diode can be used as _____.
a) d.c. voltage regulator only
b) a.c. voltage regulator only
c) both d.c. and a.c. voltage regulator
d) none of the above

4) The dc current gain in common collector configuration is given by _____.
a) α b) β
c) $\beta + 1$ d) $\alpha + 1$

5) In which mode of BJT operation are both junctions reverse biased _____.
a) active b) saturation
c) cut off d) reverse active

6) For an NPN transistor in normal bias _____.
a) Only holes cross the collector junction
b) Only majority carriers cross the collector junction
c) The emitter junction has high resistance
d) Emitter junction is forward biased and collector junction is reverse biased

7) The ideal value for stability factor for biasing circuit is _____.
a) 1 b) 5
c) 0 d) 100

8) In BJT base region is made very thin so that _____.
a) Recombination in base region is minimum
b) Electric field gradient in base is high
c) Base can be easily fabricated
d) Base can be easily biased

9) In the input RC circuit of a single stage BJT amplifier, by how much does the base voltage lead the input voltage for frequencies much larger than the cutoff frequency in the low frequency region?
a) About 0° b) 45°
c) About 90° d) None of the above

10) If temperature changes, h parameters of a transistor _____.
a) May or may not change b) Do not change
c) Also change d) None of the above

11) In an unregulated power supply, if load current increases, the output voltage _____.
a) Remains the same b) Decreases
c) Increases d) None of the above

12) The gain of an amplifier without feedback is 100 dB. If negative feedback of 3 db is applied, the gain of the amplifier will become _____.
a) 5 dB b) 300 dB
c) 103 dB d) 97 dB

13) An emitter-follower is also known as a _____.
a) common-emitter amplifier b) common-base amplifier
c) common-collector amplifier d) Darlington pair

14) A transistor behaves as a linear device for _____.
a) Small signals only b) Large signals only
c) Both small and large signals d) None of the above

Seat No.	

Set **P**

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Section – I

Q.2 Answer the Following. (Any Four) **16**

a) Explain neat diagram of DC load line of BJT. Write significance of load line.
b) Explain the details effect of coupling capacitor on frequency response of CE amplifier.
c) Derive the relation between α & β, derive equation for α & β.
d) "For amplifier application Q point is selected into center of load line." Justify & explain this statement.
e) Define the terms related to small signal parameter of JFET.
i) DC drain to source resistance
ii) Amplification factor
iii) AC drain resistance
iv) Transconductance

Q.3 Answer the Following. (Any Two) **12**

a) Draw & Explain V-I characteristics of JFET, also draw & explain V-I characteristics for different value of V_{GS}.
b) Determine the voltage gain, current gain, input resistance using hybrid model of BJT in a CE amplifier?
c) Design a single stage CE amplifier which has $V_{CEQ} = 5V$, $I_{CEQ} = 5$ mA, $V_{CC} = 12V$, $A_V = 100$, $A_i = 150$, $V_{BE} = 0.6V$, hie = 2.5 kΩ, s = 3, $R_L = 1k\Omega$.

Section – II

Q.4 Answer the Following. (Any Four) **16**

a) Draw the Circuit diagram of Full wave center tap rectifier with π filter. Explain.
b) Explain crossover distortion in power amplifier with suitable diagram.
c) Explain with diagram transformer coupled class-A amplifier.
d) Derive the equation for voltage series feedback amplifier for effect of Input resistance (R_{if}).
e) Differentiate between negative and positive feedback amplifiers.

Q.5 Answer the Following. (Any Two) **12**

a) Design an unregulated power supply using capacitor filter, supply to give DC output voltage of 50V at 1KΩ load with ripple factor not exceeding 3%, use two diode rectifiers.
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Seat No.	

Set **Q**

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Seat No.	

Set **Q**

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Section – II

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Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electronic Devices and Circuits (BTN07305)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In an unregulated power supply, if load current increases, the output voltage _____.
a) Remains the same b) Decreases
c) Increases d) None of the above

2) The gain of an amplifier without feedback is 100 dB. If negative feedback of 3 db is applied, the gain of the amplifier will become _____.
a) 5 dB b) 300 dB
c) 103 dB d) 97 dB

3) An emitter-follower is also known as a _____.
a) common-emitter amplifier b) common-base amplifier
c) common-collector amplifier d) Darlington pair

4) A transistor behaves as a linear device for _____.
a) Small signals only b) Large signals only
c) Both small and large signals d) None of the above

5) Thermal runaway occurs when _____.
a) Collector is reverse biased b) Transistor is not biased
c) Emitter is forward biased d) Junction capacitance is high

6) The disadvantage of voltage divider bias, that it has _____.
a) High stability factor b) Low base current
c) Many resistor d) None of the above

7) Zener diode can be used as _____.
a) d.c. voltage regulator only
b) a.c. voltage regulator only
c) both d.c. and a.c. voltage regulator
d) none of the above

8) The dc current gain in common collector configuration is given by _____.
a) α b) β
c) $\beta + 1$ d) $\alpha + 1$

9) In which mode of BJT operation are both junctions reverse biased _____.
a) active b) saturation
c) cut off d) reverse active

10) For an NPN transistor in normal bias _____.
a) Only holes cross the collector junction
b) Only majority carriers cross the collector junction
c) The emitter junction has high resistance
d) Emitter junction is forward biased and collector junction is reverse biased

11) The ideal value for stability factor for biasing circuit is _____.
a) 1 b) 5
c) 0 d) 100

12) In BJT base region is made very thin so that _____.
a) Recombination in base region is minimum
b) Electric field gradient in base is high
c) Base can be easily fabricated
d) Base can be easily biased

13) In the input RC circuit of a single stage BJT amplifier, by how much does the base voltage lead the input voltage for frequencies much larger than the cutoff frequency in the low frequency region?
a) About 0° b) 45°
c) About 90° d) None of the above

14) If temperature changes, h parameters of a transistor _____.
a) May or may not change b) Do not change
c) Also change d) None of the above

Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electronic Devices and Circuits (BTN07305)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the Following. (Any Four) **16**

a) Explain neat diagram of DC load line of BJT. Write significance of load line.
b) Explain the details effect of coupling capacitor on frequency response of CE amplifier.
c) Derive the relation between α & β, derive equation for α & β.
d) "For amplifier application Q point is selected into center of load line." Justify & explain this statement.
e) Define the terms related to small signal parameter of JFET.
i) DC drain to source resistance
ii) Amplification factor
iii) AC drain resistance
iv) Transconductance

Q.3 Answer the Following. (Any Two) **12**

a) Draw & Explain V-I characteristics of JFET, also draw & explain V-I characteristics for different value of V_{GS}.
b) Determine the voltage gain, current gain, input resistance using hybrid model of BJT in a CE amplifier?
c) Design a single stage CE amplifier which has $V_{CEQ} = 5V$, $I_{CEQ} = 5$ mA, $V_{CC} = 12V$, $A_V = 100$, $A_i = 150$, $V_{BE} = 0.6V$, hie = 2.5 kΩ, s = 3, $R_L = 1k\Omega$.

Section – II

Q.4 Answer the Following. (Any Four) **16**

a) Draw the Circuit diagram of Full wave center tap rectifier with π filter. Explain.
b) Explain crossover distortion in power amplifier with suitable diagram.
c) Explain with diagram transformer coupled class-A amplifier.
d) Derive the equation for voltage series feedback amplifier for effect of Input resistance (R_{if}).
e) Differentiate between negative and positive feedback amplifiers.

Q.5 Answer the Following. (Any Two) **12**

a) Design an unregulated power supply using capacitor filter, supply to give DC output voltage of 50V at 1KΩ load with ripple factor not exceeding 3%, use two diode rectifiers.
b) Explain the concept of critical inductance in LC filter with their derivation.
c) Derive the equation for voltage series feedback amplifier for effect of output resistance (R_{of}).

Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electronic Devices and Circuits (BTN07305)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) For an NPN transistor in normal bias _____.
a) Only holes cross the collector junction
b) Only majority carriers cross the collector junction
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2) The ideal value for stability factor for biasing circuit is _____.
a) 1 b) 5
c) 0 d) 100

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b) Electric field gradient in base is high
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4) In the input RC circuit of a single stage BJT amplifier, by how much does the base voltage lead the input voltage for frequencies much larger than the cutoff frequency in the low frequency region?
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c) About 90° d) None of the above

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c) Also change d) None of the above

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c) Increases d) None of the above

7) The gain of an amplifier without feedback is 100 dB. If negative feedback of 3 db is applied, the gain of the amplifier will become _____.
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c) 103 dB d) 97 dB

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c) common-collector amplifier d) Darlington pair

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c) Both small and large signals d) None of the above

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12) Zener diode can be used as _____.
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b) a.c. voltage regulator only
c) both d.c. and a.c. voltage regulator
d) none of the above

13) The dc current gain in common collector configuration is given by _____.
a) α b) β
c) $\beta + 1$ d) $\alpha + 1$

14) In which mode of BJT operation are both junctions reverse biased _____.
a) active b) saturation
c) cut off d) reverse active

SLR-GF-805

Seat No.	

Set S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electronic Devices and Circuits (BTN07305)

Day & Date: Wednesday, 10-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the Following. (Any Four) **16**

a) Explain neat diagram of DC load line of BJT. Write significance of load line.
b) Explain the details effect of coupling capacitor on frequency response of CE amplifier.
c) Derive the relation between α & β, derive equation for α & β.
d) "For amplifier application Q point is selected into center of load line." Justify & explain this statement.
e) Define the terms related to small signal parameter of JFET.
i) DC drain to source resistance
ii) Amplification factor
iii) AC drain resistance
iv) Transconductance

Q.3 Answer the Following. (Any Two) **12**

a) Draw & Explain V-I characteristics of JFET, also draw & explain V-I characteristics for different value of V_{GS}.
b) Determine the voltage gain, current gain, input resistance using hybrid model of BJT in a CE amplifier?
c) Design a single stage CE amplifier which has $V_{CEQ} = 5V$, $I_{CEQ} = 5$ mA, $V_{CC} = 12V$, $A_V = 100$, $A_i = 150$, $V_{BE} = 0.6V$, hie = 2.5 kΩ, s = 3, $R_L = 1k\Omega$.

Section – II

Q.4 Answer the Following. (Any Four) **16**

a) Draw the Circuit diagram of Full wave center tap rectifier with π filter. Explain.
b) Explain crossover distortion in power amplifier with suitable diagram.
c) Explain with diagram transformer coupled class-A amplifier.
d) Derive the equation for voltage series feedback amplifier for effect of Input resistance (R_{if}).
e) Differentiate between negative and positive feedback amplifiers.

Q.5 Answer the Following. (Any Two) **12**

a) Design an unregulated power supply using capacitor filter, supply to give DC output voltage of 50V at 1KΩ load with ripple factor not exceeding 3%, use two diode rectifiers.
b) Explain the concept of critical inductance in LC filter with their derivation.
c) Derive the equation for voltage series feedback amplifier for effect of output resistance (R_{of}).

SLR-GF-806

Seat No.	

Set P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

2) For handling greater currents induction wattmeters are used in conjunction with _____.
a) potential transformers b) current transformers
c) power transformer d) either of the above

3) Induction type single phase energy meters measure electric energy in _____.
a) kW b) Wh
c) kWh d) VAR

4) In majority of instruments damping is provided by _____.
a) fluid friction b) spring
c) eddy currents d) all of the above

5) Basically, a potentiometer is a device for _____.
a) comparing two voltages b) measuring a current
c) comparing two currents d) measuring a voltage

6) In order to achieve high accuracy, the slide wire of a potentiometer should be _____.
a) as long as possible b) as short as possible
c) neither too small not too large d) very thick

7) Instrument transformers are _____.
a) potential transformers b) current transformers
c) both (a) and (b) d) power transformers

8) An instrument transformer is used to extend the range of _____.
a) induction instrument b) electrostatic instrument
c) moving coil instrument d) any of the above

9) For measurement of mutual inductance, we can use _____.
a) Anderson bridge b) Maxwell's bridge
c) Heaviside bridge d) Any of the above

10) In a Weston frequency meter, the magnetic axes of the two fixed coils are ____.
a) parallel b) perpendicular
c) inclined at 60° d) inclined at 120°

11) To measure radio frequency, the suitable frequency meter is _____.
a) Weston frequency meter
b) reed vibrator frequency meter
c) heterodoxy frequency meter
d) electrical resonance frequency meter

12) A CRO can display _____.
a) AC signals b) DC signals
c) Both AC and DC signals d) Time invariant signals

13) The internal resistance of an ammeter should be _____.
a) Very small b) Medium
c) High d) Infinity

14) In a moving coil instrument, the deflecting torque is proportional to _____.
a) Current b) Square of the current
c) Square root of the current d) sine of the measurand

Seat No.		Set	P

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Friday, 12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR **16**

a) Write classification of measuring instruments.
b) Define standard & explain types of standard.
c) Explain the working of megger with neat diagram.
d) Explain Maxwell's inductance bridge with phasor diagram.
e) With neat sketch explain PMMC type instrument.

Q.3 Attempt any TWO **12**

a) Explain construction & operation of 1-Φ electrodynamometerpower factor meter.
b) Explain Schering Bridge measurement of unknown capacitance with phasor diagram.
c) A bridge consists of the following:
Arm ab : - A choke coil having resistance R_1 & inductance L_1
Arm bc : - A non-inductive resistance R_3
Arm cd : - A mica condenser C_4 in series with non-inductive resistance R_4
Arm da : - A non-inductive resistance R_2
When this bridge fed from a source of 500 Hz, balance is obtained underfollowing conditions
$R_2 = 2410\ \Omega, R_3 = 750\ \Omega, C_4 = 0.35\ \mu F, R_4 = 64.5\ \Omega$
The series resistance of capacitor is 0.4 Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

Section – II

Q.4 Attempt any FOUR **16**

a) Difference between CT and PT.
b) Write note on Digital voltmeter.
c) Explain Q-meter with neat diagram.
d) Write note on digital storage oscilloscope.
e) Explain digital measurement of time period.

Q.5 Attempt any TWO **12**

a) Draw the block diagram of CRO and explain each block.
b) Explain with neat diagram, working of ramp type digital voltmeter
c) Draw typical phasor diagram of potential transformer. Derive an expression for actual transformation ratio.

Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no. 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) An instrument transformer is used to extend the range of _____.
a) induction instrument b) electrostatic instrument
c) moving coil instrument d) any of the above

2) For measurement of mutual inductance, we can use _____.
a) Anderson bridge b) Maxwell's bridge
c) Heaviside bridge d) Any of the above

3) In a Weston frequency meter, the magnetic axes of the two fixed coils are ____.
a) parallel b) perpendicular
c) inclined at 60° d) inclined at 120°

4) To measure radio frequency, the suitable frequency meter is _____.
a) Weston frequency meter
b) reed vibrator frequency meter
c) heterodoxy frequency meter
d) electrical resonance frequency meter

5) A CRO can display _____.
a) AC signals b) DC signals
c) Both AC and DC signals d) Time invariant signals

6) The internal resistance of an ammeter should be _____.
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c) High d) Infinity

7) In a moving coil instrument, the deflecting torque is proportional to _____.
a) Current b) Square of the current
c) Square root of the current d) sine of the measurand

8) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

9) For handling greater currents induction wattmeters are used in conjunction with _____.

a) potential transformers b) current transformers
c) power transformer d) either of the above

10) Induction type single phase energy meters measure electric energy in _____.

a) kW b) Wh
c) kWh d) VAR

11) In majority of instruments damping is provided by _____.

a) fluid friction b) spring
c) eddy currents d) all of the above

12) Basically, a potentiometer is a device for _____.

a) comparing two voltages b) measuring a current
c) comparing two currents d) measuring a voltage

13) In order to achieve high accuracy, the slide wire of a potentiometer should be _____.

a) as long as possible b) as short as possible
c) neither too small not too large d) very thick

14) Instrument transformers are _____.

a) potential transformers b) current transformers
c) both (a) and (b) d) power transformers

Seat No.		Set	Q

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Friday, 12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR **16**

a) Write classification of measuring instruments.
b) Define standard & explain types of standard.
c) Explain the working of megger with neat diagram.
d) Explain Maxwell's inductance bridge with phasor diagram.
e) With neat sketch explain PMMC type instrument.

Q.3 Attempt any TWO **12**

a) Explain construction & operation of 1-Φ electrodynamometerpower factor meter.
b) Explain Schering Bridge measurement of unknown capacitance with phasor diagram.
c) A bridge consists of the following:
Arm ab : - A choke coil having resistance R_1 & inductance L_1
Arm bc : - A non-inductive resistance R_3
Arm cd : - A mica condenser C_4 in series with non-inductive resistance R_4
Arm da : - A non-inductive resistance R_2
When this bridge fed from a source of 500 Hz, balance is obtained underfollowing conditions
$R_2 = 2410\ \Omega, R_3 = 750\ \Omega, C_4 = 0.35\ \mu F, R_4 = 64.5\ \Omega$
The series resistance of capacitor is 0.4 Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

Section – II

Q.4 Attempt any FOUR **16**

a) Difference between CT and PT.
b) Write note on Digital voltmeter.
c) Explain Q-meter with neat diagram.
d) Write note on digital storage oscilloscope.
e) Explain digital measurement of time period.

Q.5 Attempt any TWO **12**

a) Draw the block diagram of CRO and explain each block.
b) Explain with neat diagram, working of ramp type digital voltmeter
c) Draw typical phasor diagram of potential transformer. Derive an expression for actual transformation ratio.

Seat No.		Set	R

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) To measure radio frequency, the suitable frequency meter is _____.
a) Weston frequency meter
b) reed vibrator frequency meter
c) heterodoxy frequency meter
d) electrical resonance frequency meter

2) A CRO can display _____.
a) AC signals b) DC signals
c) Both AC and DC signals d) Time invariant signals

3) The internal resistance of an ammeter should be _____.
a) Very small b) Medium
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4) In a moving coil instrument, the deflecting torque is proportional to _____.
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c) Square root of the current d) sine of the measurand

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13) For measurement of mutual inductance, we can use _____.
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Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Friday, 12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt any FOUR **16**

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b) Define standard & explain types of standard.
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Section – II

Q.4 Attempt any FOUR **16**

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b) Write note on Digital voltmeter.
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Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Friday, 12-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book page no. 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In order to achieve high accuracy, the slide wire of a potentiometer should be _____.
a) as long as possible b) as short as possible
c) neither too small not too large d) very thick

2) Instrument transformers are _____.
a) potential transformers b) current transformers
c) both (a) and (b) d) power transformers

3) An instrument transformer is used to extend the range of _____.
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Seat No.		Set	S

S. Y. (B. Tech) (Sem - I) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Friday, 12-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any FOUR **16**

a) Write classification of measuring instruments.
b) Define standard & explain types of standard.
c) Explain the working of megger with neat diagram.
d) Explain Maxwell's inductance bridge with phasor diagram.
e) With neat sketch explain PMMC type instrument.

Q.3 Attempt any TWO **12**

a) Explain construction & operation of 1-Φ electrodynamometerpower factor meter.
b) Explain Schering Bridge measurement of unknown capacitance with phasor diagram.
c) A bridge consists of the following:
Arm ab : - A choke coil having resistance R_1 & inductance L_1
Arm bc : - A non-inductive resistance R_3
Arm cd : - A mica condenser C_4 in series with non-inductive resistance R_4
Arm da : - A non-inductive resistance R_2
When this bridge fed from a source of 500 Hz, balance is obtained underfollowing conditions
$R_2 = 2410\ \Omega, R_3 = 750\ \Omega, C_4 = 0.35\ \mu F, R_4 = 64.5\ \Omega$
The series resistance of capacitor is 0.4 Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

Section – II

Q.4 Attempt any FOUR **16**

a) Difference between CT and PT.
b) Write note on Digital voltmeter.
c) Explain Q-meter with neat diagram.
d) Write note on digital storage oscilloscope.
e) Explain digital measurement of time period.

Q.5 Attempt any TWO **12**

a) Draw the block diagram of CRO and explain each block.
b) Explain with neat diagram, working of ramp type digital voltmeter
c) Draw typical phasor diagram of potential transformer. Derive an expression for actual transformation ratio.

SLR-GF-807

Seat No.	

Set P

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - II (BTN07402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer. **14**

1) A 3-phase slip ring motor has _____.
a) double cage rotor b) wound rotor
c) short-circuited rotor d) any of the above

2) The maximum torque in an induction motor depends on _____.
a) Frequency b) rotor inductive reactance
c) square of supply voltage d) all of the above

3) The auto-starters (using three auto transformers) can be used to start cage induction motor of the following type _____.
a) star connected only b) delta connected only
c) (A) and (B) both d) none of the above

4) In case of the induction motors the torque is _____.
a) inversely proportional to (√slip)
b) directly proportional to square of slip
c) inversely proportional to slip
d) directly proportional to slip

5) In Ns is the synchronous speed and s the slip, then actual running speed of an induction motor will be _____.
a) Ns b) s.N,
c) (1-s)Ns d) (Ns-1)s

6) DOL starting of induction motors is usually restricted to _____.
a) low horsepower motors b) variable speed motors
c) high horsepower motors d) high speed motors

7) The speed of a squirrel-cage induction motor can be controlled by all of the following expect.
a) changing supply frequency b) changing number of poles
c) changing winding resistance d) reducing supply voltage

8) A single-phase induction motor is _____.
a) inherently self-starting with high torque
b) inherently non-self-starting with low torque
c) inherently self-starting with low torque
d) inherently non-self-starting with high torque

9) In a single phase motor the centrifugal switch _____.
a) disconnects auxiliary winding of the motor
b) disconnects main winding of the motor
c) reconnects the main winding the motor
d) reconnects the auxiliary winding of the motor

10) The winding of a 4-pole alternator having 36 slots and coil span is _____ Degrees.
a) 140 b) 80
c) 20 d) 40

11) Zero power factor method of an alternator is used to find its _____.
a) efficiency b) voltage regulation
c) armature resistance d) synchronous impedance

12) Synchronous motor always runs at _____.
a) speed which is less than synchronous speed
b) speed which is greater than synchronous speed
c) synchronous speed
d) none of the above

13) Under which of the following conditions hunting of synchronous motor is likely to occur?
a) Periodic variation of load b) Over-excitation
c) Over-loading for long periods d) Small and constant load

14) Mostly, synchronous motors are of _____.
a) alternator type machines
b) induction type machines
c) salient pole type machines
d) smooth cylindrical type machines

Seat No.	

Set **P**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - II (BTN07402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain constructional details of squirrel cage induction motor.
b) Define slip and explain it's effect on rotor parameters.
c) Explain with diagram DOL starter.
d) Derive the torque equation of three phase induction motor.
e) Explain the V/F ratio method of speed control of 3-phase induction motor.
f) A 50 Hz, 8- pole induction motor has full load slip of 4%. The rotor resistance per phase = 0.1 ohm and standstill reactance per phase = 0.1 ohm. Find the ratio of maximum to full load torque and the speed at which the maximum torque occurs.

Q.3 Solve the following. **12**

a) Explain different losses in an induction motor. Draw and state different power stages in power flow of an induction motor.
b) The input power to a 6- pole, 3 phase, 50 Hz induction motor is 42 KW, the speed is 970 rpm. The stator losses are 1.2 KW and friction and windage losses are 1.8 KW. Calculate,
i) output power of motor
ii) rotor copper loss
iii) efficiency of motor

OR

b) Explain in detail no load and blocked rotor test conducted on 3-phase induction motor.

Section – II

Q.4 Solve any four. **16**

a) Explain in detail the double revolving theory related to single phase induction motor.
b) Explain with circuit diagram and vector diagram capacitor start capacitor run single phase induction motor.
c) Derive EMF equation of alternator with short pitched coils and distributed windings.
d) Explain armature reaction in an alternator.
e) Derive an expression for the power developed in synchronous motor.
f) Explain constructional details of synchronous motor.

Q.5 Solve the following. **12**

a) Define and derive expression for pitch factor and distribution factor in case of alternator.

b) Why synchronous motor is not self started? Explain different methods of starting of synchronous motor.

c) Explain the operation of synchronous motor with constant load and following type of excitation with phasor diagram.

i) Under excitation

ii) Over excitation

Seat No.	

Set **Q**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - II (BTN07402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer. **14**

1) A single-phase induction motor is _____.
a) inherently self-starting with high torque
b) inherently non-self-starting with low torque
c) inherently self-starting with low torque
d) inherently non-self-starting with high torque

2) In a single phase motor the centrifugal switch _____.
a) disconnects auxiliary winding of the motor
b) disconnects main winding of the motor
c) reconnects the main winding the motor
d) reconnects the auxiliary winding of the motor

3) The winding of a 4-pole alternator having 36 slots and coil span is _____ Degrees.
a) 140 b) 80
c) 20 d) 40

4) Zero power factor method of an alternator is used to find its _____.
a) efficiency b) voltage regulation
c) armature resistance d) synchronous impedance

5) Synchronous motor always runs at _____.
a) speed which is less than synchronous speed
b) speed which is greater than synchronous speed
c) synchronous speed
d) none of the above

6) Under which of the following conditions hunting of synchronous motor is likely to occur?
a) Periodic variation of load b) Over-excitation
c) Over-loading for long periods d) Small and constant load

7) Mostly, synchronous motors are of _____.
a) alternator type machines
b) induction type machines
c) salient pole type machines
d) smooth cylindrical type machines

8) A 3-phase slip ring motor has _____.
a) double cage rotor
b) wound rotor
c) short-circuited rotor
d) any of the above

9) The maximum torque in an induction motor depends on _____.
a) Frequency
b) rotor inductive reactance
c) square of supply voltage
d) all of the above

10) The auto-starters (using three auto transformers) can be used to start cage induction motor of the following type _____.
a) star connected only
b) delta connected only
c) (A) and (B) both
d) none of the above

11) In case of the induction motors the torque is _____.
a) inversely proportional to (√slip)
b) directly proportional to square of slip
c) inversely proportional to slip
d) directly proportional to slip

12) In Ns is the synchronous speed and s the slip, then actual running speed of an induction motor will be _____.
a) Ns
b) s.N,
c) (1-s)Ns
d) (Ns-1)s

13) DOL starting of induction motors is usually restricted to _____.
a) low horsepower motors
b) variable speed motors
c) high horsepower motors
d) high speed motors

14) The speed of a squirrel-cage induction motor can be controlled by all of the following expect.
a) changing supply frequency
b) changing number of poles
c) changing winding resistance
d) reducing supply voltage

Seat No.	

Set **Q**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - II (BTN07402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain constructional details of squirrel cage induction motor.
b) Define slip and explain it's effect on rotor parameters.
c) Explain with diagram DOL starter.
d) Derive the torque equation of three phase induction motor.
e) Explain the V/F ratio method of speed control of 3-phase induction motor.
f) A 50 Hz, 8- pole induction motor has full load slip of 4%. The rotor resistance per phase = 0.1 ohm and standstill reactance per phase = 0.1 ohm. Find the ratio of maximum to full load torque and the speed at which the maximum torque occurs.

Q.3 Solve the following. **12**

a) Explain different losses in an induction motor. Draw and state different power stages in power flow of an induction motor.
b) The input power to a 6- pole, 3 phase, 50 Hz induction motor is 42 KW, the speed is 970 rpm. The stator losses are 1.2 KW and friction and windage losses are 1.8 KW. Calculate,
i) output power of motor
ii) rotor copper loss
iii) efficiency of motor

OR

b) Explain in detail no load and blocked rotor test conducted on 3-phase induction motor.

Section – II

Q.4 Solve any four. **16**

a) Explain in detail the double revolving theory related to single phase induction motor.
b) Explain with circuit diagram and vector diagram capacitor start capacitor run single phase induction motor.
c) Derive EMF equation of alternator with short pitched coils and distributed windings.
d) Explain armature reaction in an alternator.
e) Derive an expression for the power developed in synchronous motor.
f) Explain constructional details of synchronous motor.

Q.5 Solve the following. **12**

a) Define and derive expression for pitch factor and distribution factor in case of alternator.

b) Why synchronous motor is not self started? Explain different methods of starting of synchronous motor.

c) Explain the operation of synchronous motor with constant load and following type of excitation with phasor diagram.

i) Under excitation

ii) Over excitation

Seat No.	

Set **R**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - II (BTN07402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer. **14**

1) Zero power factor method of an alternator is used to find its _____.
a) efficiency b) voltage regulation
c) armature resistance d) synchronous impedance

2) Synchronous motor always runs at _____.
a) speed which is less than synchronous speed
b) speed which is greater than synchronous speed
c) synchronous speed
d) none of the above

3) Under which of the following conditions hunting of synchronous motor is likely to occur?
a) Periodic variation of load b) Over-excitation
c) Over-loading for long periods d) Small and constant load

4) Mostly, synchronous motors are of _____.
a) alternator type machines
b) induction type machines
c) salient pole type machines
d) smooth cylindrical type machines

5) A 3-phase slip ring motor has _____.
a) double cage rotor b) wound rotor
c) short-circuited rotor d) any of the above

6) The maximum torque in an induction motor depends on _____.
a) Frequency b) rotor inductive reactance
c) square of supply voltage d) all of the above

7) The auto-starters (using three auto transformers) can be used to start cage induction motor of the following type _____.
a) star connected only b) delta connected only
c) (A) and (B) both d) none of the above

8) In case of the induction motors the torque is _____.
a) inversely proportional to (√slip)
b) directly proportional to square of slip
c) inversely proportional to slip
d) directly proportional to slip

9) In Ns is the synchronous speed and s the slip, then actual running speed of an induction motor will be _____.
a) Ns
b) s.N,
c) (1-s)Ns
d) (Ns-1)s

10) DOL starting of induction motors is usually restricted to _____.
a) low horsepower motors
b) variable speed motors
c) high horsepower motors
d) high speed motors

11) The speed of a squirrel-cage induction motor can be controlled by all of the following expect.
a) changing supply frequency
b) changing number of poles
c) changing winding resistance
d) reducing supply voltage

12) A single-phase induction motor is _____.
a) inherently self-starting with high torque
b) inherently non-self-starting with low torque
c) inherently self-starting with low torque
d) inherently non-self-starting with high torque

13) In a single phase motor the centrifugal switch _____.
a) disconnects auxiliary winding of the motor
b) disconnects main winding of the motor
c) reconnects the main winding the motor
d) reconnects the auxiliary winding of the motor

14) The winding of a 4-pole alternator having 36 slots and coil span is _____ Degrees.
a) 140
b) 80
c) 20
d) 40

Seat No.	

Set **R**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - II (BTN07402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain constructional details of squirrel cage induction motor.
b) Define slip and explain it's effect on rotor parameters.
c) Explain with diagram DOL starter.
d) Derive the torque equation of three phase induction motor.
e) Explain the V/F ratio method of speed control of 3-phase induction motor.
f) A 50 Hz, 8- pole induction motor has full load slip of 4%. The rotor resistance per phase = 0.1 ohm and standstill reactance per phase = 0.1 ohm. Find the ratio of maximum to full load torque and the speed at which the maximum torque occurs.

Q.3 Solve the following. **12**

a) Explain different losses in an induction motor. Draw and state different power stages in power flow of an induction motor.
b) The input power to a 6- pole, 3 phase, 50 Hz induction motor is 42 KW, the speed is 970 rpm. The stator losses are 1.2 KW and friction and windage losses are 1.8 KW. Calculate,
i) output power of motor
ii) rotor copper loss
iii) efficiency of motor

OR

b) Explain in detail no load and blocked rotor test conducted on 3-phase induction motor.

Section – II

Q.4 Solve any four. **16**

a) Explain in detail the double revolving theory related to single phase induction motor.
b) Explain with circuit diagram and vector diagram capacitor start capacitor run single phase induction motor.
c) Derive EMF equation of alternator with short pitched coils and distributed windings.
d) Explain armature reaction in an alternator.
e) Derive an expression for the power developed in synchronous motor.
f) Explain constructional details of synchronous motor.

Q.5 Solve the following. **12**

a) Define and derive expression for pitch factor and distribution factor in case of alternator.

b) Why synchronous motor is not self started? Explain different methods of starting of synchronous motor.

c) Explain the operation of synchronous motor with constant load and following type of excitation with phasor diagram.

i) Under excitation

ii) Over excitation

Seat No.	

Set **S**

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - II (BTN07402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer. **14**

1) DOL starting of induction motors is usually restricted to _____.
a) low horsepower motors b) variable speed motors
c) high horsepower motors d) high speed motors

2) The speed of a squirrel-cage induction motor can be controlled by all of the following expect.
a) changing supply frequency b) changing number of poles
c) changing winding resistance d) reducing supply voltage

3) A single-phase induction motor is _____.
a) inherently self-starting with high torque
b) inherently non-self-starting with low torque
c) inherently self-starting with low torque
d) inherently non-self-starting with high torque

4) In a single phase motor the centrifugal switch _____.
a) disconnects auxiliary winding of the motor
b) disconnects main winding of the motor
c) reconnects the main winding the motor
d) reconnects the auxiliary winding of the motor

5) The winding of a 4-pole alternator having 36 slots and coil span is _____ Degrees.
a) 140 b) 80
c) 20 d) 40

6) Zero power factor method of an alternator is used to find its _____.
a) efficiency b) voltage regulation
c) armature resistance d) synchronous impedance

7) Synchronous motor always runs at _____.
a) speed which is less than synchronous speed
b) speed which is greater than synchronous speed
c) synchronous speed
d) none of the above

8) Under which of the following conditions hunting of synchronous motor is likely to occur?
a) Periodic variation of load
b) Over-excitation
c) Over-loading for long periods
d) Small and constant load

9) Mostly, synchronous motors are of _____.
a) alternator type machines
b) induction type machines
c) salient pole type machines
d) smooth cylindrical type machines

10) A 3-phase slip ring motor has _____.
a) double cage rotor
b) wound rotor
c) short-circuited rotor
d) any of the above

11) The maximum torque in an induction motor depends on _____.
a) Frequency
b) rotor inductive reactance
c) square of supply voltage
d) all of the above

12) The auto-starters (using three auto transformers) can be used to start cage induction motor of the following type _____.
a) star connected only
b) delta connected only
c) (A) and (B) both
d) none of the above

13) In case of the induction motors the torque is _____.
a) inversely proportional to (√slip)
b) directly proportional to square of slip
c) inversely proportional to slip
d) directly proportional to slip

14) In Ns is the synchronous speed and s the slip, then actual running speed of an induction motor will be _____.
a) Ns
b) s.N,
c) (1-s)Ns
d) (Ns-1)s

Seat No.	

Set | S

S. Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electrical Machines - II (BTN07402)

Day & Date: Saturday, 23-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain constructional details of squirrel cage induction motor.
b) Define slip and explain it's effect on rotor parameters.
c) Explain with diagram DOL starter.
d) Derive the torque equation of three phase induction motor.
e) Explain the V/F ratio method of speed control of 3-phase induction motor.
f) A 50 Hz, 8- pole induction motor has full load slip of 4%. The rotor resistance per phase = 0.1 ohm and standstill reactance per phase = 0.1 ohm. Find the ratio of maximum to full load torque and the speed at which the maximum torque occurs.

Q.3 Solve the following. **12**

a) Explain different losses in an induction motor. Draw and state different power stages in power flow of an induction motor.
b) The input power to a 6- pole, 3 phase, 50 Hz induction motor is 42 KW, the speed is 970 rpm. The stator losses are 1.2 KW and friction and windage losses are 1.8 KW. Calculate,
i) output power of motor
ii) rotor copper loss
iii) efficiency of motor

OR

b) Explain in detail no load and blocked rotor test conducted on 3-phase induction motor.

Section – II

Q.4 Solve any four. **16**

a) Explain in detail the double revolving theory related to single phase induction motor.
b) Explain with circuit diagram and vector diagram capacitor start capacitor run single phase induction motor.
c) Derive EMF equation of alternator with short pitched coils and distributed windings.
d) Explain armature reaction in an alternator.
e) Derive an expression for the power developed in synchronous motor.
f) Explain constructional details of synchronous motor.

Q.5 Solve the following. **12**

a) Define and derive expression for pitch factor and distribution factor in case of alternator.

b) Why synchronous motor is not self started? Explain different methods of starting of synchronous motor.

c) Explain the operation of synchronous motor with constant load and following type of excitation with phasor diagram.

i) Under excitation

ii) Over excitation

SLR-GF-808

Seat No.	

Set P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Systems - II (BTN07403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve all MCQ questions. **14**

1) The sag of transmission line is least affected owing to _____.
a) weight of conductor
b) current through the conductor
c) temperature
d) Ice deposited on the conductor

2) Corona usually occurs when the electrostatic stress in the air around the conductor succeeds _____.
a) 30 kV (maximum value)/cm b) 22 kV (maximum value)/cm
c) 11 kV (rms value)/cm d) 6.6 kV (rms value)/cm

3) The effect of corona is _____.
a) increased energy loss b) increased reactance
c) increased inductance d) none of these

4) The operating voltage of high Tension cables is up to _____.
a) 1.1 kV b) 6.6 kV
c) 3.3 kV d) 11 kV

5) The process of achieving uniformity in the dielectric stress by using layers of different dielectrics is known as _____.
a) Stranding process b) Grading of cables
c) Stress distribution d) Capacitance grading

6) The skin effect increases _____.
a) Resistance of line b) Inductance of line
c) Capacitance of line d) Voltage of line

7) By using which conductor is the skin effect reduced?
a Bundled conductors b) Stranded conductors
c) Hollow conductors d) Solid conductors

8) Which of the following is correct operating voltage range for short transmission lines?
a) Less than 456 KV b) Less than 132 KV
c) Less than 20 KV d) Less than 100 KV

9) In the analysis of which of the following lines shunt capacitance is neglected?
a) Short transmission line
b) Medium transmission line
c) Long transmission line
d) Medium as well as long transmission lines

10) In any transmission line, the constants $\overrightarrow{A}$ and $\overrightarrow{D}$ are _____.
a) Dimensionless
b) Ohms and Siemen
c) Mega ohm and volts
d) Volt and ampere

11) In a substation the following equipment is not installed _____.
a) Exciters
b) Series capacitors
c) Shunt reactors
d) Voltage transformers

12) In a transmission system the feeder supplies power to _____.
a) Transformer substations
b) Service mains
c) Distributors
d) All of these

13) Distributor is designed mainly from the point of view of _____.
a) Its current carrying capacity
b) Voltage drop in it
c) Operating voltage
d) Operating Frequency

14) Which of the following are the methods of grounding?
a) Resistance
b) Reactance
c) Solid
d) All of these

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Systems - II (BTN07403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Solve any Four of the Following. **16**

a) What is meant by sag? Derive an expression for sag in a transmission line having equal level of supports.

b) A single core cable has a conductor diameter of 1 cm & inters heath diameter of 1.8 cm. If the impregnated paper of relative permittivity 3 is used as insulation, calculate the capacitance for 1 km length of cable.

c) Explain in detail skin effect & proximity effect

d) A 132 kv transmission line has the following data:
Weight of conductor = 680 kg/m, span length = 260 m, ultimate strength = 3100kg, safety factor = 2. Calculate the height above the ground at which conductor is supported. Ground clearance required is 10 m.

e) Draw and explain the construction of cable with all layers.

f) Derive the expression for capacitance of single phase two wire line.

Q.3 Solve any Two of the Following. **12**

a) An overhead transmission line at a river crossing is supported from two towers at heights of 50 m and 100 m above water level, the horizontal distance between the towers being 400 m. If the maximum allowable tension is 1800 kg. Find the clearance between the conductor and water at a point midway between the towers. Weight of conductor is 1 kg/m.

b) Derive the expression for inductance of single phase two wire line.

c) Derive the expression for:
i) Insulation resistance
ii) Capacitance of single core cable

Section – II

Q.4 Attempt any Four of the Following. **16**

a) Derive the generalized circuit constant for medium line using nominal T-method.

b) Explain different equipment used in substation.

c) Describe with diagram.
i) Radial system
ii) Ring main system
iii) Interconnected system

d) A 3-phase, 50Hz, 100 km line has a following constant
   i) Resistance/km/phase $= 0.1\ \Omega$
   ii) Inductive reactance/km/phase $= 0.2\ \Omega$
   iii) Capacitive susceptance/km/phase $= 0.04 \times 10^{-6}$S. Determine the sending end voltage and current when supplying balanced load of 10,000 KW at 66 KV, p.f 0.8 lagging. Use Nominal T method.

e) Draw and explain concentrated loaded DC distributor fed at Both end.

f) Write short note on resistance & Solid grounding.

Q.5 Attempt any Two of the Following. **12**

a) Explain the analysis of long transmission line using rigorous method.

b) A (medium) single phase transmission line 80 km long has the following constants:
Resistance/km $= 0.3125\ \Omega$,
reactance/km $= 0.1\Omega$,
susceptance/km $= 17.5 \times 10^{-6}$ S
Receiving end line voltage = 66KV. Assuming that the total capacitance of the line is localized at the receiving end alone, determine:
(i) The sending end current
(ii) sending end voltage
(iii) regulation and
(iv) sending end power factor.
The line is delivering 15 MW at 0.8 power factor lagging.

c) A single-phase ac distributor AB 300 m long is fed from end A and is loaded 6 as under
   i) 100 A at 0.707 p.f. lagging 200 m from point A
   ii) 200 A at 0.8 p.f. lagging 300 m from point A
The load resistance and reactance of distributor is 0.2 ohms and 0.1 ohms per km. Calculate the voltage drop in the distributor. The load power factors refer to the voltage at far end.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Systems - II (BTN07403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve all MCQ questions. **14**

1) Which of the following is correct operating voltage range for short transmission lines?
a) Less than 456 KV b) Less than 132 KV
c) Less than 20 KV d) Less than 100 KV

2) In the analysis of which of the following lines shunt capacitance is neglected?
a) Short transmission line
b) Medium transmission line
c) Long transmission line
d) Medium as well as long transmission lines

3) In any transmission line, the constants $\overrightarrow{A}$ and $\overrightarrow{D}$ are _____.
a) Dimensionless b) Ohms and Siemen
c) Mega ohm and volts d) Volt and ampere

4) In a substation the following equipment is not installed _____.
a) Exciters b) Series capacitors
c) Shunt reactors d) Voltage transformers

5) In a transmission system the feeder supplies power to _____.
a) Transformer substations b) Service mains
c) Distributors d) All of these

6) Distributor is designed mainly from the point of view of _____.
a) Its current carrying capacity
b) Voltage drop in it
c) Operating voltage
d) Operating Frequency

7) Which of the following are the methods of grounding?
a) Resistance b) Reactance
c) Solid d) All of these

8) The sag of transmission line is least affected owing to _____.
a) weight of conductor
b) current through the conductor
c) temperature
d) Ice deposited on the conductor

9) Corona usually occurs when the electrostatic stress in the air around the conductor succeeds _____.
a) 30 kV (maximum value)/cm b) 22 kV (maximum value)/cm
c) 11 kV (rms value)/cm d) 6.6 kV (rms value)/cm

10) The effect of corona is _____.
a) increased energy loss b) increased reactance
c) increased inductance d) none of these

11) The operating voltage of high Tension cables is up to _____.
a) 1.1 kV b) 6.6 kV
c) 3.3 kV d) 11 kV

12) The process of achieving uniformity in the dielectric stress by using layers of different dielectrics is known as _____.
a) Stranding process b) Grading of cables
c) Stress distribution d) Capacitance grading

13) The skin effect increases _____.
a) Resistance of line b) Inductance of line
c) Capacitance of line d) Voltage of line

14) By using which conductor is the skin effect reduced?
a Bundled conductors b) Stranded conductors
c) Hollow conductors d) Solid conductors

SLR-GF-808

Seat No.	

Set Q

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Systems - II (BTN07403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Solve any Four of the Following. **16**

a) What is meant by sag? Derive an expression for sag in a transmission line having equal level of supports.

b) A single core cable has a conductor diameter of 1 cm & inters heath diameter of 1.8 cm. If the impregnated paper of relative permittivity 3 is used as insulation, calculate the capacitance for 1 km length of cable.

c) Explain in detail skin effect & proximity effect

d) A 132 kv transmission line has the following data:
Weight of conductor = 680 kg/m, span length = 260 m, ultimate strength = 3100kg, safety factor = 2. Calculate the height above the ground at which conductor is supported. Ground clearance required is 10 m.

e) Draw and explain the construction of cable with all layers.

f) Derive the expression for capacitance of single phase two wire line.

Q.3 Solve any Two of the Following. **12**

a) An overhead transmission line at a river crossing is supported from two towers at heights of 50 m and 100 m above water level, the horizontal distance between the towers being 400 m. If the maximum allowable tension is 1800 kg. Find the clearance between the conductor and water at a point midway between the towers. Weight of conductor is 1 kg/m.

b) Derive the expression for inductance of single phase two wire line.

c) Derive the expression for:
i) Insulation resistance
ii) Capacitance of single core cable

Section – II

Q.4 Attempt any Four of the Following. **16**

a) Derive the generalized circuit constant for medium line using nominal T-method.

b) Explain different equipment used in substation.

c) Describe with diagram.
i) Radial system
ii) Ring main system
iii) Interconnected system

d) A 3-phase, 50Hz, 100 km line has a following constant
   i) Resistance/km/phase $= 0.1\ \Omega$
   ii) Inductive reactance/km/phase $= 0.2\ \Omega$
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e) Draw and explain concentrated loaded DC distributor fed at Both end.

f) Write short note on resistance & Solid grounding.

Q.5 Attempt any Two of the Following. **12**

a) Explain the analysis of long transmission line using rigorous method.

b) A (medium) single phase transmission line 80 km long has the following constants:
Resistance/km $= 0.3125\ \Omega$,
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Receiving end line voltage = 66KV. Assuming that the total capacitance of the line is localized at the receiving end alone, determine:
(i) The sending end current
(ii) sending end voltage
(iii) regulation and
(iv) sending end power factor.
The line is delivering 15 MW at 0.8 power factor lagging.

c) A single-phase ac distributor AB 300 m long is fed from end A and is loaded 6 as under
   i) 100 A at 0.707 p.f. lagging 200 m from point A
   ii) 200 A at 0.8 p.f. lagging 300 m from point A
The load resistance and reactance of distributor is 0.2 ohms and 0.1 ohms per km. Calculate the voltage drop in the distributor. The load power factors refer to the voltage at far end.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Systems - II (BTN07403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve all MCQ questions. **14**

1) In a substation the following equipment is not installed _____.
a) Exciters b) Series capacitors
c) Shunt reactors d) Voltage transformers

2) In a transmission system the feeder supplies power to _____.
a) Transformer substations b) Service mains
c) Distributors d) All of these

3) Distributor is designed mainly from the point of view of _____.
a) Its current carrying capacity
b) Voltage drop in it
c) Operating voltage
d) Operating Frequency

4) Which of the following are the methods of grounding?
a) Resistance b) Reactance
c) Solid d) All of these

5) The sag of transmission line is least affected owing to _____.
a) weight of conductor
b) current through the conductor
c) temperature
d) Ice deposited on the conductor

6) Corona usually occurs when the electrostatic stress in the air around the conductor succeeds _____.
a) 30 kV (maximum value)/cm b) 22 kV (maximum value)/cm
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7) The effect of corona is _____.
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c) increased inductance d) none of these

8) The operating voltage of high Tension cables is up to _____.
a) 1.1 kV b) 6.6 kV
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9) The process of achieving uniformity in the dielectric stress by using layers of different dielectrics is known as _____.
a) Stranding process b) Grading of cables
c) Stress distribution d) Capacitance grading

10) The skin effect increases _____.
a) Resistance of line b) Inductance of line
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11) By using which conductor is the skin effect reduced?
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12) Which of the following is correct operating voltage range for short transmission lines?
a) Less than 456 KV b) Less than 132 KV
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13) In the analysis of which of the following lines shunt capacitance is neglected?
a) Short transmission line
b) Medium transmission line
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14) In any transmission line, the constants $\overrightarrow{A}$ and $\overrightarrow{D}$ are _____.
a) Dimensionless b) Ohms and Siemen
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Seat No.	

Set R

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Systems - II (BTN07403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any Four of the Following. **16**

a) What is meant by sag? Derive an expression for sag in a transmission line having equal level of supports.

b) A single core cable has a conductor diameter of 1 cm & inters heath diameter of 1.8 cm. If the impregnated paper of relative permittivity 3 is used as insulation, calculate the capacitance for 1 km length of cable.

c) Explain in detail skin effect & proximity effect

d) A 132 kv transmission line has the following data:
Weight of conductor = 680 kg/m, span length = 260 m, ultimate strength = 3100kg, safety factor = 2. Calculate the height above the ground at which conductor is supported. Ground clearance required is 10 m.

e) Draw and explain the construction of cable with all layers.

f) Derive the expression for capacitance of single phase two wire line.

Q.3 Solve any Two of the Following. **12**

a) An overhead transmission line at a river crossing is supported from two towers at heights of 50 m and 100 m above water level, the horizontal distance between the towers being 400 m. If the maximum allowable tension is 1800 kg. Find the clearance between the conductor and water at a point midway between the towers. Weight of conductor is 1 kg/m.

b) Derive the expression for inductance of single phase two wire line.

c) Derive the expression for:
i) Insulation resistance
ii) Capacitance of single core cable

Section – II

Q.4 Attempt any Four of the Following. **16**

a) Derive the generalized circuit constant for medium line using nominal T-method.

b) Explain different equipment used in substation.

c) Describe with diagram.
i) Radial system
ii) Ring main system
iii) Interconnected system

d) A 3-phase, 50Hz, 100 km line has a following constant
   i) Resistance/km/phase $= 0.1\ \Omega$
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e) Draw and explain concentrated loaded DC distributor fed at Both end.

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a) Explain the analysis of long transmission line using rigorous method.

b) A (medium) single phase transmission line 80 km long has the following constants:
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susceptance/km $= 17.5 \times 10^{-6}$ S
Receiving end line voltage = 66KV. Assuming that the total capacitance of the line is localized at the receiving end alone, determine:
(i) The sending end current
(ii) sending end voltage
(iii) regulation and
(iv) sending end power factor.
The line is delivering 15 MW at 0.8 power factor lagging.

c) A single-phase ac distributor AB 300 m long is fed from end A and is loaded 6 as under
   i) 100 A at 0.707 p.f. lagging 200 m from point A
   ii) 200 A at 0.8 p.f. lagging 300 m from point A
The load resistance and reactance of distributor is 0.2 ohms and 0.1 ohms per km. Calculate the voltage drop in the distributor. The load power factors refer to the voltage at far end.

Seat No.	

Set | S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Systems - II (BTN07403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Solve all MCQ questions. **14**

1) The skin effect increases _____.
a) Resistance of line b) Inductance of line
c) Capacitance of line d) Voltage of line

2) By using which conductor is the skin effect reduced?
a Bundled conductors b) Stranded conductors
c) Hollow conductors d) Solid conductors

3) Which of the following is correct operating voltage range for short transmission lines?
a) Less than 456 KV b) Less than 132 KV
c) Less than 20 KV d) Less than 100 KV

4) In the analysis of which of the following lines shunt capacitance is neglected?
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d) Operating Frequency

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d) Ice deposited on the conductor

11) Corona usually occurs when the electrostatic stress in the air around the conductor succeeds _____.
a) 30 kV (maximum value)/cm b) 22 kV (maximum value)/cm
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12) The effect of corona is _____.
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13) The operating voltage of high Tension cables is up to _____.
a) 1.1 kV b) 6.6 kV
c) 3.3 kV d) 11 kV

14) The process of achieving uniformity in the dielectric stress by using layers of different dielectrics is known as _____.
a) Stranding process b) Grading of cables
c) Stress distribution d) Capacitance grading

SLR-GF-808

Seat No.	

Set S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Power Systems - II (BTN07403)

Day & Date: Sunday, 24-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figure to the right indicate full marks.

Section – I

Q.2 Solve any Four of the Following. **16**

a) What is meant by sag? Derive an expression for sag in a transmission line having equal level of supports.

b) A single core cable has a conductor diameter of 1 cm & inters heath diameter of 1.8 cm. If the impregnated paper of relative permittivity 3 is used as insulation, calculate the capacitance for 1 km length of cable.

c) Explain in detail skin effect & proximity effect

d) A 132 kv transmission line has the following data:
Weight of conductor = 680 kg/m, span length = 260 m, ultimate strength = 3100kg, safety factor = 2. Calculate the height above the ground at which conductor is supported. Ground clearance required is 10 m.

e) Draw and explain the construction of cable with all layers.

f) Derive the expression for capacitance of single phase two wire line.

Q.3 Solve any Two of the Following. **12**

a) An overhead transmission line at a river crossing is supported from two towers at heights of 50 m and 100 m above water level, the horizontal distance between the towers being 400 m. If the maximum allowable tension is 1800 kg. Find the clearance between the conductor and water at a point midway between the towers. Weight of conductor is 1 kg/m.

b) Derive the expression for inductance of single phase two wire line.

c) Derive the expression for:
i) Insulation resistance
ii) Capacitance of single core cable

Section – II

Q.4 Attempt any Four of the Following. **16**

a) Derive the generalized circuit constant for medium line using nominal T-method.

b) Explain different equipment used in substation.

c) Describe with diagram.
i) Radial system
ii) Ring main system
iii) Interconnected system

d) A 3-phase, 50Hz, 100 km line has a following constant
   i) Resistance/km/phase $= 0.1\ \Omega$
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e) Draw and explain concentrated loaded DC distributor fed at Both end.

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Q.5 Attempt any Two of the Following. **12**

a) Explain the analysis of long transmission line using rigorous method.

b) A (medium) single phase transmission line 80 km long has the following constants:
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Receiving end line voltage = 66KV. Assuming that the total capacitance of the line is localized at the receiving end alone, determine:
(i) The sending end current
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(iv) sending end power factor.
The line is delivering 15 MW at 0.8 power factor lagging.

c) A single-phase ac distributor AB 300 m long is fed from end A and is loaded 6 as under
   i) 100 A at 0.707 p.f. lagging 200 m from point A
   ii) 200 A at 0.8 p.f. lagging 300 m from point A
The load resistance and reactance of distributor is 0.2 ohms and 0.1 ohms per km. Calculate the voltage drop in the distributor. The load power factors refer to the voltage at far end.

SLR-GF-809

Seat No.		Set	P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Analog & Digital Integrated Circuits (BTN07404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) If output is measured between two collectors of transistors, then the Differential amplifier with two input signal is said to be configured as _____.
a) Dual Input Balanced Output
b) Dual Input Unbalanced Output
c) Single Input Balanced Output
d) Singal Input Unbalanced Output

2) For non-inverting amplifier, if $\mathrm{Rf} = 100\mathrm{k}\Omega$ and $\mathrm{Ri} = 1\mathrm{k}\Omega$ then closed loop gain is _____.
a) 1,00,000 b) 1,000
c) 101 d) 100

3) The large signal bandwidth of an op-amp is limited by its _____.
a) loop gain b) slew rate
c) output impedance d) input frequency

4) CMRR of a differential amplifier can be improved by decreasing _____.
a) Differential voltage gain b) Common mode voltage gain
c) Both a and b d) None of the above

5) In ideal differential amplifier, if same signal is given to both inputs, then output will be _____.
a) same as input b) double the input
c) not equal to zero d) zero

6) A feedback amplifier is also called as _____.
a) Open loop amplifier b) Closed loop amplifier
c) Feedback network amplifier d) Looped network amplifier

7) An inverting amplifier with gain 1 have different input voltage: 1.2v, 3.2v and 4.2v. Find the output voltage?
a) 4.2v b) 8.6v
c) -4.2v d) -8.6v

8) A Karnaugh map (K-map) is a theoretical form of representing _____.
a) Circuit diagram b) Block diagram
c) Logic diagram d) Venn diagram

9) The Boolean expression $Y = XY + ZX$ is in the _____ form.
a) Product-of-Sum b) Sum-of-Products
c) Linear d) None of the above

10) The flip flop is a _____ device.
a) Unstable b) Bi-stable
c) Both a and b d) None of the above

11) Which circuit doesn't have a memory unit?
a) Combinational b) Sequential
c) Both a and b d) None of the above

12) A register is defined as _____.
a) The group of latches for storing two bit of information
b) The group of latches for storing n-bit of information
c) The group of flip-flops suitable for storing one bit of information
d) The group of flip-flops suitable for storing binary information

13) The full form of SIPO is _____.
a) Serial-in Parallel-out b) Serial in perpendicular out
c) Serial-in past out d) Serial-In Peripheral-Out

14) Registers capable of shifting in one direction is _____.
a) Universal shift register b) Unidirectional shift register
c) Unipolar shift register d) Unique shift register

Seat No.		Set	P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Analog & Digital Integrated Circuits (BTN07404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following (Any four). **16**

a) Explain DC analysis of differential amplifier (SIBO).
b) Draw and explain the block diagram of operational amplifier.
c) Explain the concept of virtual ground condition.
d) Explain current to voltage converter.
e) With neat circuit diagram explain working of an integrator.

Q.3 Answer the Following (Any two). **12**

a) Explain three op-amp instrumentation amplifier.
b) Draw and explain equivalent circuit and ideal voltage transfer curve of op-amp.
c) Derive an expression for input resistance and output resistance for voltage shunt feedback amplifier.

Section – II

Q.4 Answer the following (Any four). **16**

a) Explain different modes of shift registers with suitable diagrams.
b) Differentiate between synchronous and asynchronous counters.
c) Define the following terms in brief.
1) Maxterm
2) Minterm
3) SOP
4) POS
d) Explain full adder in details & realize it using basic logic gates.
e) Explain 4 bit ring counter.

Q.5 Answer the Following (Any two) **12**

a) Design 2 bit synchronous counter using T flip flop.
b) Reduce the following expression using K-map and implement reduced expression by using.
logic gates = (A,B,C,D)= $\sum m(1,2,5,8,11,13)$
c) Design a mod-10 asynchronous down counter using J-K flip flop.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Analog & Digital Integrated Circuits (BTN07404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

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c) Serial-in past out d) Serial-In Peripheral-Out

7) Registers capable of shifting in one direction is _____.
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c) output impedance d) input frequency

11) CMRR of a differential amplifier can be improved by decreasing _____.

a) Differential voltage gain b) Common mode voltage gain
c) Both a and b d) None of the above

12) In ideal differential amplifier, if same signal is given to both inputs, then output will be _____.

a) same as input b) double the input
c) not equal to zero d) zero

13) A feedback amplifier is also called as _____.

a) Open loop amplifier b) Closed loop amplifier
c) Feedback network amplifier d) Looped network amplifier

14) An inverting amplifier with gain 1 have different input voltage: 1.2v, 3.2v and 4.2v. Find the output voltage?

a) 4.2v b) 8.6v
c) -4.2v d) -8.6v

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Analog & Digital Integrated Circuits (BTN07404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following (Any four). **16**

a) Explain DC analysis of differential amplifier (SIBO).
b) Draw and explain the block diagram of operational amplifier.
c) Explain the concept of virtual ground condition.
d) Explain current to voltage converter.
e) With neat circuit diagram explain working of an integrator.

Q.3 Answer the Following (Any two). **12**

a) Explain three op-amp instrumentation amplifier.
b) Draw and explain equivalent circuit and ideal voltage transfer curve of op-amp.
c) Derive an expression for input resistance and output resistance for voltage shunt feedback amplifier.

Section – II

Q.4 Answer the following (Any four). **16**

a) Explain different modes of shift registers with suitable diagrams.
b) Differentiate between synchronous and asynchronous counters.
c) Define the following terms in brief.
1) Maxterm
2) Minterm
3) SOP
4) POS
d) Explain full adder in details & realize it using basic logic gates.
e) Explain 4 bit ring counter.

Q.5 Answer the Following (Any two) **12**

a) Design 2 bit synchronous counter using T flip flop.
b) Reduce the following expression using K-map and implement reduced expression by using.
logic gates = (A,B,C,D)= $\sum m(1,2,5,8,11,13)$
c) Design a mod-10 asynchronous down counter using J-K flip flop.

Seat No.		Set	R

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Analog & Digital Integrated Circuits (BTN07404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which circuit doesn't have a memory unit?
a) Combinational b) Sequential
c) Both a and b d) None of the above

2) A register is defined as _____.
a) The group of latches for storing two bit of information
b) The group of latches for storing n-bit of information
c) The group of flip-flops suitable for storing one bit of information
d) The group of flip-flops suitable for storing binary information

3) The full form of SIPO is _____.
a) Serial-in Parallel-out b) Serial in perpendicular out
c) Serial-in past out d) Serial-In Peripheral-Out

4) Registers capable of shifting in one direction is _____.
a) Universal shift register b) Unidirectional shift register
c) Unipolar shift register d) Unique shift register

5) If output is measured between two collectors of transistors, then the Differential amplifier with two input signal is said to be configured as _____.
a) Dual Input Balanced Output
b) Dual Input Unbalanced Output
c) Single Input Balanced Output
d) Singal Input Unbalanced Output

6) For non-inverting amplifier, if $\mathrm{Rf} = 100\mathrm{k}\Omega$ and $\mathrm{Ri} = 1\mathrm{k}\Omega$ then closed loop gain is _____.
a) 1,00,000 b) 1,000
c) 101 d) 100

7) The large signal bandwidth of an op-amp is limited by its _____.
a) loop gain b) slew rate
c) output impedance d) input frequency

8) CMRR of a differential amplifier can be improved by decreasing _____.
a) Differential voltage gain b) Common mode voltage gain
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9) In ideal differential amplifier, if same signal is given to both inputs, then output will be _____.

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10) A feedback amplifier is also called as _____.

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11) An inverting amplifier with gain 1 have different input voltage: 1.2v, 3.2v and 4.2v. Find the output voltage?

a) 4.2v b) 8.6v
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12) A Karnaugh map (K-map) is a theoretical form of representing _____.

a) Circuit diagram b) Block diagram
c) Logic diagram d) Venn diagram

13) The Boolean expression $Y = XY + ZX$ is in the _____ form.

a) Product-of-Sum b) Sum-of-Products
c) Linear d) None of the above

14) The flip flop is a _____ device.

a) Unstable b) Bi-stable
c) Both a and b d) None of the above

Seat No.		Set	R

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Analog & Digital Integrated Circuits (BTN07404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Answer the following (Any four). **16**
- **a)** Explain DC analysis of differential amplifier (SIBO).
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- **d)** Explain current to voltage converter.
- **e)** With neat circuit diagram explain working of an integrator.

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- **a)** Explain three op-amp instrumentation amplifier.
- **b)** Draw and explain equivalent circuit and ideal voltage transfer curve of op-amp.
- **c)** Derive an expression for input resistance and output resistance for voltage shunt feedback amplifier.

Section – II

Q.4 Answer the following (Any four). **16**
- **a)** Explain different modes of shift registers with suitable diagrams.
- **b)** Differentiate between synchronous and asynchronous counters.
- **c)** Define the following terms in brief.
  1) Maxterm
  2) Minterm
  3) SOP
  4) POS
- **d)** Explain full adder in details & realize it using basic logic gates.
- **e)** Explain 4 bit ring counter.

Q.5 Answer the Following (Any two) **12**
- **a)** Design 2 bit synchronous counter using T flip flop.
- **b)** Reduce the following expression using K-map and implement reduced expression by using.
  logic gates = (A,B,C,D)= $\sum m(1,2,5,8,11,13)$
- **c)** Design a mod-10 asynchronous down counter using J-K flip flop.

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Analog & Digital Integrated Circuits (BTN07404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) A feedback amplifier is also called as _____.
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c) Feedback network amplifier d) Looped network amplifier

2) An inverting amplifier with gain 1 have different input voltage: 1.2v, 3.2v and 4.2v. Find the output voltage?
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13) CMRR of a differential amplifier can be improved by decreasing _____.

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SLR-GF-809

Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Analog & Digital Integrated Circuits (BTN07404)

Day & Date: Wednesday, 27-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following (Any four). **16**

a) Explain DC analysis of differential amplifier (SIBO).
b) Draw and explain the block diagram of operational amplifier.
c) Explain the concept of virtual ground condition.
d) Explain current to voltage converter.
e) With neat circuit diagram explain working of an integrator.

Q.3 Answer the Following (Any two). **12**

a) Explain three op-amp instrumentation amplifier.
b) Draw and explain equivalent circuit and ideal voltage transfer curve of op-amp.
c) Derive an expression for input resistance and output resistance for voltage shunt feedback amplifier.

Section – II

Q.4 Answer the following (Any four). **16**

a) Explain different modes of shift registers with suitable diagrams.
b) Differentiate between synchronous and asynchronous counters.
c) Define the following terms in brief.
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2) Minterm
3) SOP
4) POS
d) Explain full adder in details & realize it using basic logic gates.
e) Explain 4 bit ring counter.

Q.5 Answer the Following (Any two) **12**

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b) Reduce the following expression using K-map and implement reduced expression by using.
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c) Design a mod-10 asynchronous down counter using J-K flip flop.

Seat No.		Set	P

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Network Analysis (BTN07405)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

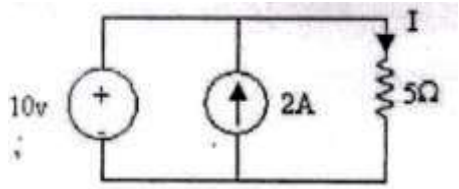
Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) In an electrical circuit dual of inductance is _____.
a) conductance b) resistance
c) capacitance d) susceptance

2) Four equal value resistors are connected in parallel. 5 V voltage is applied across the parallel circuit and 2.5 A current are measured from the source. What is the value of each resistor?
a) 4Ω b) 8 Ω
c) 2.5 Ω d) 5 Ω

3) Calculate current I of the circuit shown below.



a) 4 A b) 2 A
c) -2 A d) -4 A

4) Application of Thevenin's theorem to a circuit yields _____
a) Equivalent voltage source and impedance in series
b) Equivalent current source and impedance in parallel
c) Equivalent impedance
d) Equivalent current source

5) The number of independent loops for a network with n nodes and b branches is _____.
a) n – 1
b) b – n
c) b – n + 1
d) independent of the number of nodes

6) Between two open circuited terminals the current is _____.
a) Minimum b) Maximum
c) Zero d) None of the above

7) Superposition theorem is not applicable to network containing _____
a) nonlinear elements b) dependent voltage source
c) dependent current source d) Transformers

8) The time constant of RC circuit is _____.
a) RC b) C/R
c) R/C d) R

9) Laplace transform of a unit ramp function is _____.
a) 1 b) s
c) 1/s d) 1/s2

10) The value of impulse function for t > 0 _____.
a) Zero b) Unity
c) K where k is a constant d) Infinity

11) A capacitor does not allow sudden changes in _____.
a) Currents b) Voltages
c) both a and b d) None of above

12) Transients are presents in the circuit when the circuit is having _____
a) R b) L
c) C d) either b) or c)

13) For a 2-port network to be reciprocal, _____.
a) $\mathrm{Z}_{11} = \mathrm{Z}_{22}$ b) $\mathrm{Y}_{21} = \mathrm{Y}_{22}$
c) $\mathrm{h}_{21} = -\mathrm{h}_{12}$ d) $\mathrm{AD} - \mathrm{BC} = 0$

14) Which parameters are widely used in transmission line theory?
a) Z parameters b) ABCD parameters
c) Y parameters d) h parameters

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Network Analysis (BTN07405)

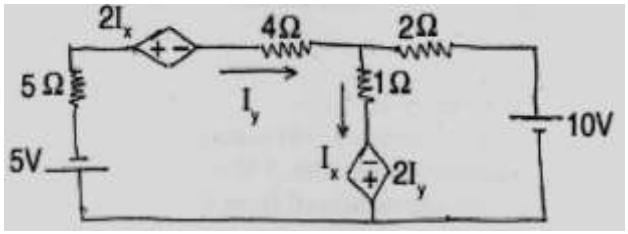
Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume data wherever necessary

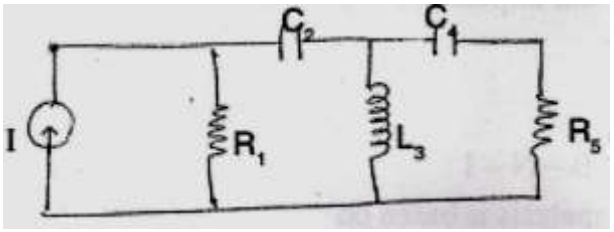
Section –I

Q.2 Answer any Four questions **16**

a) Find the I_x and I_y for the circuit shown by mesh method.

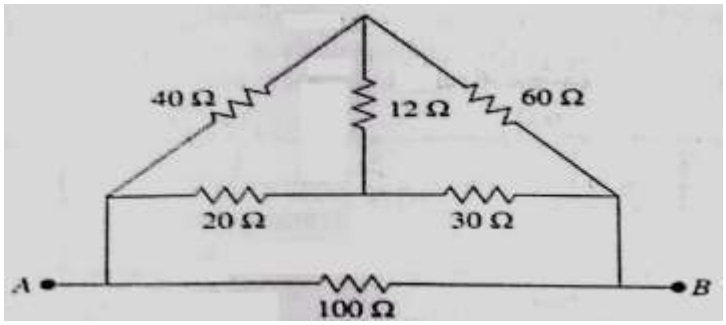


b) Draw the dual of the network.

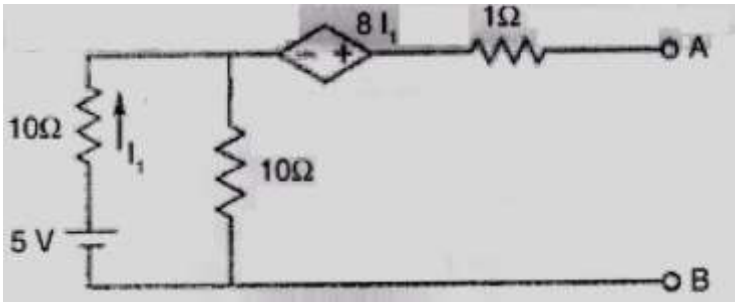


c) State and explain Superposition theorem.

d) Find the Equivalent Resistance between terminal A&B.

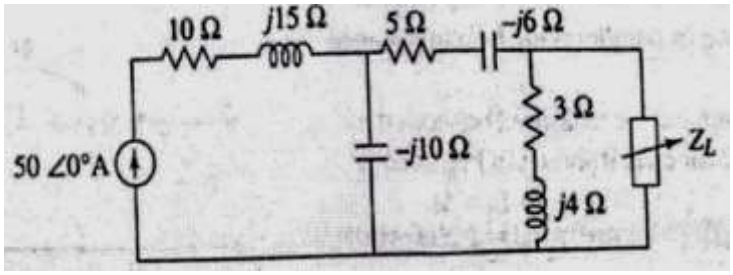


e) Find the Thevenin's equivalent network for the terminals A and B.

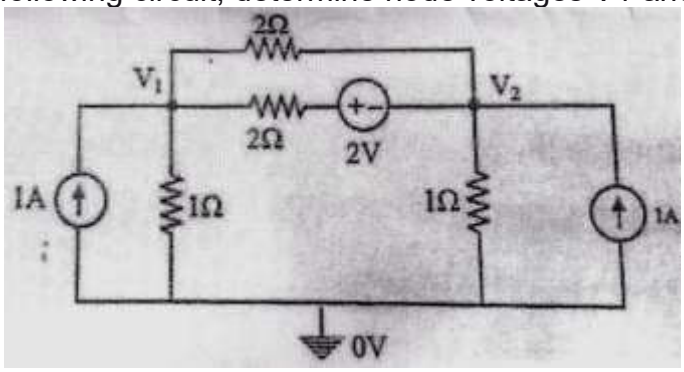


Q.3 Solve Any Two **12**

a) What will be value of Z_L to get maximum power delivered to it? What will be the value of Maximum Power?

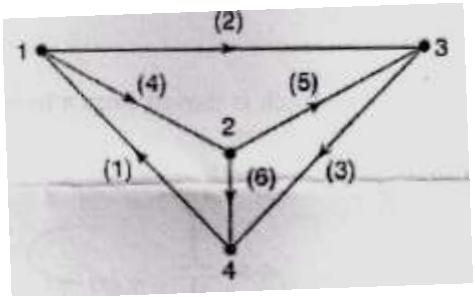


b) Consider the following circuit, determine node voltages V1 and V2



c) The graph of a network shown in fig. write

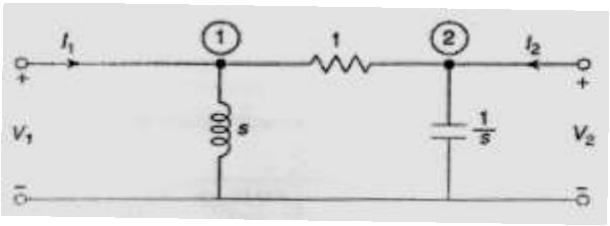
i) Incidence matrix
ii) Tie set matrix
iii) Cut set matrix



Section – II

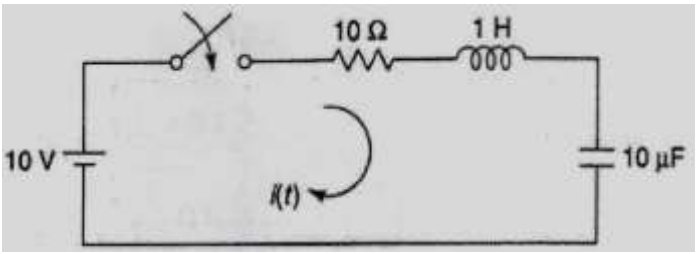
Q.4 Attempt Any Four: **16**

a) Determine transmission parameters for the given network.

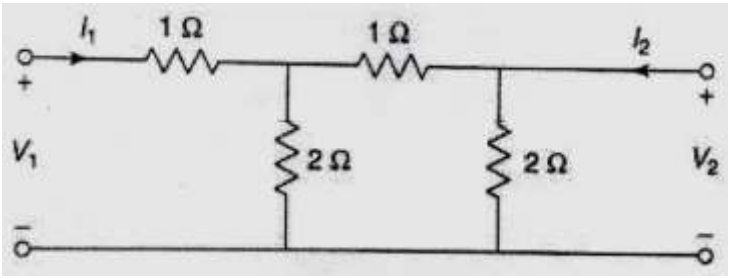


b) Derive an expression for response given by RL circuit.

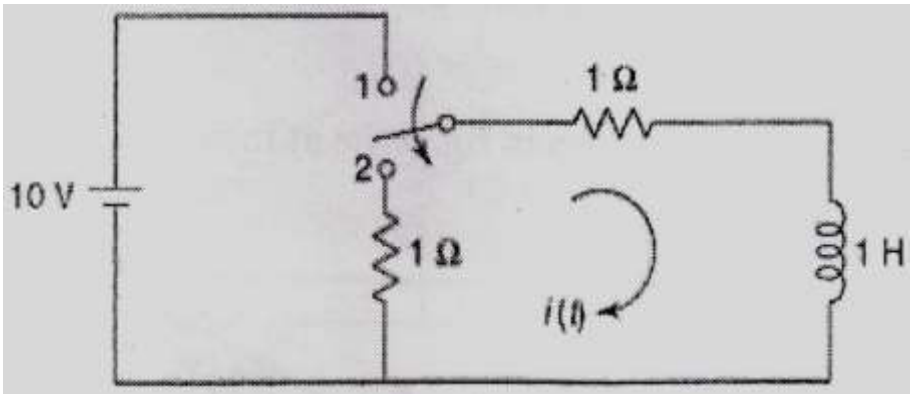
c) In the network shown, the switch is closed. Assuming all initial conditions as zero, find $i, di/dt, d^2i/dt^2$ at $t = 0+$.



d) Find open Circuit Parameter for the network shown in fig. below

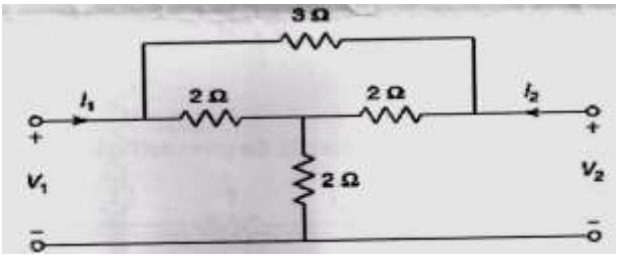


e) In the network shown in fig. the switch is moved from 1 to 2 at t = 0. Steady state condition having reached in position 1. Determine i(t) for t > 0 using Laplace transforms.

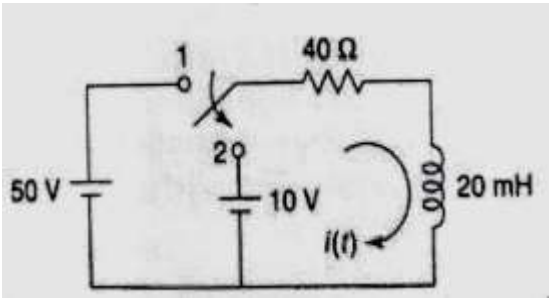


Q.5 Solve Any Two. **12**

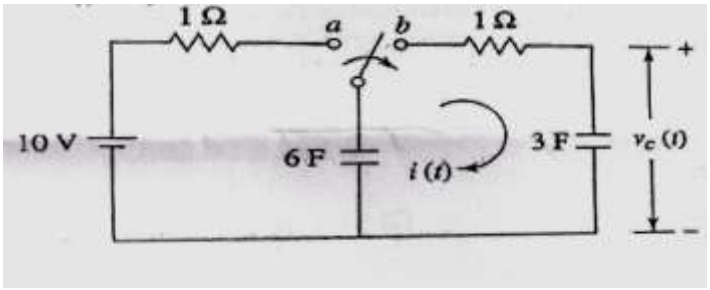
a) Find Y parameter for the two-port network shown.



b) In the network of fig, is under steady state with switch is at position 1, at switch is moved to position 2. Find i (t).



c) In the network of fig. the switch is moved from a to b at t = 0. Determine i(t) and Vc (t) using Laplace transform.



Seat No.		Set	Q

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Network Analysis (BTN07405)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The time constant of RC circuit is _____.
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c) R/C d) R

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5) Transients are presents in the circuit when the circuit is having _____
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6) For a 2-port network to be reciprocal, _____.
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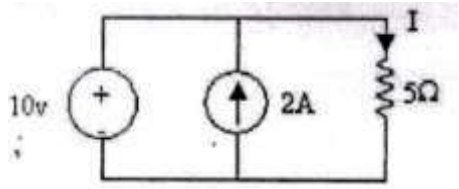

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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Network Analysis (BTN07405)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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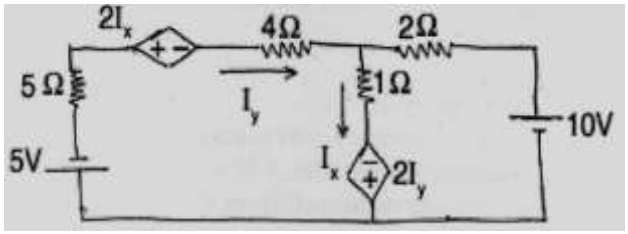
3) Assume data wherever necessary

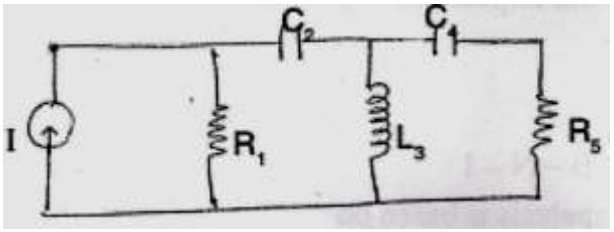
Section –I

Q.2 Answer any Four questions **16**

a) Find the I_x and I_y for the circuit shown by mesh method.

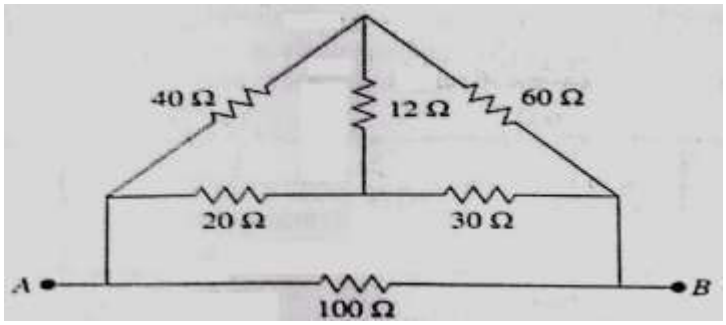


b) Draw the dual of the network.

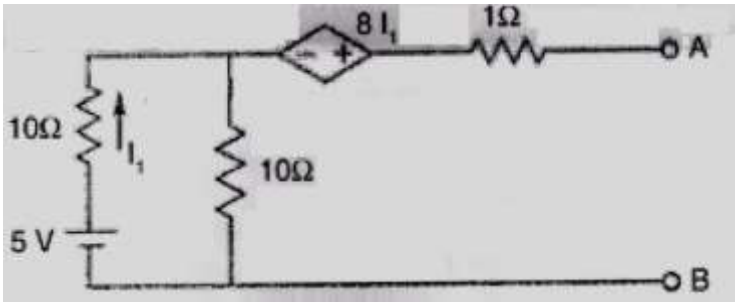


c) State and explain Superposition theorem.

d) Find the Equivalent Resistance between terminal A&B.

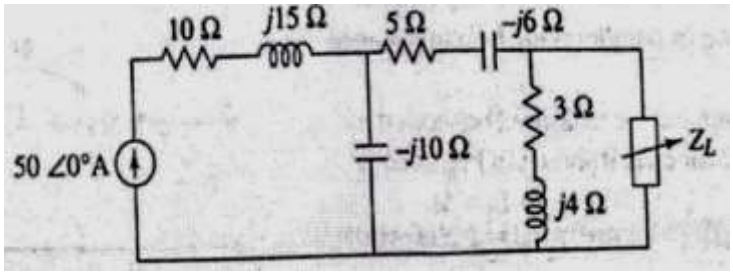


e) Find the Thevenin's equivalent network for the terminals A and B.

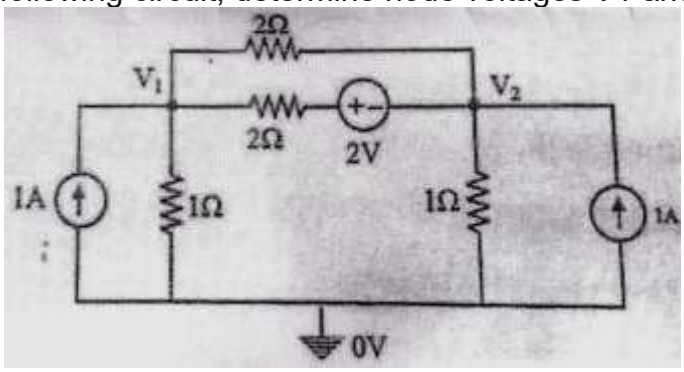


Q.3 Solve Any Two **12**

a) What will be value of Z_L to get maximum power delivered to it? What will be the value of Maximum Power?



b) Consider the following circuit, determine node voltages V1 and V2



c) The graph of a network shown in fig. write

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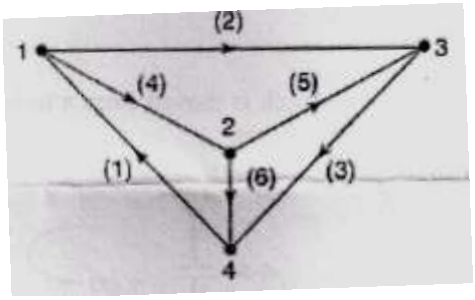
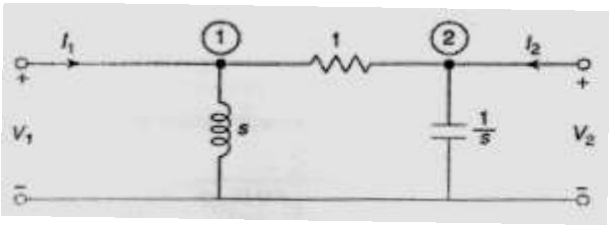


Section – II

Q.4 Attempt Any Four: **16**

a) Determine transmission parameters for the given network.



b) Derive an expression for response given by RL circuit.

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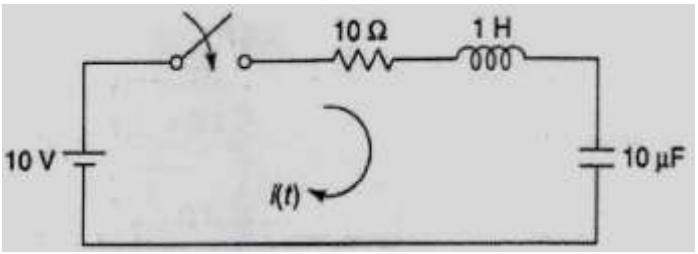
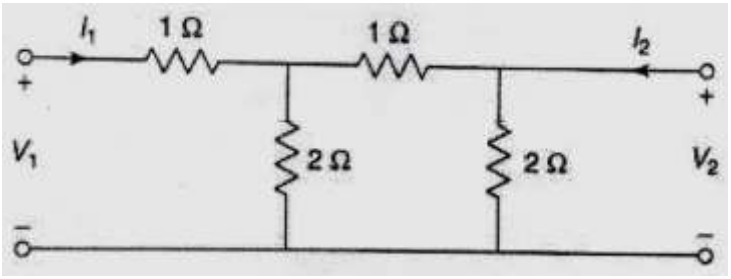
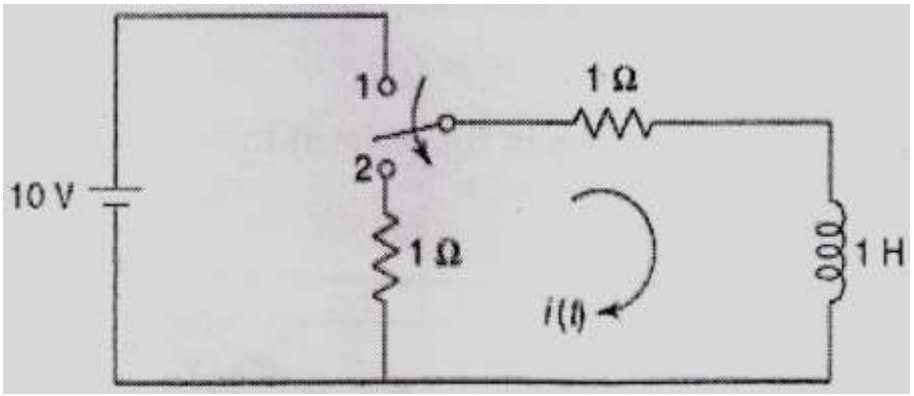


d) Find open Circuit Parameter for the network shown in fig. below

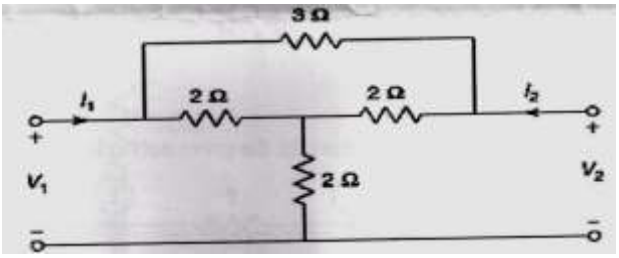


e) In the network shown in fig. the switch is moved from 1 to 2 at t = 0. Steady state condition having reached in position 1. Determine i(t) for t > 0 using Laplace transforms.

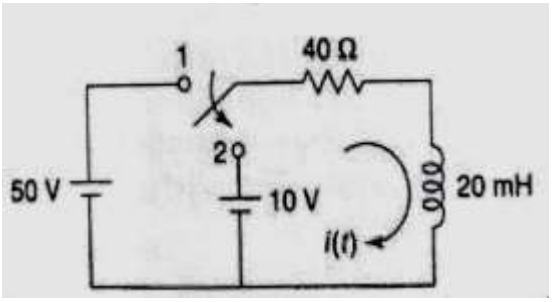


Q.5 Solve Any Two. **12**

a) Find Y parameter for the two-port network shown.



b) In the network of fig, is under steady state with switch is at position 1, at switch is moved to position 2. Find i (t).



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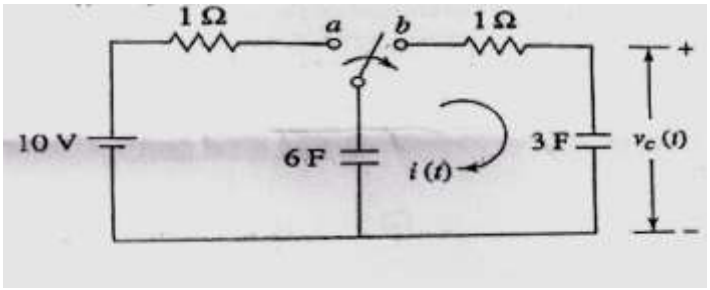

Seat No.		Set	R

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Network Analysis (BTN07405)

Day & Date: Friday, 29-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) A capacitor does not allow sudden changes in _____.
a) Currents b) Voltages
c) both a and b d) None of above

2) Transients are presents in the circuit when the circuit is having _____
a) R b) L
c) C d) either b) or c)

3) For a 2-port network to be reciprocal, _____.
a) $Z_{11} = Z_{22}$ b) $Y_{21} = Y_{22}$
c) $h_{21} = -h_{12}$ d) $AD - BC = 0$

4) Which parameters are widely used in transmission line theory?
a) Z parameters b) ABCD parameters
c) Y parameters d) h parameters

5) In an electrical circuit dual of inductance is _____.
a) conductance b) resistance
c) capacitance d) susceptance

6) Four equal value resistors are connected in parallel. 5 V voltage is applied across the parallel circuit and 2.5 A current are measured from the source. What is the value of each resistor?
a) 4Ω b) $8\ \Omega$
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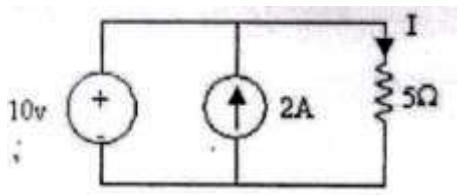
7) Calculate current I of the circuit shown below.



a) 4 A b) 2 A
c) -2 A d) -4 A

8) Application of Thevenin's theorem to a circuit yields _____
a) Equivalent voltage source and impedance in series
b) Equivalent current source and impedance in parallel
c) Equivalent impedance
d) Equivalent current source

9) The number of independent loops for a network with n nodes and b branches is _____.
a) n – 1
b) b – n
c) b – n + 1
d) independent of the number of nodes

10) Between two open circuited terminals the current is _____.
a) Minimum b) Maximum
c) Zero d) None of the above

11) Superposition theorem is not applicable to network containing _____
a) nonlinear elements b) dependent voltage source
c) dependent current source d) Transformers

12) The time constant of RC circuit is _____.
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13) Laplace transform of a unit ramp function is _____.
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Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Network Analysis (BTN07405)

Day & Date: Friday, 29-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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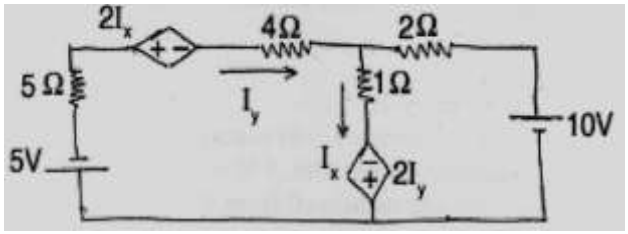
Section –I

Q.2 Answer any Four questions **16**

a) Find the I_x and I_y for the circuit shown by mesh method.



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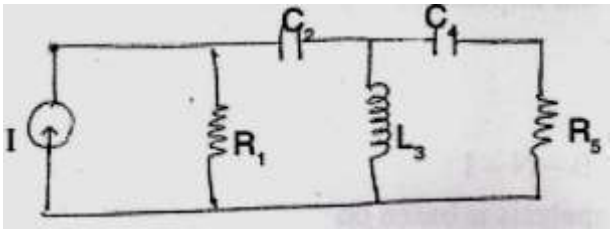

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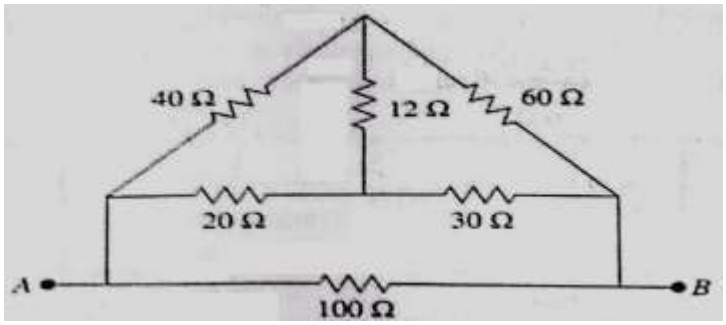

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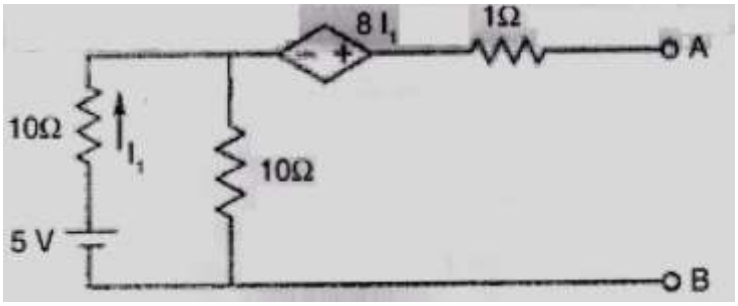

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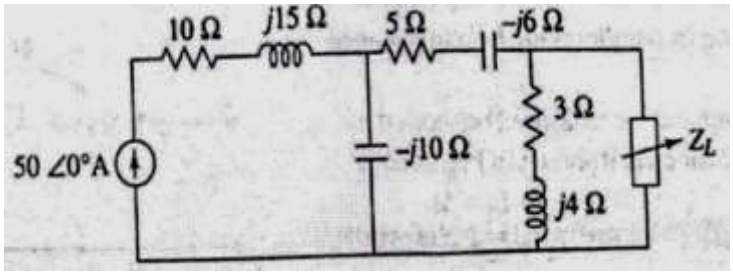

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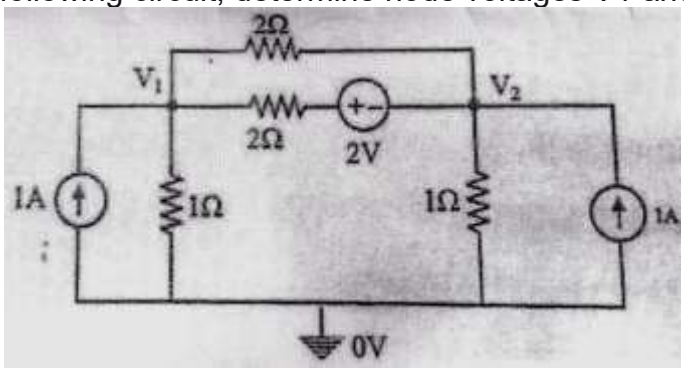

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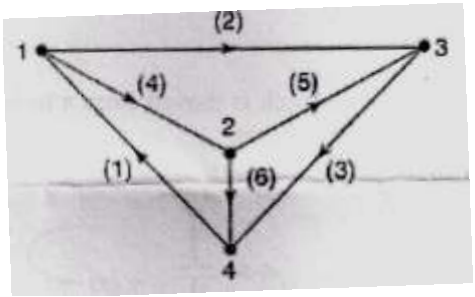

Section – II

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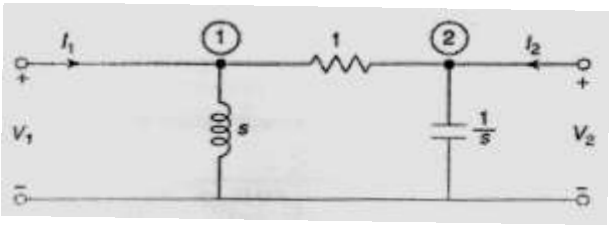

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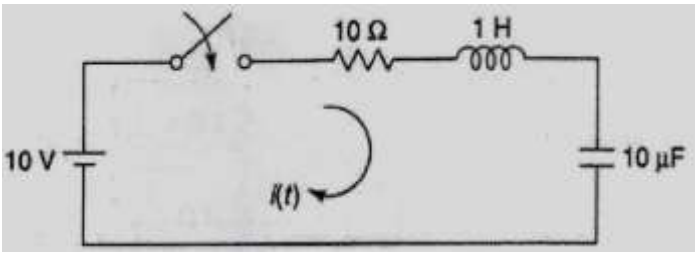

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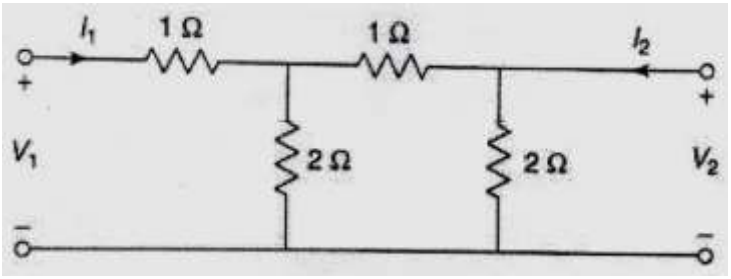

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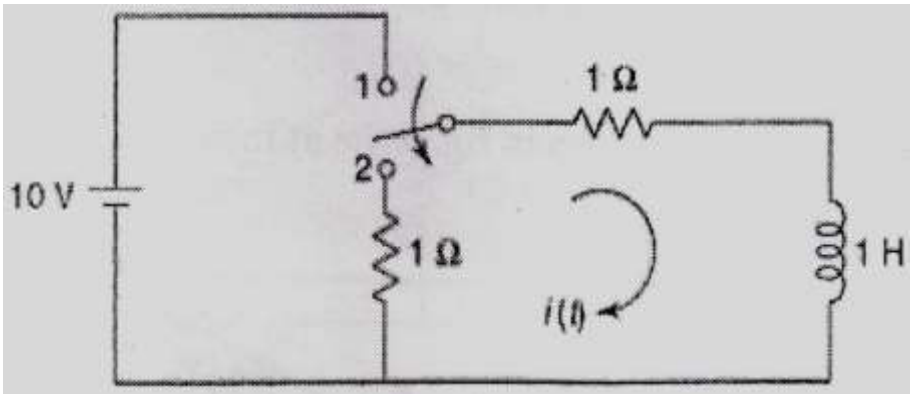

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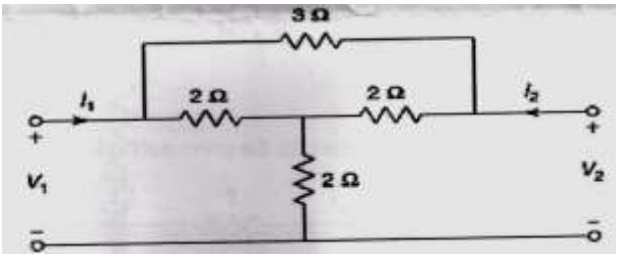

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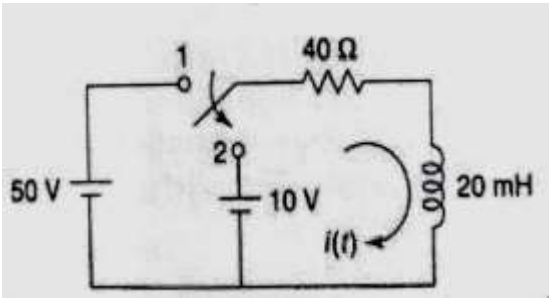

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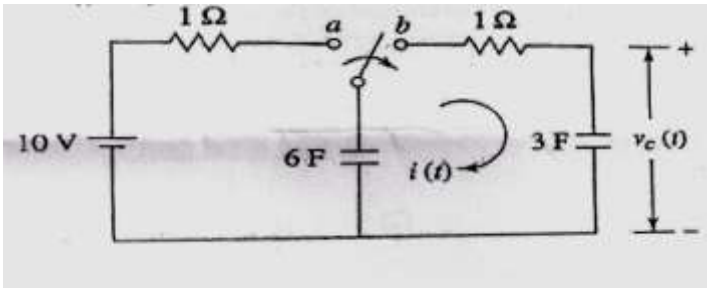

SLR-GF-810

Seat No.		Set	S

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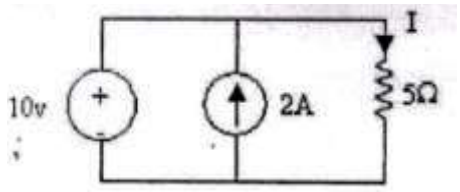

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Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New)(CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Network Analysis (BTN07405)

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Section –I

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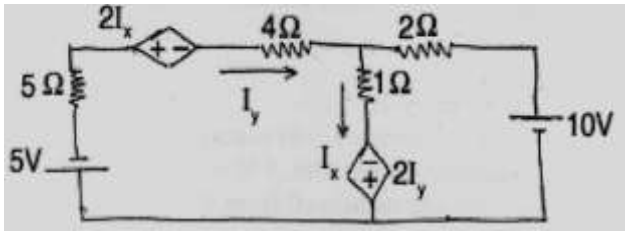

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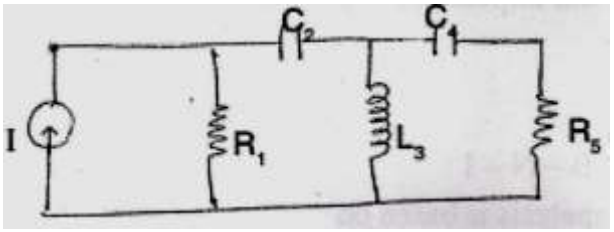

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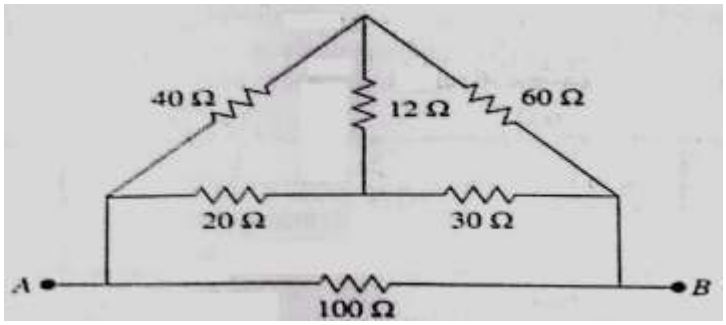

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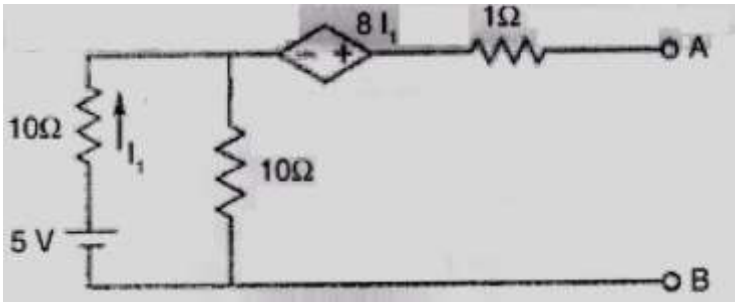

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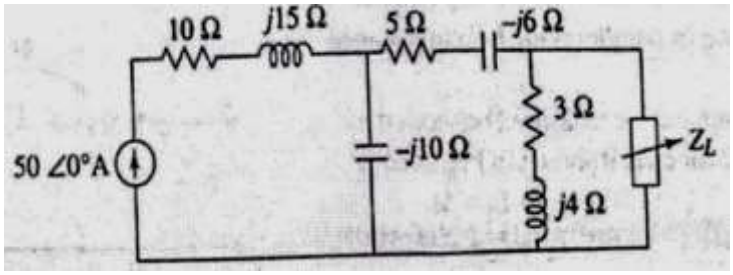

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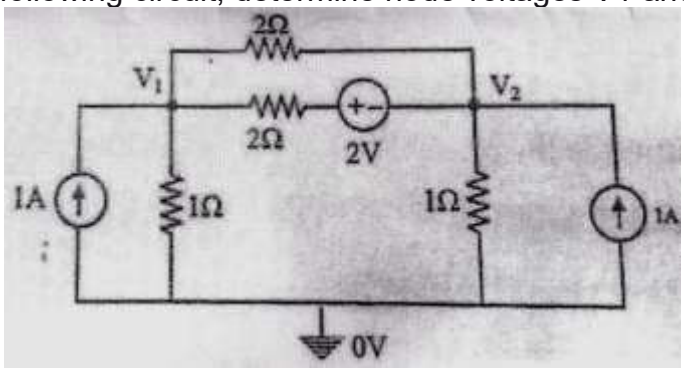

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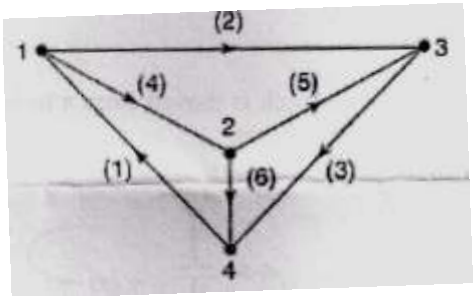
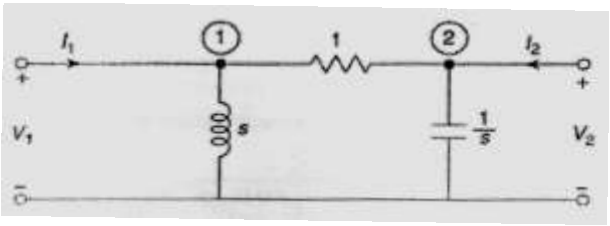


Section – II

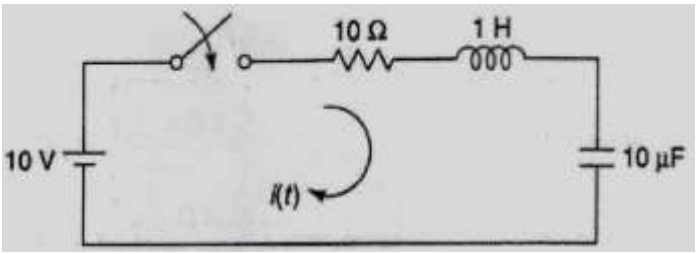
Q.4 Attempt Any Four: **16**

a) Determine transmission parameters for the given network.

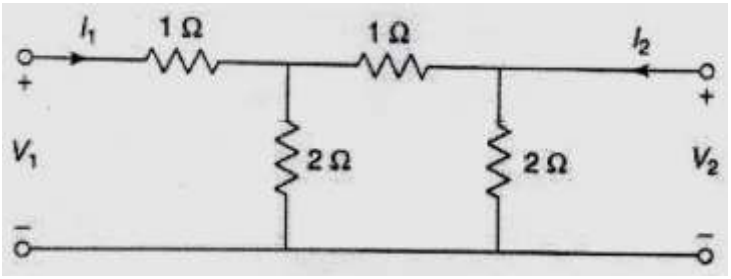


b) Derive an expression for response given by RL circuit.

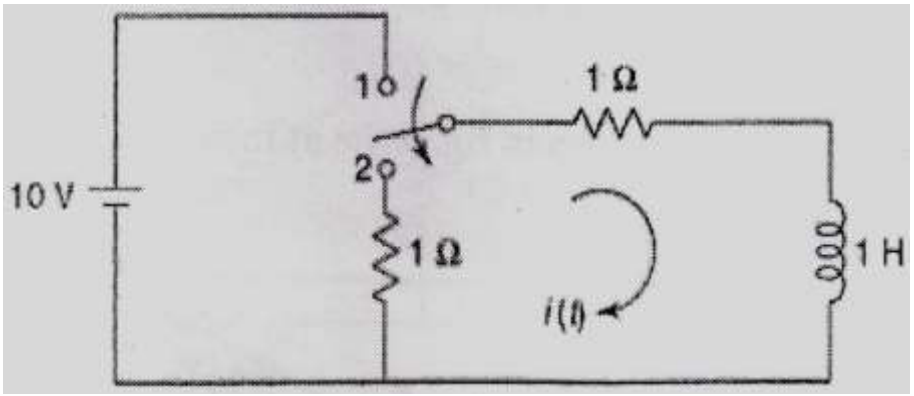
c) In the network shown, the switch is closed. Assuming all initial conditions as zero, find $i, di/dt, d^2i/dt^2$ at $t = 0+$.



d) Find open Circuit Parameter for the network shown in fig. below

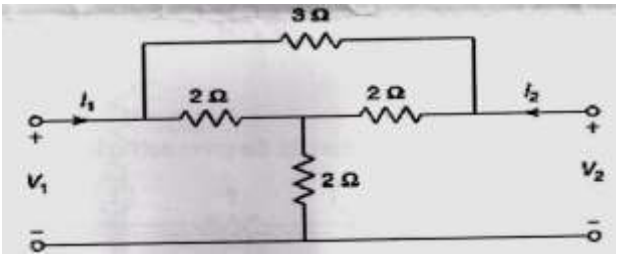


e) In the network shown in fig. the switch is moved from 1 to 2 at t = 0. Steady state condition having reached in position 1. Determine i(t) for t > 0 using Laplace transforms.

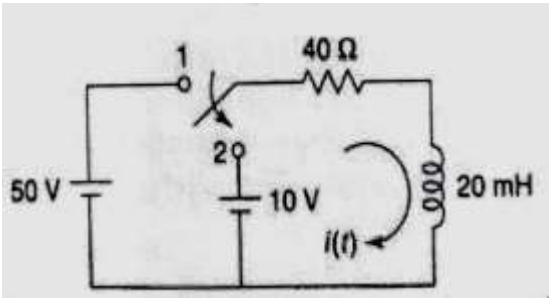


Q.5 Solve Any Two. **12**

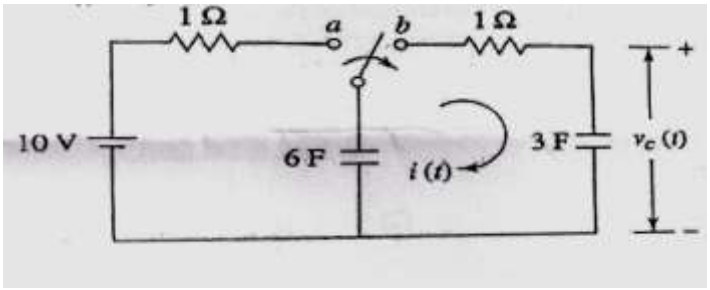
a) Find Y parameter for the two-port network shown.



b) In the network of fig, is under steady state with switch is at position 1, at switch is moved to position 2. Find i (t).



c) In the network of fig. the switch is moved from a to b at t = 0. Determine i(t) and Vc (t) using Laplace transform.



SLR-GF-811

Seat No.	

Set P

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The order of convergence of Newton-Raphson method is _____.
a) 3 b) 2
c) 1 d) 0

2) The positive real root of the equation $x^3 - 2x - 5 = 0$ lies between _____.
a) 0 and 1 b) 1 and 2
c) 2 and 3 d) 3 and 4

3) LU decomposition of matrix is possible for _____.
a) Only invertible matrix b) Only singular matrix
c) Any square matrix d) Any ordered matrix

4) Error in the Simpson's one-third rule is of order _____.
a) h^3 b) h^4
c) h^5 d) None

5) Gauss-Seidal method converges only if coefficient matrix is _____.
a) Singular matrix b) Non-singular matrix
c) Upper triangular d) Diagonally dominant

6) Romberg's method is used to solve _____.
a) Ordinary differential equation b) Integration
c) Partial differential equation d) All of these

7) In solving a ODE by Runge Kutta method if $y(0) = 1, h = 0.1, k_1 = 0.1, k_2 = 0.1150, k_3 = 0.1171, k_4 = 0.1359$ then the value of $y(0.1) =$ _____.
a) 0.11668 b) 0.16186
c) 1.11668 d) 1.16186

8) If a system of linear equation has no free variable then it has _____.
a) Unique solution b) No solution
c) Infinite solution d) None

9) If $u = \begin{bmatrix} 2 \\ -5 \\ -1 \end{bmatrix}, v = \begin{bmatrix} 3 \\ 2 \\ -3 \end{bmatrix}$ then $u.v$ is _____.

a) -1 b) 1
c) 0 d) 2

10) Dimension of non-zero subspace H is _____.

a) Number of vectors in col A
b) Number of vectors in any basis for H
c) Both a and b
d) None

11) Power method is used to find _____.

a) Smallest eigenvalue b) Zero eigenvalue
c) Largest eigenvalue d) None

12) If all eigen values are positive, then the quadratic form is _____.

a) Positive definite
b) Negative definite
c) Positive and Negative definite
d) Indefinite

13) If the inner product of two vectors u and v is zero then vectors are _____.

a) Orthogonal b) Orthonormal
c) Unique d) None

14) Let $u = (7, 1), v = (3, 2)$ then distance between u and v is _____.

a) $\sqrt{16}$ b) $\sqrt{15}$
c) $\sqrt{17}$ d) $\sqrt{18}$

Seat No.	

Set **P**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section –I

Q.2 Attempt any three of the following question. **09**

a) Find the positive root of $x^4 - x = 10$ correct to three decimal places by Newton-Raphson method. Take $x_0 = 2$ as initial approximation (Perform three iterations).

b) Solve the system of equation by Guass elimination method.

c) Apply Runge-Kutta method to find approximate value of $y\ for\ x = 0.2$ If $\frac{dy}{dx} = x + y^2, y(0) = 1, h = 0.2$.

d) Compute $\int_0^6 \frac{dx}{1+x^2}$ by using Weddle's rule.

e) Find the double root of $x^3 - x^2 - x + 1 = 0$ choosing $x_0 = 0.8$.

Q.3 Attempt any three of the following question. **09**

a) Find an iterative formula to find $\sqrt{N}$ (where N is a positive number) and hence find $\sqrt{5}$.

b) Solve the system of equation by Jacobi's method.

c) Using Runge-Kutta method of fourth order, solve $\frac{dy}{dx} = x + y, y(0) = 1, h = 0.2\ at\ x = 0.2$.

d) Compute $\int_0^6 \frac{dx}{1+x^2}$ by using Trapezoidal rule.

e) Compute $\int_0^6 \frac{1}{1+x} dx$ by Simpson's 3/8th rule, take $h = 1$.

Q.4 Attempt any two of the following question. **10**

a) Apply Crouts-Triangularization method (Factorisation method) to solve equations:
$3x + 2y + 7z = 4$
$2x + 3y + z = 5$
$3x + 4y + z = 7$

b) Solve the differential equations.
$\frac{dy}{dx} = 1 + xz, \frac{dz}{dx} = -xy$
For $x = 0.3$ using fourth order Runge-Kutta method. Initial values are $x = 0$, $y = 0, z = 1$.

c) Using Romberg's method, evaluate $\int_0^1 \frac{1}{1+x^2} dx$ correct to three decimal places.

Section – II

Q.5 Attempt any three of the following question. **09**

a) Determine whether the vectors are dependent or independent.

$$V_1 = \begin{bmatrix}0\\0\\2\end{bmatrix}, V_2 = \begin{bmatrix}0\\5\\-8\end{bmatrix} V_3 = \begin{bmatrix}-3\\4\\1\end{bmatrix}.$$

b) Assume that T is linear transformation find standard matrix of T
$T: \mathbb{R}^3 \to \mathbb{R}^2$
$T(e_1) = (1,3), T(e_2) = (4,-7)$
$T(e_3) = (-5,4)$ where e_1, e_2, e_3 are columns of 3×3 identify matrix.

c) Find the basis for Nul Space of matrix A.

$$A = \begin{bmatrix}-3 & 6 & -1 & 1 & -7\\ 1 & -2 & 2 & 3 & -1\\ 2 & -4 & 5 & 8 & -4\end{bmatrix}$$

d) Find the characteristic equation of

$$A = \begin{bmatrix}5 & -2 & 6 & -1\\ 0 & 3 & -8 & 0\\ 0 & 0 & 5 & 4\\ 0 & 0 & 0 & 1\end{bmatrix}$$

and also determine all eigen values of matrix A.

e) Show that $\{u_1, u_2, u_3\}$ is an orthogonal set, where

$$u_1 = \begin{bmatrix}3\\1\\1\end{bmatrix}; u_2 = \begin{bmatrix}-1\\2\\1\end{bmatrix}, u_3 \begin{bmatrix}-1/2\\-2\\7/2\end{bmatrix}$$

Q.6 Attempt any three of the following question. **09**

a) Describe all solutions of $AX = b$ where

$$A = \begin{bmatrix}3 & 5 & -4\\ -3 & -2 & 4\\ 6 & 1 & -8\end{bmatrix} b = \begin{bmatrix}7\\-1\\4\end{bmatrix}.$$

b) Let $A = \begin{bmatrix}-8 & -2 & -9\\ 6 & 4 & 8\\ 4 & 0 & 4\end{bmatrix} W = \begin{bmatrix}2\\1\\-2\end{bmatrix}$
Is W is in Nul A?
Is W is in Col A?

c) Show that the quadratic form $3x_1^2 + 5x_2^2 + 3x_3^2 - 2x_1x_2 + 2x_1x_3 - 2x_2x_3$ is positive definite.

d) Find the least square solution of inconsistent system $AX = b$ for

$$A = \begin{bmatrix} 4 & 0 \\ 0 & 2 \\ 1 & 1 \end{bmatrix} \; b = \begin{bmatrix} 2 \\ 0 \\ 11 \end{bmatrix}.$$

e) Find the inverse of matrix $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 0 & 3 \\ 4 & -3 & 8 \end{bmatrix}$.

Q.7 Attempt any two of the following question. **10**

a) Find a spanning set for the null space of the matrix.

$$A = \begin{bmatrix} -3 & 6 & -1 & 1 & -7 \\ 1 & -2 & 2 & 3 & -1 \\ 2 & -4 & 5 & 8 & -4 \end{bmatrix}$$

b) Find the numerically largest Eigen value of matrix A.

$$A = \begin{bmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix} \; Take\ X_0 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

c) Orthogonally diagonalize the matrix A.

$$A = \begin{bmatrix} 3 & -2 & 4 \\ -2 & 6 & 2 \\ 4 & 2 & 3 \end{bmatrix}$$

Seat No.		Set	Q

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
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Numerical Methods and Linear Algebra (BTN07401)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If a system of linear equation has no free variable then it has _____.
a) Unique solution b) No solution
c) Infinite solution d) None

2) If $u = \begin{bmatrix} 2 \\ -5 \\ -1 \end{bmatrix}, v = \begin{bmatrix} 3 \\ 2 \\ -3 \end{bmatrix}$ then $u.v$ is _____.
a) -1 b) 1
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Seat No.		Set	Q

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c) Using Runge-Kutta method of fourth order, solve $\frac{dy}{dx} = x + y, y(0) = 1, h = 0.2\ at\ x = 0.2$.

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b) Solve the differential equations.
$\frac{dy}{dx} = 1 + xz, \frac{dz}{dx} = -xy$
For $x = 0.3$ using fourth order Runge-Kutta method. Initial values are $x = 0$, $y = 0, z = 1$.

c) Using Romberg's method, evaluate $\int_0^1 \frac{1}{1+x^2} dx$ correct to three decimal places.

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Q.5 Attempt any three of the following question. **09**

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b) Assume that T is linear transformation find standard matrix of T
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$$A = \begin{bmatrix}-3 & 6 & -1 & 1 & -7\\ 1 & -2 & 2 & 3 & -1\\ 2 & -4 & 5 & 8 & -4\end{bmatrix}$$

d) Find the characteristic equation of

$$A = \begin{bmatrix}5 & -2 & 6 & -1\\ 0 & 3 & -8 & 0\\ 0 & 0 & 5 & 4\\ 0 & 0 & 0 & 1\end{bmatrix}$$

and also determine all eigen values of matrix A.

e) Show that $\{u_1, u_2, u_3\}$ is an orthogonal set, where

$$u_1 = \begin{bmatrix}3\\1\\1\end{bmatrix}; u_2 = \begin{bmatrix}-1\\2\\1\end{bmatrix}, u_3 \begin{bmatrix}-1/2\\-2\\7/2\end{bmatrix}$$

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a) Describe all solutions of $AX = b$ where

$$A = \begin{bmatrix}3 & 5 & -4\\ -3 & -2 & 4\\ 6 & 1 & -8\end{bmatrix} b = \begin{bmatrix}7\\-1\\4\end{bmatrix}.$$

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c) Show that the quadratic form $3x_1^2 + 5x_2^2 + 3x_3^2 - 2x_1x_2 + 2x_1x_3 - 2x_2x_3$ is positive definite.

d) Find the least square solution of inconsistent system $AX = b$ for

$$A = \begin{bmatrix} 4 & 0 \\ 0 & 2 \\ 1 & 1 \end{bmatrix} \; b = \begin{bmatrix} 2 \\ 0 \\ 11 \end{bmatrix}.$$

e) Find the inverse of matrix $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 0 & 3 \\ 4 & -3 & 8 \end{bmatrix}$.

Q.7 Attempt any two of the following question. **10**

a) Find a spanning set for the null space of the matrix.

$$A = \begin{bmatrix} -3 & 6 & -1 & 1 & -7 \\ 1 & -2 & 2 & 3 & -1 \\ 2 & -4 & 5 & 8 & -4 \end{bmatrix}$$

b) Find the numerically largest Eigen value of matrix A.

$$A = \begin{bmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix} \; Take\ X_0 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

c) Orthogonally diagonalize the matrix A.

$$A = \begin{bmatrix} 3 & -2 & 4 \\ -2 & 6 & 2 \\ 4 & 2 & 3 \end{bmatrix}$$

Seat No.	

Set **R**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Power method is used to find _____.
a) Smallest eigenvalue b) Zero eigenvalue
c) Largest eigenvalue d) None

2) If all eigen values are positive, then the quadratic form is _____.
a) Positive definite
b) Negative definite
c) Positive and Negative definite
d) Indefinite

3) If the inner product of two vectors u and v is zero then vectors are _____.
a) Orthogonal b) Orthonormal
c) Unique d) None

4) Let $u = (7, 1), v = (3, 2)$ then distance between u and v is _____.
a) $\sqrt{16}$ b) $\sqrt{15}$
c) $\sqrt{17}$ d) $\sqrt{18}$

5) The order of convergence of Newton-Raphson method is _____.
a) 3 b) 2
c) 1 d) 0

6) The positive real root of the equation $x^3 - 2x - 5 = 0$ lies between _____.
a) 0 and 1 b) 1 and 2
c) 2 and 3 d) 3 and 4

7) LU decomposition of matrix is possible for _____.
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c) Any square matrix d) Any ordered matrix

8) Error in the Simpson's one-third rule is of order _____.
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9) Gauss-Seidal method converges only if coefficient matrix is _____.

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c) Upper triangular
d) Diagonally dominant

10) Romberg's method is used to solve _____.

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11) In solving a ODE by Runge Kutta method if $y(0) = 1, h = 0.1, k_1 = 0.1, k_2 = 0.1150, k_3 = 0.1171, k_4 = 0.1359$ then the value of $y(0.1) =$ _____.

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b) 0.16186
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a) -1
b) 1
c) 0
d) 2

14) Dimension of non-zero subspace H is _____.

a) Number of vectors in col A
b) Number of vectors in any basis for H
c) Both a and b
d) None

Seat No.	

Set **R**

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section –I

Q.2 Attempt any three of the following question. **09**

a) Find the positive root of $x^4 - x = 10$ correct to three decimal places by Newton-Raphson method. Take $x_0 = 2$ as initial approximation (Perform three iterations).

b) Solve the system of equation by Guass elimination method.

c) Apply Runge-Kutta method to find approximate value of $y\ for\ x = 0.2$ If $\frac{dy}{dx} = x + y^2, y(0) = 1, h = 0.2$.

d) Compute $\int_0^6 \frac{dx}{1+x^2}$ by using Weddle's rule.

e) Find the double root of $x^3 - x^2 - x + 1 = 0$ choosing $x_0 = 0.8$.

Q.3 Attempt any three of the following question. **09**

a) Find an iterative formula to find $\sqrt{N}$ (where N is a positive number) and hence find $\sqrt{5}$.

b) Solve the system of equation by Jacobi's method.

c) Using Runge-Kutta method of fourth order, solve $\frac{dy}{dx} = x + y, y(0) = 1, h = 0.2\ at\ x = 0.2$.

d) Compute $\int_0^6 \frac{dx}{1+x^2}$ by using Trapezoidal rule.

e) Compute $\int_0^6 \frac{1}{1+x} dx$ by Simpson's 3/8th rule, take $h = 1$.

Q.4 Attempt any two of the following question. **10**

a) Apply Crouts-Triangularization method (Factorisation method) to solve equations:
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b) Solve the differential equations.
$\frac{dy}{dx} = 1 + xz, \frac{dz}{dx} = -xy$
For $x = 0.3$ using fourth order Runge-Kutta method. Initial values are $x = 0$, $y = 0, z = 1$.

c) Using Romberg's method, evaluate $\int_0^1 \frac{1}{1+x^2} dx$ correct to three decimal places.

Section – II

Q.5 Attempt any three of the following question. **09**

a) Determine whether the vectors are dependent or independent.

$$V_1 = \begin{bmatrix}0\\0\\2\end{bmatrix}, V_2 = \begin{bmatrix}0\\5\\-8\end{bmatrix} V_3 = \begin{bmatrix}-3\\4\\1\end{bmatrix}.$$

b) Assume that T is linear transformation find standard matrix of T
$T: \mathbb{R}^3 \to \mathbb{R}^2$
$T(e_1) = (1,3), T(e_2) = (4,-7)$
$T(e_3) = (-5,4)$ where e_1, e_2, e_3 are columns of 3×3 identify matrix.

c) Find the basis for Nul Space of matrix A.

$$A = \begin{bmatrix}-3 & 6 & -1 & 1 & -7\\ 1 & -2 & 2 & 3 & -1\\ 2 & -4 & 5 & 8 & -4\end{bmatrix}$$

d) Find the characteristic equation of

$$A = \begin{bmatrix}5 & -2 & 6 & -1\\ 0 & 3 & -8 & 0\\ 0 & 0 & 5 & 4\\ 0 & 0 & 0 & 1\end{bmatrix}$$

and also determine all eigen values of matrix A.

e) Show that $\{u_1, u_2, u_3\}$ is an orthogonal set, where

$$u_1 = \begin{bmatrix}3\\1\\1\end{bmatrix}; u_2 = \begin{bmatrix}-1\\2\\1\end{bmatrix}, u_3 \begin{bmatrix}-1/2\\-2\\7/2\end{bmatrix}$$

Q.6 Attempt any three of the following question. **09**

a) Describe all solutions of $AX = b$ where

$$A = \begin{bmatrix}3 & 5 & -4\\ -3 & -2 & 4\\ 6 & 1 & -8\end{bmatrix} b = \begin{bmatrix}7\\-1\\4\end{bmatrix}.$$

b) Let $A = \begin{bmatrix}-8 & -2 & -9\\ 6 & 4 & 8\\ 4 & 0 & 4\end{bmatrix} W = \begin{bmatrix}2\\1\\-2\end{bmatrix}$
Is W is in Nul A?
Is W is in Col A?

c) Show that the quadratic form $3x_1^2 + 5x_2^2 + 3x_3^2 - 2x_1x_2 + 2x_1x_3 - 2x_2x_3$ is positive definite.

d) Find the least square solution of inconsistent system $AX = b$ for

$$A = \begin{bmatrix} 4 & 0 \\ 0 & 2 \\ 1 & 1 \end{bmatrix} \; b = \begin{bmatrix} 2 \\ 0 \\ 11 \end{bmatrix}.$$

e) Find the inverse of matrix $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 0 & 3 \\ 4 & -3 & 8 \end{bmatrix}$.

Q.7 Attempt any two of the following question. **10**

a) Find a spanning set for the null space of the matrix.

$$A = \begin{bmatrix} -3 & 6 & -1 & 1 & -7 \\ 1 & -2 & 2 & 3 & -1 \\ 2 & -4 & 5 & 8 & -4 \end{bmatrix}$$

b) Find the numerically largest Eigen value of matrix A.

$$A = \begin{bmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix} \; Take\ X_0 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

c) Orthogonally diagonalize the matrix A.

$$A = \begin{bmatrix} 3 & -2 & 4 \\ -2 & 6 & 2 \\ 4 & 2 & 3 \end{bmatrix}$$

Seat No.		Set	S

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Sunday, 31-12-2023 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) Romberg's method is used to solve _____.
a) Ordinary differential equation b) Integration
c) Partial differential equation d) All of these

2) In solving a ODE by Runge Kutta method if $y(0) = 1, h = 0.1, k_1 = 0.1, k_2 = 0.1150, k_3 = 0.1171, k_4 = 0.1359$ then the value of $y(0.1) =$ _____.
a) 0.11668 b) 0.16186
c) 1.11668 d) 1.16186

3) If a system of linear equation has no free variable then it has _____.
a) Unique solution b) No solution
c) Infinite solution d) None

4) If $u = \begin{bmatrix} 2 \\ -5 \\ -1 \end{bmatrix}, v = \begin{bmatrix} 3 \\ 2 \\ -3 \end{bmatrix}$ then $u.v$ is _____.
a) -1 b) 1
c) 0 d) 2

5) Dimension of non-zero subspace H is _____.
a) Number of vectors in col A
b) Number of vectors in any basis for H
c) Both a and b
d) None

6) Power method is used to find _____.
a) Smallest eigenvalue b) Zero eigenvalue
c) Largest eigenvalue d) None

7) If all eigen values are positive, then the quadratic form is _____.
a) Positive definite
b) Negative definite
c) Positive and Negative definite
d) Indefinite

8) If the inner product of two vectors u and v is zero then vectors are _____.
a) Orthogonal b) Orthonormal
c) Unique d) None

9) Let $u = (7, 1), v = (3, 2)$ then distance between u and v is _____.
a) $\sqrt{16}$ b) $\sqrt{15}$
c) $\sqrt{17}$ d) $\sqrt{18}$

10) The order of convergence of Newton-Raphson method is _____.
a) 3 b) 2
c) 1 d) 0

11) The positive real root of the equation $x^3 - 2x - 5 = 0$ lies between _____.
a) 0 and 1 b) 1 and 2
c) 2 and 3 d) 3 and 4

12) LU decomposition of matrix is possible for _____.
a) Only invertible matrix b) Only singular matrix
c) Any square matrix d) Any ordered matrix

13) Error in the Simpson's one-third rule is of order _____.
a) h^3 b) h^4
c) h^5 d) None

14) Gauss-Seidal method converges only if coefficient matrix is _____.
a) Singular matrix b) Non-singular matrix
c) Upper triangular d) Diagonally dominant

Seat No.		Set	S

S.Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Sunday, 31-12-2023 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section –I

Q.2 Attempt any three of the following question. **09**

a) Find the positive root of $x^4 - x = 10$ correct to three decimal places by Newton-Raphson method. Take $x_0 = 2$ as initial approximation (Perform three iterations).

b) Solve the system of equation by Guass elimination method.

c) Apply Runge-Kutta method to find approximate value of $y\ for\ x = 0.2$ If $\frac{dy}{dx} = x + y^2, y(0) = 1, h = 0.2$.

d) Compute $\int_0^6 \frac{dx}{1+x^2}$ by using Weddle's rule.

e) Find the double root of $x^3 - x^2 - x + 1 = 0$ choosing $x_0 = 0.8$.

Q.3 Attempt any three of the following question. **09**

a) Find an iterative formula to find $\sqrt{N}$ (where N is a positive number) and hence find $\sqrt{5}$.

b) Solve the system of equation by Jacobi's method.

c) Using Runge-Kutta method of fourth order, solve $\frac{dy}{dx} = x + y, y(0) = 1, h = 0.2\ at\ x = 0.2$.

d) Compute $\int_0^6 \frac{dx}{1+x^2}$ by using Trapezoidal rule.

e) Compute $\int_0^6 \frac{1}{1+x} dx$ by Simpson's 3/8th rule, take $h = 1$.

Q.4 Attempt any two of the following question. **10**

a) Apply Crouts-Triangularization method (Factorisation method) to solve equations:
$3x + 2y + 7z = 4$
$2x + 3y + z = 5$
$3x + 4y + z = 7$

b) Solve the differential equations.
$\frac{dy}{dx} = 1 + xz, \frac{dz}{dx} = -xy$
For $x = 0.3$ using fourth order Runge-Kutta method. Initial values are $x = 0$, $y = 0, z = 1$.

c) Using Romberg's method, evaluate $\int_0^1 \frac{1}{1+x^2} dx$ correct to three decimal places.

Section – II

Q.5 Attempt any three of the following question. **09**

a) Determine whether the vectors are dependent or independent.
$$V_1 = \begin{bmatrix}0\\0\\2\end{bmatrix}, V_2 = \begin{bmatrix}0\\5\\-8\end{bmatrix} V_3 = \begin{bmatrix}-3\\4\\1\end{bmatrix}.$$

b) Assume that T is linear transformation find standard matrix of T
$T: \mathbb{R}^3 \to \mathbb{R}^2$
$T(e_1) = (1,3), T(e_2) = (4,-7)$
$T(e_3) = (-5,4)$ where e_1, e_2, e_3 are columns of 3×3 identify matrix.

c) Find the basis for Nul Space of matrix A.
$$A = \begin{bmatrix}-3 & 6 & -1 & 1 & -7\\1 & -2 & 2 & 3 & -1\\2 & -4 & 5 & 8 & -4\end{bmatrix}$$

d) Find the characteristic equation of
$$A = \begin{bmatrix}5 & -2 & 6 & -1\\0 & 3 & -8 & 0\\0 & 0 & 5 & 4\\0 & 0 & 0 & 1\end{bmatrix}$$
and also determine all eigen values of matrix A.

e) Show that $\{u_1, u_2, u_3\}$ is an orthogonal set, where
$u_1 = \begin{bmatrix}3\\1\\1\end{bmatrix}; u_2 = \begin{bmatrix}-1\\2\\1\end{bmatrix}, u_3 \begin{bmatrix}-1/2\\-2\\7/2\end{bmatrix}$

Q.6 Attempt any three of the following question. **09**

a) Describe all solutions of $AX = b$ where
$$A = \begin{bmatrix}3 & 5 & -4\\-3 & -2 & 4\\6 & 1 & -8\end{bmatrix} b = \begin{bmatrix}7\\-1\\4\end{bmatrix}.$$

b) Let $A = \begin{bmatrix}-8 & -2 & -9\\6 & 4 & 8\\4 & 0 & 4\end{bmatrix} W = \begin{bmatrix}2\\1\\-2\end{bmatrix}$
Is W is in Nul A?
Is W is in Col A?

c) Show that the quadratic form $3x_1^2 + 5x_2^2 + 3x_3^2 - 2x_1x_2 + 2x_1x_3 - 2x_2x_3$ is positive definite.

d) Find the least square solution of inconsistent system $AX = b$ for

$$A = \begin{bmatrix} 4 & 0 \\ 0 & 2 \\ 1 & 1 \end{bmatrix} \; b = \begin{bmatrix} 2 \\ 0 \\ 11 \end{bmatrix}.$$

e) Find the inverse of matrix $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 0 & 3 \\ 4 & -3 & 8 \end{bmatrix}$.

Q.7 Attempt any two of the following question. **10**

a) Find a spanning set for the null space of the matrix.

$$A = \begin{bmatrix} -3 & 6 & -1 & 1 & -7 \\ 1 & -2 & 2 & 3 & -1 \\ 2 & -4 & 5 & 8 & -4 \end{bmatrix}$$

b) Find the numerically largest Eigen value of matrix A.

$$A = \begin{bmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix} \; Take\ X_0 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

c) Orthogonally diagonalize the matrix A.

$$A = \begin{bmatrix} 3 & -2 & 4 \\ -2 & 6 & 2 \\ 4 & 2 & 3 \end{bmatrix}$$

SLR-GF-812

Seat No.		Set	P

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced and Sustainable Energy Sources (BTN07407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Steam power plant works on _____.
a) Vapor cycle b) Brayton cycle
c) Rankine cycle d) Carnot cycle

2) Out of the following which one is not a unconventional source of energy?
a) Tidal power b) Geothermal energy
c) Nuclear energy d) Wind power

3) Pulverized coal is _____.
a) coal free from ash b) non-smoking coal
c) coal which bums For long time d) coal broken into fine particles

4) Which of the following is considered as superior quality of coal?
a) Bituminous coal b) Peat
c) Lignite d) Coke

5) The modern steam turbines are _____.
a) reaction turbines b) impulse turbines
c) impulse reaction turbines d) none of the above

6) A graphical representation between discharge and time is known as _____.
a) Monograph b) Hectograph
c) Topograph d) Hydrograph

7) Outward radial flow turbines _____.
a) are impulses turbines
b) are reaction turbines
c) are partly impulse partly reaction turbines
d) may be impulse or reaction turbines

8) In a thermal power plant cooling towers are used to _____.
a) condense low pressure steam
b) cool condensed steam
c) cool water used in condenser for condensing steam
d) cool feed water of boiler

9) I atomic mass unit is equal to _____.
a) $1.66 \times 10^{-27} kg$ b) $1.66 \times 10^{-25} kg$
c) $1.66 \times 10^{-17} kg$ d) $1.66 \times 10^{-10} kg$

10) Graphite is used in nuclear power plant as a _____.
a) Fuel b) Coolant
c) Moderator d) Electrode

11) A gas turbine works on _____.
a) Carnot cycle b) Brayton cycle
c) Dual cycle d) Rankine cycle

12) A jet aircraft is powered by _____.
a) Petrol engine b) Diesel engine
c) Gas turbine d) Solar cells

13) Which of the following plant is the least reliable?
a) Wind b) Tidal
c) Geothermal d) Solar

14) The total power of a wind stream is proportional to _____.
a) velocity of stream b) (velocity of stream)^2
c) (velocity of stream)^3 d) 1/ (velocity of stream)

Seat No.	

Set **P**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced and Sustainable Energy Sources (BTN07407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the function of Economizer and super heater in a thermal power plant with near diagrams.
b) Discuss the factors governing the choice of site for a hydro-station. Draw flow duration curve and hydrograph.
c) With the help of neat sketch, explain Francis turbine.
d) With a neat diagram, explain the working of nuclear power plant.
e) Explain the principle and working Wind power genetration.

Q.3 Solve Any Two **12**

a) Explain with neat diagram the function of BWR and PWR. Mention the advantages and disadvantages.
b) Explain with necessary diagrams.
i) Mass curve
ii) Hydrograph
iii) Specific speed of the turbine
iv) Penstocks
v) Surge tank
vi) Water hammer and
vii) Flow duration curve and mention their use.
c) Describe the schematic arrangement of a thermal power station and explain the function of each briefly.

Section – II

Q.4 Solve Any Four: **16**

a) Discuss different criterion for selection of site for WTG.
b) Write a short note on tidal power generation.
c) Explain with neat sketch solar thermal power plant.
d) Write a short note on geothermal power generation.
e) Explain the design of marine.

Q.5 Solve Any Two. **12**

a) Explain the design of bio mass.
b) Explain the performance analysis of wind-diesel power station.
c) Explain the design of Micro hydle power station.

SLR-GF-812

Seat No.		Set	Q

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced and Sustainable Energy Sources (BTN07407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) In a thermal power plant cooling towers are used to _____.
a) condense low pressure steam
b) cool condensed steam
c) cool water used in condenser for condensing steam
d) cool feed water of boiler

2) I atomic mass unit is equal to _____.
a) $1.66 \times 10^{-27} kg$ b) $1.66 \times 10^{-25} kg$
c) $1.66 \times 10^{-17} kg$ d) $1.66 \times 10^{-10} kg$

3) Graphite is used in nuclear power plant as a _____.
a) Fuel b) Coolant
c) Moderator d) Electrode

4) A gas turbine works on _____.
a) Carnot cycle b) Brayton cycle
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5) A jet aircraft is powered by _____.
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6) Which of the following plant is the least reliable?
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11) Which of the following is considered as superior quality of coal?
a) Bituminous coal b) Peat
c) Lignite d) Coke

12) The modern steam turbines are _____.
a) reaction turbines b) impulse turbines
c) impulse reaction turbines d) none of the above

13) A graphical representation between discharge and time is known as _____.
a) Monograph b) Hectograph
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14) Outward radial flow turbines _____.
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b) are reaction turbines
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Seat No.	

Set **Q**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced and Sustainable Energy Sources (BTN07407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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Section – I

Q.2 Solve any four **16**

a) Explain the function of Economizer and super heater in a thermal power plant with near diagrams.
b) Discuss the factors governing the choice of site for a hydro-station. Draw flow duration curve and hydrograph.
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Q.3 Solve Any Two **12**

a) Explain with neat diagram the function of BWR and PWR. Mention the advantages and disadvantages.
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c) Describe the schematic arrangement of a thermal power station and explain the function of each briefly.

Section – II

Q.4 Solve Any Four: **16**

a) Discuss different criterion for selection of site for WTG.
b) Write a short note on tidal power generation.
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d) Write a short note on geothermal power generation.
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Seat No.	

Set **R**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced and Sustainable Energy Sources (BTN07407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) A gas turbine works on _____.
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c) Dual cycle d) Rankine cycle

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Seat No.	

Set **R**

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ELECTRICAL ENGINEERING
Advanced and Sustainable Energy Sources (BTN07407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve any four **16**

a) Explain the function of Economizer and super heater in a thermal power plant with near diagrams.
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Section – II

Q.4 Solve Any Four: **16**

a) Discuss different criterion for selection of site for WTG.
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Seat No.	

Set **S**

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced and Sustainable Energy Sources (BTN07407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
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Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

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12) Pulverized coal is _____.
a) coal free from ash
b) non-smoking coal
c) coal which bums For long time
d) coal broken into fine particles

13) Which of the following is considered as superior quality of coal?
a) Bituminous coal
b) Peat
c) Lignite
d) Coke

14) The modern steam turbines are _____.
a) reaction turbines
b) impulse turbines
c) impulse reaction turbines
d) none of the above

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Seat No.		Set	S

S. Y. (B. Tech) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Advanced and Sustainable Energy Sources (BTN07407)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve any four **16**

a) Explain the function of Economizer and super heater in a thermal power plant with near diagrams.
b) Discuss the factors governing the choice of site for a hydro-station. Draw flow duration curve and hydrograph.
c) With the help of neat sketch, explain Francis turbine.
d) With a neat diagram, explain the working of nuclear power plant.
e) Explain the principle and working Wind power genetration.

Q.3 Solve Any Two **12**

a) Explain with neat diagram the function of BWR and PWR. Mention the advantages and disadvantages.
b) Explain with necessary diagrams.
i) Mass curve
ii) Hydrograph
iii) Specific speed of the turbine
iv) Penstocks
v) Surge tank
vi) Water hammer and
vii) Flow duration curve and mention their use.
c) Describe the schematic arrangement of a thermal power station and explain the function of each briefly.

Section – II

Q.4 Solve Any Four: **16**

a) Discuss different criterion for selection of site for WTG.
b) Write a short note on tidal power generation.
c) Explain with neat sketch solar thermal power plant.
d) Write a short note on geothermal power generation.
e) Explain the design of marine.

Q.5 Solve Any Two. **12**

a) Explain the design of bio mass.
b) Explain the performance analysis of wind-diesel power station.
c) Explain the design of Micro hydle power station.

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Seat No.	

Set P

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Vehicle Technology (BTN07408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) When was the first electric car invented?
a) 1830 b) 1985
c) 1832 d) 1945

2) If the force acting on body is zero. Its momentum is: _____.
a) Zero b) Constant
c) Infinite d) None of the above

3) What is S.I. unit of force is _____.
a) Newton- metre b) Newton
c) Newton per second d) Newton per square metre

4) What is the challenge with electric vehicles?
a) Vehicle durability b) Cell life
c) Cost d) Both a) and b)

5) A fuel cells converts _____ energy into electrical energy.
a) Mechanical b) Magnetic
c) Solar d) Chemical

6) The solar cell efficiency is about _____.
a) 25% b) 15%
c) 48% d) 63%

7) The moving coil instrument measures the _____ of signal.
a) Average value b) R.M.S value
c) Zero value d) Half value

8) The capacity of batteries is expressed in terms of _____.
a) Current rating b) Voltage rating
c) Ampere hour rating d) None of the above

9) How to increase the range on electric vehicles?
a) By increasing the battery capacity
b) By reducing battery capacity
c) By installing another DC motor
d) By installing turbocharger

10) From where tractive effort generate in EV _____.
a) Battery
b) Convertor
c) Driving Shaft
d) Motor

11) Which motor is suitable for high starting torque?
a) DC series motor
b) DC shunt motor
c) DC separately excited motor
d) Synchronous motor

12) Which of the following vehicle produces zero emissions?
a) Gasoline vehicle
b) Electrical vehicle
c) Hybrid vehicle
d) Diesel vehicle

13) Who coined the term battery?
a) George Franklin
b) Benjamin Fernandes
c) Benjamin Franklin
d) George Bush

14) The solar energy essentially used in _____ contexts.
a) Soar thermal
b) Solar photovoltaics
c) Solar thermal and Solar photovoltaics
d) None of above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Vehicle Technology (BTN07408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt any four. **16**
- **a)** Explain history of vehicle in detail.
- **b)** State and explain laws of motion.
- **c)** Write note on tractive effort and transmission requirement.
- **d)** Explain electric vehicle market.
- **e)** Explain in brief vehicle kinetics.
- **f)** Write note on energy consumption and vehicle performance.

Q.3 Attempt any two. **12**
- **a)** What is meant by Electric vehicle and explain the components of electric vehicle in brief.
- **b)** State and explain electric motor characteristics in detail.
- **c)** Explain propulsion power along with velocity and acceleration.

Section – II

Q.4 Attempt any four. **16**
- **a)** Explain concept of plug-in hybrid electric vehicle.
- **b)** Explain social benefits of solar powered charging systems.
- **c)** Explain the integration of EV's smart grid.
- **d)** Explain in detail powertrain component sizing.
- **e)** Explain electric vehicle supply equipment.
- **f)** Explain different types of EV charging connector.

Q.5 Attempt any two. **12**
- **a)** Explain in detail hybrid electric drive with series and parallel concept.
- **b)** State and explain environmental and economic benefits of solar powered charging systems.
- **c)** State and explain different types of plug standard in different countries.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Vehicle Technology (BTN07408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The capacity of batteries is expressed in terms of _____.
a) Current rating b) Voltage rating
c) Ampere hour rating d) None of the above

2) How to increase the range on electric vehicles?
a) By increasing the battery capacity
b) By reducing battery capacity
c) By installing another DC motor
d) By installing turbocharger

3) From where tractive effort generate in EV _____.
a) Battery b) Convertor
c) Driving Shaft d) Motor

4) Which motor is suitable for high starting torque?
a) DC series motor b) DC shunt motor
c) DC separately excited motor d) Synchronous motor

5) Which of the following vehicle produces zero emissions?
a) Gasoline vehicle b) Electrical vehicle
c) Hybrid vehicle d) Diesel vehicle

6) Who coined the term battery?
a) George Franklin b) Benjamin Fernandes
c) Benjamin Franklin d) George Bush

7) The solar energy essentially used in _____ contexts.
a) Soar thermal
b) Solar photovoltaics
c) Solar thermal and Solar photovoltaics
d) None of above

8) When was the first electric car invented?
a) 1830 b) 1985
c) 1832 d) 1945

9) If the force acting on body is zero. Its momentum is: _____.
a) Zero b) Constant
c) Infinite d) None of the above

10) What is S.I. unit of force is _____.
a) Newton- metre b) Newton
c) Newton per second d) Newton per square metre

11) What is the challenge with electric vehicles?
a) Vehicle durability b) Cell life
c) Cost d) Both a) and b)

12) A fuel cells converts _____ energy into electrical energy.
a) Mechanical b) Magnetic
c) Solar d) Chemical

13) The solar cell efficiency is about _____.
a) 25% b) 15%
c) 48% d) 63%

14) The moving coil instrument measures the _____ of signal.
a) Average value b) R.M.S value
c) Zero value d) Half value

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Vehicle Technology (BTN07408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt any four. **16**
- **a)** Explain history of vehicle in detail.
- **b)** State and explain laws of motion.
- **c)** Write note on tractive effort and transmission requirement.
- **d)** Explain electric vehicle market.
- **e)** Explain in brief vehicle kinetics.
- **f)** Write note on energy consumption and vehicle performance.

Q.3 Attempt any two. **12**
- **a)** What is meant by Electric vehicle and explain the components of electric vehicle in brief.
- **b)** State and explain electric motor characteristics in detail.
- **c)** Explain propulsion power along with velocity and acceleration.

Section – II

Q.4 Attempt any four. **16**
- **a)** Explain concept of plug-in hybrid electric vehicle.
- **b)** Explain social benefits of solar powered charging systems.
- **c)** Explain the integration of EV's smart grid.
- **d)** Explain in detail powertrain component sizing.
- **e)** Explain electric vehicle supply equipment.
- **f)** Explain different types of EV charging connector.

Q.5 Attempt any two. **12**
- **a)** Explain in detail hybrid electric drive with series and parallel concept.
- **b)** State and explain environmental and economic benefits of solar powered charging systems.
- **c)** State and explain different types of plug standard in different countries.

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Seat No.	

Set R

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Vehicle Technology (BTN07408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
2) Don't forget to mention Question Paper Set (P/Q/R/S) at the top of the same page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) Which motor is suitable for high starting torque?
a) DC series motor b) DC shunt motor
c) DC separately excited motor d) Synchronous motor

2) Which of the following vehicle produces zero emissions?
a) Gasoline vehicle b) Electrical vehicle
c) Hybrid vehicle d) Diesel vehicle

3) Who coined the term battery?
a) George Franklin b) Benjamin Fernandes
c) Benjamin Franklin d) George Bush

4) The solar energy essentially used in _____ contexts.
a) Soar thermal
b) Solar photovoltaics
c) Solar thermal and Solar photovoltaics
d) None of above

5) When was the first electric car invented?
a) 1830 b) 1985
c) 1832 d) 1945

6) If the force acting on body is zero. Its momentum is: _____.
a) Zero b) Constant
c) Infinite d) None of the above

7) What is S.I. unit of force is _____.
a) Newton- metre b) Newton
c) Newton per second d) Newton per square metre

8) What is the challenge with electric vehicles?
a) Vehicle durability b) Cell life
c) Cost d) Both a) and b)

9) A fuel cells converts _____ energy into electrical energy.
a) Mechanical b) Magnetic
c) Solar d) Chemical

10) The solar cell efficiency is about _____.
a) 25% b) 15%
c) 48% d) 63%

11) The moving coil instrument measures the _____ of signal.
a) Average value b) R.M.S value
c) Zero value d) Half value

12) The capacity of batteries is expressed in terms of _____.
a) Current rating b) Voltage rating
c) Ampere hour rating d) None of the above

13) How to increase the range on electric vehicles?
a) By increasing the battery capacity
b) By reducing battery capacity
c) By installing another DC motor
d) By installing turbocharger

14) From where tractive effort generate in EV _____.
a) Battery b) Convertor
c) Driving Shaft d) Motor

Seat No.	

Set **R**

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Vehicle Technology (BTN07408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt any four. **16**
- **a)** Explain history of vehicle in detail.
- **b)** State and explain laws of motion.
- **c)** Write note on tractive effort and transmission requirement.
- **d)** Explain electric vehicle market.
- **e)** Explain in brief vehicle kinetics.
- **f)** Write note on energy consumption and vehicle performance.

Q.3 Attempt any two. **12**
- **a)** What is meant by Electric vehicle and explain the components of electric vehicle in brief.
- **b)** State and explain electric motor characteristics in detail.
- **c)** Explain propulsion power along with velocity and acceleration.

Section – II

Q.4 Attempt any four. **16**
- **a)** Explain concept of plug-in hybrid electric vehicle.
- **b)** Explain social benefits of solar powered charging systems.
- **c)** Explain the integration of EV's smart grid.
- **d)** Explain in detail powertrain component sizing.
- **e)** Explain electric vehicle supply equipment.
- **f)** Explain different types of EV charging connector.

Q.5 Attempt any two. **12**
- **a)** Explain in detail hybrid electric drive with series and parallel concept.
- **b)** State and explain environmental and economic benefits of solar powered charging systems.
- **c)** State and explain different types of plug standard in different countries.

Seat No.	

Set | S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Vehicle Technology (BTN07408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory and should be solved in first 30 minutes in Answer Book. Page No.3 (starting page of the Answer Book). Each question carry one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option from the following. **14**

1) The solar cell efficiency is about _____.
a) 25% b) 15%
c) 48% d) 63%

2) The moving coil instrument measures the _____ of signal.
a) Average value b) R.M.S value
c) Zero value d) Half value

3) The capacity of batteries is expressed in terms of _____.
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c) By installing another DC motor
d) By installing turbocharger

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c) Solar thermal and Solar photovoltaics
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c) Infinite d) None of the above

12) What is S.I. unit of force is _____.
a) Newton- metre b) Newton
c) Newton per second d) Newton per square metre

13) What is the challenge with electric vehicles?
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c) Cost d) Both a) and b)

14) A fuel cells converts _____ energy into electrical energy.
a) Mechanical b) Magnetic
c) Solar d) Chemical

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Seat No.		Set	S

S.Y. (B.Tech.) (Sem - II) (New) (CBCS) Examination: Oct/Nov-2023
ELECTRICAL ENGINEERING
Electric Vehicle Technology (BTN07408)

Day & Date: Tuesday, 16-01-2024 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and mention it clearly.

Section – I

Q.2 Attempt any four. **16**
- **a)** Explain history of vehicle in detail.
- **b)** State and explain laws of motion.
- **c)** Write note on tractive effort and transmission requirement.
- **d)** Explain electric vehicle market.
- **e)** Explain in brief vehicle kinetics.
- **f)** Write note on energy consumption and vehicle performance.

Q.3 Attempt any two. **12**
- **a)** What is meant by Electric vehicle and explain the components of electric vehicle in brief.
- **b)** State and explain electric motor characteristics in detail.
- **c)** Explain propulsion power along with velocity and acceleration.

Section – II

Q.4 Attempt any four. **16**
- **a)** Explain concept of plug-in hybrid electric vehicle.
- **b)** Explain social benefits of solar powered charging systems.
- **c)** Explain the integration of EV's smart grid.
- **d)** Explain in detail powertrain component sizing.
- **e)** Explain electric vehicle supply equipment.
- **f)** Explain different types of EV charging connector.

Q.5 Attempt any two. **12**
- **a)** Explain in detail hybrid electric drive with series and parallel concept.
- **b)** State and explain environmental and economic benefits of solar powered charging systems.
- **c)** State and explain different types of plug standard in different countries.